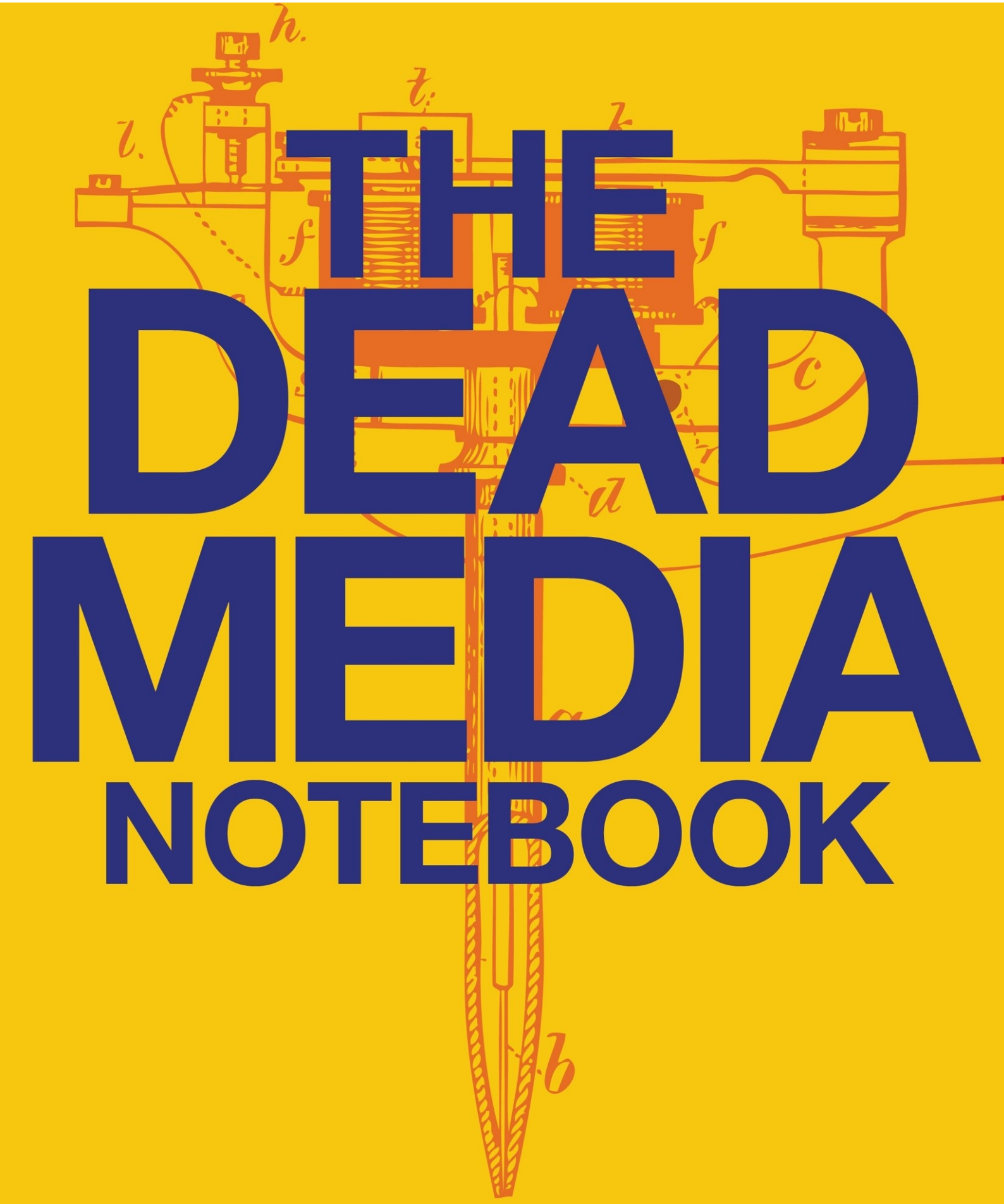

THE DEAD MEDIA NOTEBOOK

20TH ANNIVERSARY EDITION

Table of Contents

What Is This Book?
The Dead Media Project: A Modest Proposal And A Public Appeal
The Master List Of Dead Media

The Inca Quipu
Chaucerian Virtual Reality
The Milton Bradley Vectrex
The Voice-Activated Typewriter Of 1916
Hotel Annunciator
The Cyrograph
The Scopitone
Dead Computer Languages
Artoc: The US Army's Portable Pneumatic-Tube Powered Multi-Media System. In Tents.
The Magic Lantern; Peck & Snyder's Price List
The Scale Of The Magic Lantern Market
Anatomy Of A Magic Lantern Show
Silent Film, Diorama, Panorama
Leaflet Grenades And The Monroe Bomb
Software Innovation In The Magic Lantern Era
Mechanical Encryption Systems Of The 1930s; The Comparator; The Rapid Selector
The Experiential Typewriter
Dead Cryptanalytic Devices Of World War II
Tongan Tin Can Mail
Edison's Electric Pen And Early Desktop Publishing
Military Telegraphy, Balloon Semaphore
Mirror Telegraphy: The Heliograph, The Helioscope,

The Heliostat, The Heliotrope
The 17th Century App Store: Schott's Organum Mathematicum
Mobile Phones Using Telegraph Wires
Pre WwII Speech Synthesis: The Voder, The Vocoder
C. X. Thomas De Colmar's Arithmometer
Phonographic Dolls
IBM Letterwriter
The Zuse Ziffernrechner; The V1, Z1, Z2, Z3 And Z4 Program-Controlled Electromechanical Digital Computers; The Death Of Konrad Zuse
Dead Media 1897: The Consumer Context
18TH CENTURY MULTIMEDIA: Loutherbourg's Eidophusikon
Karakuri; The Japanese Puppet Theater Of Chikamatsu
Dead Memory Systems
Victorian Talking Pictures: The Kinetophone
Clockwork Wall Animation—Living Pictures
Skytale, The Spartan Code-Stick
The Pigeon Post Of Ancient Sumer
The Pigeon Post In The Seige Of Paris
The Pigeon Post In The Seige Of Paris, Part 2
The Pigeon Post And The Balloon Post
Even More About The Pigeon Post
Vidscan
Bootleg Concert Recordings Of The 19th Century, Papier-Mache Records
Kids' Dead Media 1929: The Mirrorscope, The Vista Chromoscope, The Rolmonica, The Chromatic Rolmonica
The Speaking Picture Book; Squeeze Toys That

‘Speak’
Refrigerator-Mounted Talking Note Pad
The Experiential Typewriter
Kids’ Dead Media 1937: The Auto-Magic Picture Gun
The ‘Writing Telegraph;’ Gray’s Telautograph; The Military Telautograph; The Telewriter; The Telescriber
The Heliograph AND The Heliotrope
The Heliograph
Russolo’s Intonarumori
The Agfa Geveart Family Camera
The CED Video Disc Player
Eighteenth Century English Mail Hacks
The Pigeon Post FROM THE SEIGE OF ACRE TO WWI
Muybridge’s Zoopraxiscope
The Player Piano
Atari Video Music
The Elcaset Cartridge Tape And Player
Bell Labs Half-Tone Television
Popular Science 1932: Naumburg’s Visagraph, The Electric Eye Linotype, Ordering Music By Phone
Piesse’s Smell Organ
Scott’s Electronium
Candle-Powered Radio
Cahill’s Telharmonium
Soviet Bone Music Samizdat Recordings
The Talking View-Master
Dead Photographic Processes
The Luba Lukasa
PhoneVision
Sonovision
Union Telegraph Balloons, Confederate Microfilm

Chase's Electric Cyclorama
The Optigan
The Panorama
Daguerre's Diorama
Known Surviving Panoramas
Jenkins Radiovisor, Bell Picture Telephone,
RGA/Oxberry CompuQuad,
The Theatrophone And The Electrophone
More On The Theatrophone And Electrophone
Theatrophonic Televangelism
Hopi Town Criers
Dancer's Novelty Microphotographs And Dagron's Balloon Post
Telephonic Jukeboxes: The Shyvers Multiphone, The Phonette Melody Lane, The AMI Automatic
Nazi U-Boat Automated Weather Forecasting Espionage Network
The Inuit Inuksuit
The General Electric Show 'N Tell
The Bletchley Park Colossus
The Bletchley Park Colossus
The Aluminum Transcription Disk
Indecks Information Retrieval System
Pneumatic Typewriters
Dead Personal Computers
Early Mechanical Television Systems
Baird Mechanical Television, Part One: Technical Introduction
Baird Mechanical Television, Part Two: Technical Introduction
Baird Mechanical Television, Part Three: Baird Mechanical Television Part 3: Other Countries, Other

Systems
Fire Signals And Horse Post On The Great Wall Of China
The MiniCine Toy Projector
The Theatrophone, The Electrophone
Peepshows
The Nintendo Virtual Boy, The Logitech Cyberman 3D Mouse, The Nintendo Power Glove
An Amish Cyclorama
The Tru-Vue Stereographic Viewer
The ICL One Per Desk
The Philips Programmed Individual Presentation System (PIP)
The Travelling Panorama
The Edison Electric Pen, Pneumatic Pen, Magnetic Pen, And Foot-Powered Pen
The Edison Electric Pen, Reed Pen, And Music Ruling Pen
The Edison Electric Pen
New Guinea Talking Drum
Cat Piano And Tiger Organ Cat Piano
Shadow Theatre
The Kinora
The Wilcox-Gay Recordio
The Velvet Revolution In The Magic Lantern
Native American Smoke Signals
Fraudulent Media Of The Spirit World
The Edison Wax Cylinder
Kids' Interactive Television: Captain Power
The Dubroni Instant Camera
The Singing Telegram; The Death Of George P. Oslin
Children's Dead Media

Robertson’s Phantasmagoria
Dead Media: Robertson’s Phantasmagoria; Seraphin’s Ombres Chinoises; Guyot’s Smoke Apparitions; The Magic Lantern
Robertson’s Phantasmagoria
Phantasmagoria Enters The Mainstream
Robertson’s Final Phantasmagoria
American Missile Mail
McDonnell Douglas Laserfilm VideoDisc Player
Two-Track PlayTape; The Stanton Mail Call Letter Pack
Inuit Carved Maps
Edison’s Vertical-Cut Records
The Flame Organ; The Burning Harmonica; The Chemical Harmonica; Kastner’s Pyrophone
Telelogoscopy; Television Screen News
Phonograph History
PALplus Television Letterbox Format
Heron’s Nauplius
The IBM Selectric Typewriter
The Blickensderfer Typewriter; The Scientific Keyboard
The Slide Rule
Wide-Screen Movies: Gance’s Polyvision, Waller’s Cinerama
Wide Screen Movies: CinemaScope, Todd-AO, MGM Camera 65, CinemaScope 55, Super Panavision 70, Ultra Panavision 70
Dead Cinema Color Processes
Norwegian Transport Wires
The Pneumatic Post And The Dreyfus Affair
Dead Synthesizers: The Hazelcom McLeyvier

Dead Synthesizers: The Con Brio ADS 200
Dead Synthesizers: ARP 2600
Dead Synthesizers: The Adaptive Systems, Inc. Synthia
The Library Card Catalog
The Library Card Catalog
Dead Digital Documents
Officially Deleted Digital Documents
The Baby Mark I Computer
The Readies
Caselli's Pantelegraph (Part One)
Bain's Facsimile Telegraphy
NEWSPAPERS BY RADIO, IN 1938
TELEVISION IN THEATRES, AT 50,000 VOLTS
Gould's 3-D Television
Duston's Talking Book
Dead Human Languages
The Polyrhetor AT The 1939 World's Fair Futurama
A VINE VENDING MACHINE IN THE 1960S: THE Sony Videomat
The Telegraph: The Morse Pendulum Instrument, The Morse Register
THE TELEGRAPHY ECOSYSTEM OF 1900
The Telegraph: Fire Alarms, Burglar Alarms, Railroad-Signal Systems, Hotel Annunciators, District Messenger Services
The Hotel Annunciator
The Telegraph: Inductive Telegraphy
Recording And Telling Stories With The Inca Quipo
The Telegraph
Flower Codes
Henry Mills' Typewriter

Typewriters: The Comptometer, The Numerograph, The Book Typewriter
Brown’s Cash Carrier
Brown’s Cash Carrier
Super 8 Mm Film
How To Build A ‘Farmer’s Telephone’
Cash Carriers
Graphic Novels Of 981AD
Dead ASCII Variants
Dead Money
Wheatstone’s Telegraphic Meterometer
The Amateur Radio Relay League Radiogram
The Teleplex Morse Code Recorder
Bi Sheng’s Clay Printing Press
The Astrolabe; Ctesibius’s Clepsydra Orrery
The Astrolabe In Islam
The Astrolabe In Europe
Chaucer’s Astrolabe Manual
VISIDEP 3-D Television
Coins As Media
Interactive Cable Television: Cableshop
A Personal Recollection Of VisiDep 3-D Television
Anschutz’s Arcade Peepshow
The Death Of Naval Morse Code
Artificial Church Bells
Exchequer Tallies
Afterlife Of The Edison Electric Pen
Poster Stamps
The Regina Music Box
3D PHOTOGRAPHY IN 1903
Mobile Cavalry Telephone
Camras’s Wire Recorder

Minitel R.I.P
The Burroughs Moon-Hopkins Typewriter AND Calculator
TelegraphIC LANGUAGE: Cablese, Wirespeak, Phillips Code, Morse Code
Whistling Networks Of The Canary Islands
Talking Greeting Card; Manually-Powered Sound Tape
Monastic Sign Language
Cardboard Artificial Intelligence
Spook Shows
Vinyl Multimedia
Basque Talking Drum
Peek-A-Boo Index Cards: Optical Parallel Computers Of The 1950s
US Air Force 'Clones' Obsolete Electronics
Paris Pneumatic Mail
RCA SelectaVision Holographic Videofilm
Hummel's Telediagraph; The Fax Machine Of 1898
The Organetta
Computer Game Emulators
Ghost Sites On The Web
De Moura's Wave Emitter
Nixie Indicator Tube Displays
Korean Horse Post
Naval SOS Becomes Obsolete
Dead Public Sirens And Horns
Tower Clocks And Chimes; City-Wide Public Address Systems; Factory Whistles; Foghorns
Telegraphy
Dead Digital Documents
The Philips-Miller Audio Recording System

Trail Blazing By Apes
Notched Bones
The Vortex Experimental Theater
Minifon Pocket-Size Wire Recorder
Trail Blazing In Ancient Australia
Paper Magnetic-Recording Tape
AT&T Telephotography; AT&T Picturephone
Mechanical Sirens And Foghorns
Quadraphonics
Dead Chinese Coinage
Timex Magnetic Disk Recorder
The Pigeon Post, Alive In 1998
Antique Chip Fabricator
The Toy Artist Drawing Automaton
Sound Bites Musical Candy
Phonovid Vinyl Video
Ancient Irish Fire Beacon
The Pigeon Post Criminals
Causes Of Media Mortality; Roman Relay Runners, Mongol Horse Post, Polybius's Fire Signals, British Naval Howe Code, Pony Express, Aztec Signals
Public Fire Alarms In Colonial Shanghai
The Chiu-Mou-Ti Hsing-Wu-T'ai
Crandall's Electric Sign
Dead Digital Documents
Winky-Dink Interactive TV
The Cat Piano
The Cat Piano, The Donkey Chorus, The Pig Piano
Train Token Signals System
Optical Telegraphy; Heliography
Train Token Signals System
Ramelli's Book Wheel

The Camera Obscura
Parisian Shadow Theatre
Camera Obscuras Existing Today
Immortal Media
Pigeon Post In Paris
Donisthorpe's Kinesigraph
Naragansett Drum Rocks
Pneumatic Mail In London
Pneumatic Mail In Berlin
Pneumatic Mail In America
The Pigeon Post
Radio Killed The Vaudeville Star
Pigeon Vests
Pigeon Spies Of World War Two
Military Pigeoneers Of World War Two
Pigeon Paraphernalia
The Fisher-Price Pixelvision
Nazi Videophones
The Pigeon Post; The Ostrich Post
The Auto-Typist
Unstable Photographs
Freight Tubes
The Clegg-Selvan Pneumatic Vehicle; Wire Conveyors, Cash Carriers, Parcel Carriers; The Lamson Tube; Pneumatic Tube Industrial History
Fungal Hallucinogens In Decaying Archives
The Robotyper; The Flexowriter
Computer Game Designer Dies Young, But Outlives Own Games
Pneumatic Tubes
Pneumatic Tube Applications
Dead Supercomputers Become Furniture

Dead Tunnels Of Chicago
The Chicago Freight Tunnel Flood
Canada's Telidon Network
Dead Tunnels Of Chicago, Eyewitness Report
The Optigan
The Railway Panorama
The Mareorama; The Cineorama
Newspaper Via Radio Facsimile
Ultra-Personal Sony Handycam
Vinyl Record With Zoetrope
British Foreign Office Abandons Telegrams
Gilbreth's Chronocyclegraph
Signals Of The Beyazit Tower, Istanbul
Information Tech Of Ancient Athenian Democracy, Part One: Post-It Notes Of 500BC
Info Tech Of Ancient Athenian Democracy, Part Two: The Kleroterion Randomiser
Info Tech Of Ancient Athenian Democracy, Part Three: Cryptographic ID Cards
Info Tech Of Ancient Athenian Democracy, Part Four: Voting Machines
INFO Tech Of Ancient AthenIAN DEMOCRACY, Part Five: PUBLIC RELATIONS
The Stereoscope; IMAX
Mutant Mosquitoes In Subway Tunnels
Telegraphic Paper Tape; Digital Paper Tape; Baudot Code; Dead Encoding Formats; ILLIAC; TTY
Military Pigeoneers Of World War Two: Qualifications For Pigeoneers, Pigeon Lofts; Loft Routines; Pigeon Banding Codes, Loft Equipment Pigeoneer Supplies, Message Holders, Pigeons By Parachute

Bibliocadavers
The Prague Pneumatic Post
Babbage's Difference Engine
The Pigeon Post
Bertillonage
Typesetters: A Dead Class Of Media Workers
Spirit Duplicators
Phonautograph And Barlow's Logograph
Sensorama
Chrysler's Highway Hi-Fi, Pt. One
Dead Binary Digital Computer (The Manchester Small Scale Experimental Machine—The Baby)
The Invention Of Envelopes And The Postal System In Ancient Mesopotamia
Canada's Telidon Network; Australia's Viatel And Discovery 40
Scriabin's Color Organ
Virtual Reality Techniques During The French Revolution And The Early 19th Century
Rene Dagron, Pigeon Post Microfilm Balloonist
The Kromskop, Victorian Colour Photography
The Birth And Death Of Memory
Dead UK Video Formats
DIVX: Stillborn Media
The Acoustic Telephone
Damaged, Obsolete Undersea Cables
How I Became The First Foreigner To Operate The Prague Pneumatic Post
MICRONESIAN STICK CHARTS
Newspaper Via Radio Facsimile
Cyclorama
Telautograph

Cash Carriers (Intra-Building)
Cash Carriers (Intra-Building)
Seeburg 1000 Background Music System
Del Mar CardioCorder
Radio Shack TRS-80 Model 100
Old Hard Drives
Pre-Digital Crowdsourcing
Carmontelle's Transparency
The Echo Cannonade Of 1825
Undead Media - The Edison Stock Ticker
The Toy Artist Drawing Automaton
Mechanical Memories (Rotating Disk, Movable Pins)
The Ephemeral Nature Of Magnetic Domains On Rotating Platters
Pre-Cinema Moving Pictures (Electrotachyscope)
The Nazi Volksempfanger Radio
Clay Tokens
Paul Allen Revives Cinerama
Runic Tally Sticks
Color Movies From Black-And-White Film: Thomascolor
Totenrotel, The Medieval Wikipedia
Non-HTML Hypertext Authoring Systems, Circa 1993
NASA Technology Could Save Vanishing Native American Languages
Primordial Interactive Television (Or Winky-Dink Redux)
Undead Media: The French Minitel System
The Unexpected Survival Of Telex
Old Music Recordings, Effects On Music
Contoura Portable Non-Xerographic Photocopier
V-Mail, Microfilmed Mail Of WWII

Obsolete TV-Type Remote Control Techniques
Dead Architectural (And Drafting) Media
Czarist-Era Russian Color Photography
Magnetic Disc Audio
Decoding Dead Martian Data Formats
Appendix: THE MASTER LIST OF DEAD MEDIA

Based on material from Dead Media Working Notes: deadmedia.org

Compiled (1995-2001) by Bruce Sterling, Richard Kadrey, Tom Jennings

This edition edited (2015) by Tom Whitwell
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Cover: Edison’s Electric Pen, from Patent 196747, November 1877

How this book was produced:
1. I scraped the numerical index of deadmedia.org using the *Scraper* extension for Google Chrome to produced a list of URLs for every article.
2. To download the full HTML for each article I used *Refine*. Using 'Add Column based on this column' I was able to to separate the relevant fields into columns in a spreadsheet. For example, `value.parseHtml().select("b")[1].innerHtml().split("(")[1].split(")")[0]` returns the author byline for the majority of notes.
3. This spreadsheet (500+ entries with columns for headline, source, byline, body copy) was then edited by hand in *Google Sheets*, to remove personal emails, dead URLs, strange line-lengths and broken formatting.
4. I then used Mail Merge in *Microsoft Word* to create the book as a catalogue of the spreadsheet, applying styles for headlines, bylines and so on. The Word document was then hand-edited to add paragraph breaks, rewrite headlines and re-order the notes.
5. The word document was fed into *Calibre* to be turned into a .mobi file.
Thanks to schoolofdata.org for the scraping method, and to Tom Jennings for maintaining a very neat site.

WHAT IS THIS BOOK?

In 1995, Bruce Sterling issued a challenge; “I'll personally offer a CRISP FIFTY-DOLLAR BILL for the first guy, gal, or combination thereof to write and publish THE DEAD MEDIA HANDBOOK.”

The handbook would be “a book about media that have died on the barbed wire of technological advance, media that didn't make it, martyred media, dead media… a rich, witty, insightful, profusely illustrated, perfect bound, acid-free-paper coffee-table book… by some really with-it, cutting-edge early-21st century publisher. The kind of book that will appear in seventeen different sections of your local chain store: Political Affairs, Postmodern Theory, Computer Science, Popular Mechanics, Design Studies, the coffee table art book section, the remainder table.”

Bruce appealed for help collecting stories and notes about dead media, and over the next five years, notes and suggestions accumulated at deadmedia.org.

But the book never happened. The website has survived, gradually succumbing to link-rot as the Internet evolved and grew around it.

Twenty years later, Bruce’s idea is more relevant than ever. As Benedict Evans said “For the first time ever, the tech industry is selling not just to big corporations or middle-class families but to four fifths of all the adults on earth - it is selling to people who don’t have mains electricity or running water and substitute spending on

cigarettes for mobile."

The history of media is impossibly rich. For every cranky stillborn idea ("when the real hair wig on the crown of her hinged head was lifted up it contained a turntable for playing 3 1/2 inch records!") there were successful media, around which industries were built, fortunes made and societies transformed, now lost completely.

This collection is not The Dead Media Handbook. It is simply a lightly edited collection of those nearly 500 notes and contributions. Inside, you'll find lists of early home computers, speculations about the multi-dimensional mental images created by Peruvian knotted-string books, details of Timothy Leary's experiential typewriter and a lengthy analysis of the Magic Lantern peripherals market.

I have clarified headlines and amalgamated a few entries and trimmed a few lengthy discussions of late '90s Internet and video game minutiae. You may be disappointed that I removed the nine-page list of dead mainframe computer serial numbers, but rest assured it is still available at deadmedia.org/notes/0/006.html

I also took out all the meta-discussion about "Is this dead?" and "Is this media?". The only question I asked while editing was "Is this interesting?"

There were various attempts to categorise the notes; by chronology, by type of media. These would make sense in a printed reference book, but this collection is in the order that notes were added to the archive, lightly shuffled to make sure there's lots of good stuff at the

beginning.

It opens with Bruce's first post about Peruvian knotted-string books and closes with a note about the Martian data from the Viking Landers "written in a format so old that the programmers who knew it had died."

This collection feels like a long rambling conversation. Each time you turn the page, you never know what you're going to get. Enthusiasms appear, are expanded or dropped. If you enjoy something, keep reading and it will probably return. If you get bored, skip a few pages and you'll find something unexpected.

Thanks to Bruce for letting me publish this collection, and to all the contributors who made the project possible.

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THE DEAD MEDIA PROJECT: A MODEST PROPOSAL AND A PUBLIC APPEAL

by Bruce Sterling, 1995

Ever notice how many books there are about the Internet these days? About 13,493 so far, right? And how about "multimedia?" There are 8,784 books on this topic, even though no one has ever successfully defined the term. CD-ROM -- is there a single marketable topic left that hasn't been shovelwared into the vast digital mire that is CD-ROM? And how about the "Information Superhighway" and "Virtual Reality"? Every magazine on the planet has done awestruck vaporware cover stories on these two consensus-hallucinations.

Our culture is experiencing a profound radiation of new species of media. The centralized, dinosaurian one- to-many media that roared and trampled through the 20th century are poorly adapted to the postmodern technological environment. The new media environment is aswarm with lumbering toothy digital mammals. It's all lynxes here, and gophers there, plus big fat venomous webcrawlers, appearing in Pleistocene profusion.

This is all well and good, and it's lovely that so many people are paying attention to this. Nothing gives me greater pleasure as a professional garage futurist than to ponder some weird new mutant medium and wonder how this squawking little monster is going to wriggle its way into the interstices between human beings. Still,

there's a difference between this pleasurable contemplation of the technological sublime and an actual coherent understanding of the life and death of media. We have no idea in hell what we are doing to ourselves with these new media technologies, and no consistent way even to discuss the subject. Something constructive ought to be done about this situation.

I can't do much about it, personally, because I'm booked up to the eyeballs until the end of the millennium. So is my good friend Richard Kadrey, author of the COVERT CULTURE SOURCEBOOK. Both Kadrey and myself, however, recently came to a joint understanding that what we'd really like to see at this cultural conjunction is an entirely new kind of book on media. A media book of the dead.

Plenty of wild wired promises are already being made for all the infant media. What we need is a somber, thoughtful, thorough, hype-free, even lugubrious book that honors the dead and resuscitates the spiritual ancestors of today's mediated frenzy. A book to give its readership a deeper, paleontological perspective right in the dizzy midst of the digital revolution. We need a book about the failures of media, the collapses of media, the supercessions of media, the strangulations of media, a book detailing all the freakish and hideous media mistakes that we should know enough now not to repeat, a book about media that have died on the barbed wire of technological advance, media that didn't make it, martyred media, dead media. THE HANDBOOK OF DEAD MEDIA. A naturalist's field guide for the communications

paleontologist.

Neither Richard Kadrey nor myself are currently in any position to write this proposed handbook. However, we both feel that our culture truly requires this book: this rich, witty, insightful, profusely illustrated, perfect bound, acid-free-paper coffee-table book, which is to be brought out, theoretically, eventually, by some really with-it, cutting-edge early-21st century publisher. The kind of book that will appear in seventeen different sections of your local chainstore: Political Affairs, Postmodern Theory, Computer Science, Popular Mechanics, Design Studies, the coffee table artbook section, the remainder table -- you know, whatever.

It's a rather rare phenomenon for an established medium to die. If media make it past their Golden Vaporware stage, they usually expand wildly in their early days and then shrink back to some protective niche as they are challenged by later and more highly evolved competitors. Radio didn't kill newspapers, TV didn't kill radio or movies, video and cable didn't kill broadcast network TV; they just all jostled around seeking a more perfect app.

But some media do, in fact, perish. Such as: the phenakistoscope. The teleharmonium. The Edison wax cylinder. The stereopticon. The Panorama. Early 20th century electric searchlight spectacles. Morton Heilig's early virtual reality. Telefon Hirmondo. The various species of magic lantern. The pneumatic transfer tubes that once riddled the underground of Chicago. Was the Antikythera Device a medium? How about the Big

Character Poster Democracy Wall in Peking in the early 80s?

Never heard of any of these? Well, that's the problem. Both Kadrey and I happen to be vague aficionados of this field of study, and yet we both suspect that there must be hundreds of dead media, known to few if any. It would take the combined and formidable scholarly talents of, say, Carolyn "When Old Technologies Were New" Marvin and Ricky "Learned Pigs and Fireproof Women" Jay to do this ambitious project genuine justice. Though we haven't asked, we kinda suspect that these two distinguished scholars are even busier than me and Kadrey, who, after all, are just science fiction writers who spend most of our time watching Chinese videos, reading fanzines and making up weird crap.

However. We do have one, possibly crucial, advantage. We have Internet access. If we can somehow convince the current digital media community-at-large that DEAD MEDIA is a worthwhile project, we believe that we may be able to compile a useful public-access net archive on this subject. We plan to begin with the DEAD MEDIA World Wide Web Page, on a site to-be-announced. Move on, perhaps, to alt.dead.media. Compile the Dead Media FAQ. We hope to exploit the considerable strengths of today's cutting-edge media to create a general public-domain homage to the media pioneers of the past.

Here's the deal. Kadrey and I are going to start pooling our notes. We're gonna make those notes freely available to anybody on the Net. If we can get enough net.parties to

express interest and pitch in reports, stories, and documentation about dead media, we're willing to take on the hideous burdens of editing and system administration -- no small deal when it comes to this supposedly "free" information.

We both know that authors are supposed to jealously guard really swell ideas like this, but we strongly feel that that just ain't the way to do a project of this sort. A project of this sort is a spiritual quest and an act in the general community interest. Our net heritage belongs to all netkind. If you yourself want to exploit these notes to write the DEAD MEDIA HANDBOOK -- sure, it's our "idea," our "intellectual property," but hey, we're cyberpunks, we write for magazines like BOING BOING, we can't be bothered with that crap in this situation. Write the book. Use our notes and everybody else's. We won't sue you, we promise. Do it. Knock yourself out.

I'll go farther, ladies and gentlemen. To prove the profound commercial potential of this tilt at the windmill, I'll personally offer a CRISP FIFTY-DOLLAR BILL for the first guy, gal, or combination thereof to write and publish THE DEAD MEDIA HANDBOOK. You can even have the title if you want it. Just keep in mind that me and Kadrey (or any combination thereof) reserve the right to do a book of our own on the same topic if you fail to sufficiently scratch our itch. The prospect of "competition" frightens us not at all. It never has, frankly. If there's room for 19,785 "Guide to the Internet" books, there has got to be room for a few useful tomes on dead media.

Think of it this way. How long will it be before the much-touted World Wide Web interface is itself a dead medium? And what will become of all those billions of thoughts, words, images and expressions poured onto the Internet? Won't they vanish just like the vile lacquered smoke from a burning pile of junked Victrolas? As a net.person, doesn't this stark realization fill you with a certain deep misgiving, a peculiarly postmodern remorse, an almost Heian Japanese sense of the pathos of lost things? If it doesn't, why doesn't it? It ought to.

Speaking of dead media and mono no aware – what about those little poems that Lady Murasaki used to write and stick inside cleft sticks? To be carried by foot- messager to the bamboo-shrouded estate of some lucky admirer after a night's erotic tryst? That was a medium. That medium was very alive once, a mainstay of one of the most artistically advanced cultures on earth. And isn't it dead? What are we doing today that is the functional equivalent of the cleft sticks of Murasaki Shikibu, the world's first novelist? If we ignore her historical experience, how will we learn from our own?

Listen to the following, all you digital hipsters. This is Jaqueline Goddard speaking in January 1995. Jacqueline was born in 1911, and she was one of the 20th century's great icons of bohemian femininity. Man Ray photographed her in Paris in 1930, and if we can manage it without being sued by the Juliet Man Ray Trust, we're gonna put brother Man Ray's knock-you-down-and-stomp-you- gorgeous image of Jacqueline up on our vaporware Website someday. She may be the patron saint

of this effort.

Jacqueline testifies: "After a day of work, the artists wanted to get away from their studios, and get away from what they were creating. They all met in the cafes to argue about this and that, to discuss their work, politics and philosophy… We went to the bar of La Coupole. Bob, the barman, was a terrible nice chap… As there was no telephone in those days everybody used him to leave messages. At the Dome we also had a little place behind the door for messages. The telephone was the death of Montparnasse."

"The telephone was the death of Montparnasse." Mull that Surrealist testimony over a little while, all you cafe-society modemites. Jacqueline may not grok TCP/IP, but she has been there and done that. I haven't stopped thinking about that remark since I first read it. For whom does the telephone bell toll? It tolls for me and thee -- sooner or later.

Can you help us? We wish you would, and think you ought to.

THE DEAD MEDIA NOTEBOOK

Compiled by Bruce Sterling, Richard Kadrey, Tom Jennings

This edition edited by Tom Whitwell

1995-2015

THE INCA QUIPU

From Bruce Sterling

“A quipu is a collection of cords with knots tied in them. The cords were usually made of cotton, and they were often dyed one or more colors. When held in the hands, a quipu is unimpressive; surely, in our culture, it might be mistaken for a tangled old mop.

“Quipus probably predate the coming to power of the Incas. But under the Incas, they became part of statecraft.

“There are several extremely important properties of quipus. First of all, quipus can be assigned horizontal direction. Quipumakers knew which end was which; we will assume that they start at the looped aends and proceed to the knotted ends. Quipus can also be assigned vertical direction. Pendant cords and top cords are vertically opposite to each other with pendant cords considered to go downward and top cords upward.

“Quipus have levels. Cords attached to the main cord are on one level; theur subsidiaries form a second level. Subsidiaries to these subsidiaries form a third level, and so on. Quipus are made of cords and spaces between cords. Larger or smaller spaces between cords are an intentional part of the overall construction.

“As well as having a particular placement, each cord has a color. Color is fundamental to the symbolic system of the quipu. Basically, the quipumaker designed each quipu using color coding to relate some cords together and to

distinguish them from other cords.

“Additional cord colors were created by spinning the colored yarns together. Two solid colors twisted together gives a candy cane effect, two of these twisted together using the opposite twist direction gives a mottled effect, and the two solid colors can be joined so that part of the cord is one color and the rest of it is another color.

“For the most part, cords had knots tied along them and the knots represented numbers. But we are certain that before knots were tied in the cords, the entire blank quipu was prepared. The overall planning and construction of the quipu was done first, including the types of cord connections, the relative placement of cords, the selection of cord colors, and even individual decorative finishings.

“The quipumaker’s recording was nonlinear. A group of strings occupy a space that has no definite orientation; as the quipumaker conmnected strongs to each other, the space became defined by the points where the strings were attached. Essentially then, the quipumaker had to have the ability to conceive and execute a recording in three dimensions with color.”

Source: Communication in History: Technology, Culture, Society David Crowley and Paul Heyer, eds. Longman, New York and London, 1991 ISBN 0-8013-0598-5

CHAUCERIAN VIRTUAL REALITY

From Bruce Sterling

“Many of the minstrels were conjurers. These entertainers probably reached their greatest popularity in the fourteenth century, when they were known as tregetours. Some of their tricks were generally attributed to an understanding between the performer and the devil, this view being held by James I.

“Accordingly, the tregetours were frequently classed with magicians, sorcerers and witches. They often travelled about in companies, and it is to be assumed that they carried with them the various contrivances necessary for the performance of tricks which did not depend on the most precious accomplishment of the conjurer, then as today—sleight of hand.

“In ‘The Frankeleyns Tale’ Chaucer descries some of the tricks. Among them were the appearance, in a hall, of water and a barge, a lion, flowers, a vine, a castle of lime and stone—all of which vanished as mysteriously as they had appeared: He also tells how there appeared wild deer, some being slain by arrows and some killed by the hounds.

“Falconers were seen on the bank of a river, where the birds pursued herons and slew them. Knights jousted on a plain. The amazed spectator saw himself dancing with his lady.

“These were undoubtedly magic lantern effects, yet the lantern itself is usually thought to have been invented by

Athanasius Kircher in the middle of the seventeenth century. The explanation, however, is that in the fourteenth century there were glass lenses which gave good telescopic and microscopic effects.”

Source: Popular Entertainments Through the Ages by Samuel McKechnie London, Sampson Low, Marston & Co., Ltd GV 75 M35 MAIN UT library (1937?)

THE MILTON BRADLEY VECTREX

From Patrick Lichty

What is Vectrex?

Vectrex is one of the most inspired video game machines ever produced (but similar things were said about the Edsel and Titanic). Its point of distinction is the fact that it uses vector 'line' graphics (as opposed to raster 'pixel' graphics). This is the same type of screen used in such arcade classics as Space Wars, Asteroids, Battlezone and Tempest.

"The machine has a 9 x 11 inch black and white screen and comes with a built-in Asteroids clone called Minestorm. The games come with plastic overlays that slide over the screen to cut down on flicker and give some illusion of color. It uses one of the most advanced 8 bit processors, the 68A09 (6809 with 1.5MHz clock speed), and a popular and excellent sound chip, General Instruments AY-3-8192, which can produce a wide range of noises. Also included is a 1.5 inch, self-centering, joystick with 4 buttons on the right. It uses an analog/potentiometer system allowing differing degrees of directional input.

"The machine's footprint takes up a little less than a square foot on a desk (in fact, it quite resembles a jet black Macintosh SE sans mouse and keyboard), and can be operated easily in that area. The joystick is connected via a springy telephone-like cord and can be folded into the base of the machine for portability. The machine is

moderately transportable and very well constructed but, alas, very much extinct.

“It made its debut late in 1982 and was quite scarce by the end of 1984 due to the Great Video Game Depression of ‘82 which forced Milton Bradley (who bought the rights to the Vectrex from General Consumer Electronics (GCE)) to discontinue production due to to poor sales. After this, the rights to the Vectrex and all related materials were returned to the original developers, Smith Engineering. Smith Engineering has graciously condoned the not-for-profit circulation of any duplicatable materials including games and manuals and is happy to see it is still ‘alive’ in certain circles.

“Touch-Sensitive Screen (prototype known to exist)
Computer Adapter with BASIC (prototypes rumored to exist)
Computer Keyboard
Printer “Disk Driver/Wafer Tape Drive
Modem

Computer Software:

Create Your Own Video Game
Music Maestro
Art Program in LOGO
Basic Science
Solar System
Word Processing

Q. Isn’t copying the games by burning EPROMs stealing or violating a copyright? “If the system is ‘dead’ then no money is lost by making copies of something which

otherwise would never be available. Even so, it is a fuzzy matter and technically the answer should probably be, 'YES.' Fortunately, Smith Engineering has given Usenetters permission to make copies of all Vectrex related materials (manuals, games, overlays, etc.) as long as it is for distribution to members of the group and as long as it is not for profit.

Source: Vectrex FAQ version 4.0 compiled by Gregg Woodcock Vectrex 'Frequently Asked Questions' List! Created: 9/1/92 version 4.0 Copyright worldwide © 1992, 1996 Created and maintained by Gregg Woodcock

THE VOICE-ACTIVATED TYPEWRITER OF 1916

From Darryl Rehr

Are journalists ever guilty of hyperbole? Though we would like to be kind to the hacks who bring us word of the world's events, we must face facts and read what they write with the proverbial grain of salt.

For a typewriter collector, the image of the Phonoscribe seen on the cover of the April 1916 issue of The Electrical Experimenter was tantalizing, to say the least.

The cover shows a relaxed businessman speaking casually into a microphone as his voice-activated typewriter dutifully types out the text on his desk. In 1998, when such complex technology has yet to be realized on a commonplace level, we are astounded to see that there was a version in the works as early as 1916.

Unfortunately, the fine print inside The Electrical Experimenter reveals a device much different than the one on the cover. It was the work of a Brooklyn, New York, man named John D. Flowers, and according to the magazine, it apparently was never intended to type a letter itself.

Flowers, it seems, was fascinated by the workings of human speech. In earlier experiments with voice-operated typewriters, tuned reeds were used to discriminate among the different sounds of the spoken word. Unfortunately, the reeds worked reasonably well for vowels but not well with consonants.

That's a pretty big problem in an alphabet in which consonants are the large majority. The inventor claims to have found the problem in the normal spoken voice. The vocal cords, he concluded, produced too many irrelevant overtones. The solution was to utilize a whispered voice.

Flowers told us that the shape of a sound was identical whether spoken at a normal tone or at a whisper. So, his voice-operated writing machine (we'll learn later why it wasn't a typewriter) depended on whispers so all those extraneous vocal sounds could be ignored.

Flowers hooked up a microphone to a string galvanometer, a device which produced a wiggle in a string when electric current was applied. A light shining through the string exposed film moving in a camera to produce a photographic record of the sounds spoken into the mike (whispered sounds, remember). In theory, it was not unlike the process that later made movies into talkies.

Running through a number of different speakers, Flowers produced a definitive dictionary of his electrically generated Phonetic Alphabet.

Each letter of the English alphabet had a corresponding squiggle, which was unerringly produced by his recording apparatus when anyone whispered into the microphone.

To turn this idea into a voice-operated writing machine, Flowers proposed a wonderfully Byzantine array of mirrors, lenses, and resonator circuits coupled to a microphone and selenium cell, which controlled a pen writing on a revolving drum.

When someone spoke into the microphone, Flowers' phonetic alphabet would be written on the drum. Thus, his voice-operated machine. But wait, do we sense a lack of closure here?

What good does this do us in the real world?

To quote from The Electrical Experimenter: "Hence, if this was to be used commercially or otherwise, it would be necessary for those making use of such a 'phonoscribe' (if we may so term this device), to learn this alphabet or else to employ a transcriber who could read it." So, in the end, what has the Experimenter's cover led us to?

A dictation machine that produces a line of squiggles that can only be read by somebody who wants to learn a whole new alphabet! And this at a time when the boss routinely spoke into his Dictaphone or Ediphone for his secretary to hear and transcribe with no additional training!

Underwood, by the way, had a hand in financing Mr. Flowers' work. One wonders at what point the company cut him off.

[Bruce Sterling remarks: In 1916, "Electrical Experimenter" was published by Hugo Gernsback. Gernsback had not yet formally invented the science fiction pulp, he would launch AMAZING STORIES in 1926, but he frequently larded "Electrical Experimenter" with his proto-SF "Munchausen stories" such as "Thought Transmission on Mars" (1916) and "Martian Amusements" (1916). So much for journalistic hyperbole in the business machine biz.]

Source: The Electrical Experimenter, April 1916

HOTEL ANNUNCIATOR

From Bruce Sterling

B. A. Botkin is further quoting from a book called VALENTINE'S MANUAL OF OLD NEW YORK, 1926, edited by Henry Collins Brown, published by Valentine's Manual Inc., pages 96-98.

"Before the days of the telephone, hotels had annunciator boards to indicate the room number of a guest calling up the office for service. Then, later, in the Eighties, some one invented a machine to do away with fifty percent of the toil involved in a journey to find out what was wanted and a later journey in supplying it. The machine was in use of most of the hotels of the early Nineties.

"In each room of the hotel was a dial with a movable arrow like a clock hand. On the dial was printed the names of everything a guest would be at all likely to want, all the drinks that were ever heard of, paper, envelopes, telegraph blanks, 'help,' a doctor, police, chambermaid, messenger boy, eggs, toast, mils, soup, oysters, breakfast, dinner, tea, in fact every eatable in common demand, a city directory, playing cards, cigars, cigarettes, chewing tobacco, a barber; in short, everything in a list of one hundred to one hundred and fifty necessaries."

[Bruce Sterling remarks: my dead-media bogometer is ticking over here, a hotel-room clock-dial with 150 separate divisions? Including "oysters" and a galaxy of turn-of-the-century cocktails? The "telegraph blanks" are especially touching, dead media for dead media.]

“The guest pointed the arrow to the name of whatever he wanted and by pressing a button registered his demand on the dial behind the clerk’s desk.

“It was discovered, however, that notwithstanding the wide compass of the dial there was always something a guest wanted that did not appear on its catalogue. Then again the dial was prone to get out of order and a guest calling for ice wate was on occasion surprised with a service of hot tea. The dials were not long in use before they were superseded by the telephone.”

Source: SIDEWALKS OF AMERICA, edited by B. A. Botkin, Bobbs-Merrill Com., 1954, pages 246-247.

THE CYROGRAPH

From Dan Rabin

Mr. Sterling, I just attended your talk at Apple, and I thought I'd try to get this to you before you get home. The Dead Medium in question is the CYROGRAPH. It was a form of authentication for duplicate documents used in the Middle Ages. The document was written in duplicate on a piece of vellum (or parchment); the copies were cut apart and retained by two different parties. Sometimes the cut was deliberately irregular in order to make spurious matches unlikely. In addition, lettering would be placed where the cut was to be made so that both the shape of the cut and the lettering would have to match in order to authenticate the copies.

Source: References (from Library of Congress online catalog): 92-131963: Brown, Michelle. A guide to western historical scripts : from antiquity to 1600 / London : British Library, 1990. 138 p. : ill. ; 29 cm. LC CALL NUMBER: Z114 .B87 1990 92-160830: Brown, Michelle. Anglo-Saxon manuscripts / Toronto ; Buffalo : University of Toronto Press, 1991. 80 p. : ill. (some col.) ; 24 cm. LC CALL NUMBER: Z8.G72 E53 1991

THE SCOPITONE

From Dan Rabin

The Scopitone was a precursor of the rock video, a visual jukebox introduced in France in 1963. It was a coin-operated large-screen device intended for the bar and nightclub market, showing brief 16mm color films of such period popstars as Lesley Gore, Dion, the Tijuana Brass and Nancy Sinatra.

These devices were essentially extinct by 1968 -- “victims of slot-machine racketeers and censorial prudes,” according to Request magazine writer James Sullivan. San Francisco’s Roxie Cinema has run three Scopitone festivals in recent years.

Sam Wasserman is a Scopitone collector, owning six Scopitone players and “thousands” of their films. He has been transferring his Scopitone reels to VHS cassettes and will send a catalog of his prizes for a self-addressed stamped envelope. His address is P. O. Box F, Daly City CA 94017.

Source: Request Magazine October 1995 p 10; James Sullivan, reporter; Sam Wasserman, Scopitone collector

DEAD COMPUTER LANGUAGES

From Dan Rabin

Dead computer languages covered in ‘History of Programming Languages’…

Fortran I, II and III
ALGOL 58 and 60
Lisp 1 and 1.5
COBOL (the dead-ness of this language may be debatable)
APT
JOVIAL
SIMULA I and 67
JOSS
PL/1
SNOBOL
APL (ditto)

Source Wexelblat, Richard (ed.) History Of Programming Languages
Academic Press (HBJ), ISBN 0-12-745040-8

ARTOC: THE US ARMY'S PORTABLE PNEUMATIC-TUBE POWERED MULTI-MEDIA SYSTEM. IN TENTS.

From Tom Jennings

"One hundred million bits of random access storage are provided by two magnetic disk files, each housed in a 2-1/2 ton utility truck."

ARTOC, a late-1950's hare-brained Army tactical field communications coordination system, is a breathtaking mixture of Rube Goldberg technologies whose purpose was to coordinate information from many different and incompatible sources (messengers on foot; radio; centrally-gathered intelligence, etc) and to present it in a coordinated manner to Army personel who needed to make decisions based upon the information, once coordinated.

ARTOC is at once beautiful and horrifying; it used brute force, Army logic, blind faith and the latest in computer technology to put together what can only be called a multi-media system.

It was very, very ambitious, to say the least. Apparently this thing actually existed, at least in prototype form.

ARTOC is a portable, field-operated system. One tent full of people accepted the sundry inputs, and input them to computer(s), both graphical and textual.

It is nearly impossible today to imagine how far-fetched storing graphical data in a computer was, in 1959. It just

wasn’t done. These were vector, not raster, days, and the details of implementation are not elaborated upon in this article.

You should read the article for details; but essentially, there was one tent where input was entered into the system, and a number of other tents, somewhat physically remote from the input area, that contained a number of display stations.

Data was input to a computer, which was used to produce photographic-type slides, in color, by using a non-real-time cathode-ray tube with RGB filters to make each “separation”. The slide-producing machine spit out a developed and mounted slide in under 10 seconds (please don’t stand in its way).

Each slide had a machine-readable indext attached. These were delivered by pneumatic tube to the remote display stations. Each display station consisted of a small (20”) rear-projection viewer and a large (7 foot) front projection viewer.

There was some way to select which slide(s) to view; but essentially the slides were overlays for maps, and text could be overlaid in some manner on the screens too.

“A very simple, reliable pneumatic distribution and transport system automaticall delivers the slides from a central slide generator to the many display units in a user area. Two slide generators which feed the same pneumatic distribution network are located in each user area to maintain continuous operation during maintenance and reliading periods.

Positive slides arrive at the display units about 12 sec. after initiation of computer output. This was also a FIELDATA system, experience with which lead directly to the first ASCII standard, in 1963. It used the military MOBIDIC computer, a portable, transistorized computer, apparently under 150 lbs (don't laugh; most computers in 1959 consumed a thousand square feet).

Source: ELECTRONIC INFORMATION DISPLAY SYSTEMS", Spartan Books, Inc, Washington D.C., 1963; edited by James H. Howard, Rear Admiral, U.S.N. (Ret.) [2015 Note: www.wps.com/texts/ARTOC/index.html can be retreived from archive.org]

THE MAGIC LANTERN; PECK & SNYDER'S PRICE LIST

From Bruce Sterling

I have recently come into happy possession of "Peck and Snyder's Price List of Base Ball, Gymnasium, Boating, Firemen, Cricket, Archery, Lawn Tennis and Polo Implements, Guns, Skates, Fishing Tackle. Manly Sporting Goods, Novelties, &c." This catalog was published in 1886. In 1971 it was re- released by the "American Historical Catalog Collection" of the Pyne Press at Princeton (LC# 75-24886, ISBN 0-87861-094-4).

This catalog is a veritable brass mine of dead media, offering startling insights into an entirely vanished nineteenth- century media environment. It offers for commercial sale to the public several media devices I have never heard of, plus over 40 different commercial varieties of "magic lantern."

I think it is well to have Mssrs. Peck and Snyder speak for themselves, in the first of what will doubtless turn out to be a long series of Working Notes.

The Peck & Snyder full-page ad is reproduced in its entirety.

THE ELECTRO RADIANT No. 2. The Most Popular Magic Lantern Ever Introduced (black and white woodcut illustration—"this cut represents No. 2 Electro Radiant Magic Lantern. PATENTED.")

The body of the ELECTRO RADIANT is a cone-shaped

reflector which gathers each divergent ray of light and concentrates them all on the main reflector, whence the whole mass of brilliancy illuminated and projects the picture with startling clearness. No combination of lenses, however ingenious, has ever been known to produce equal effects with the light used.

The ELECTRO RADIANT No. 2 projects on screen a picture 8 feet in diameter. The No. 2 Lantern is made entirely of metal. Including the smoke-stack, it stands over 16 inches high when ready for use, but when taken apart it goes into a box 11x9x12 -- small enough to carry in the hand.

[Imagine disassembling, by hand, a fire-driven slide projector made entirely of (red-hot) metal. Yes, the Electro Radiant Magic Lantern features a smoke-stack—a domestic, personal smoke-stack for your parlor.]

The removable parts are the base, the reflector, the lens tubes, the smoke-stack and the lamp. The entire base being removeable, allows the use of any kind of light, whether oil, gas, calcium or electric. A large door at the side gives ample room for manipulating the light. The Slide Box will take in slides 4 ½ inches wide with a 3-inch picture. It is very unusual that slides are made with pictures over 3 inches, and when they are they are for special purposes, and Lanterns have to be made to accommodate them. Therefore our No. 2 Lantern will show the largest of the regulation size slides as well as the smallest and intermediate sizes, whether made by ourselves or others here or in Europe.

[I note here that Magic Lantern ware comes in several

different size formats and from a variety of manufacturers and distributors, who apparently could not agree on a standard.]

There are 12 slides with 2 ¾ inch pictures packed with each No. 2 Lantern and included in the price. [The traditional "bundled software" or "first taste is free" marketing approach.]

There are many persons who are able and willing to pay for luxuries—such things as are no better for practical uses, but add to the convenience and perfection of life.

The sentiment is commendable, and, for those who can afford it, is not only a proper but a wise indulgence. [The infant consumer society still required moral lectures at this point.]

For that class [appeals to snobbery were useful also] we have constructed our Electro Radiant Lanterns, with fittings of various kinds, which, though they make the picture on the screen very little if any better, add very much to the convenience of handling and the the general appearance of an outfit, and increase the cost accordingly. [Today this is known as "ergonomics" and "industrial design." In 1886 this practice required an apologia.]

For instance, the price of OUR MOST POPULAR LANTERN, No. 2, is $12; but with additional conveniences the price is $15.00, $20.00 and $24.00, respectively. The $15.00 Lantern is fitted with Colt's patent Brass Spun Thread Focussing Tube, with lenses to make an eight to nine foot picture. This focussing tube is the best improvement that has been made in years. It is perfect in working,

adjustable by simple turning; there is no loss of light through uneven fitting, it does not catch or hitch, and is as easily and nicely adjustable as the highest price Rack and Pinion Tube made. [One cannot help but marvel as this sudden revelation of an entire peripherals industry for Magic Lanterns. Could this be the same “Colt” who created the Colt revolver?]

For use with a nine-foot screen we recommend the $15.00 No. 2 LANTERN ABOVE ALL OTHERS.

The $20.00 No. 2 Lantern may be used with a twelve or fifteen foot screen, and therefore may be operated in a room that will hold more people.

The $24.00 Magic Lantern is precisely the same as the $20.00 one, except that it has the lenses set in a rack and pinion focussing tube, made of heavy cast brass with milled head adjusting connection, which makes a very stylish and handsome appearance.

Price List of No. 2 Electro Radiant Magic Lanterns

No. 2. With Piano Convex Lenses...$12.00

No. 2A. With Piano Convex Lenses in Colt’s Pat Spun Thread Focussing Tube.....$15.00

No. 2B, Double Achromatic Lenses in Colt’s Pat Spun thread tube $20.00

No. 2C, Double Achromatic Lenses in heavy brass rack and pinion focussing tube....$24.00

12 Slides are packed with each No. 2 Lantern.

P E C K & S N Y D E R, 126, 128 & 130 Nassau Street, New

York.

Importers and Dealers in English, French and German Magic Lanterns, at prices from $2.00 to $50.00 each, and also in those of the best American make, prices $5.00 to 75.00 each.

[It must be noted in concluding that the “Electro Radiant,” illustrated with a burning gas lamp, has nothing “electro” about it. The Electro is entirely rhetorical, a futuristic fillip for a cutting-edge device which has already killed off the unlucky “Electro Radiant No. 1.”]

Source: Peck and Snyder’s Catalog (aka Price List of Out & Indoor Sports and Pastimes) 1886, reprinted 1971 by Pyne Press (LC# 75-24886, ISBN 0-87861-094-4)

THE SCALE OF THE MAGIC LANTERN MARKET

From Bruce Sterling

Mssrs Peck and Snyder offered at least 47 distinct varieties of magic lantern (as well as the Polyopticon and the Megascope, intriguing variants of magic lantern technology).

The large variety of Peck and Snyder's own product rose from clever recombination of the magic lantern's basic elements: the body, the base, the reflector, the condenser, the lens tube, the smoke-stack and the lamp. The materials could be cheap japanned tin, or luxuriant brass; the lenses cheap or precise; the lamps powerful and dangerous, or weak and relatively safe.

Some few magic lanterns were imported: "Wrench's Celebrated London Make Magic Lanterns", the "Favorite German Lantern," and the "New Style French Magic Lantern." The following sample excerpts from Peck and Snyder advertising copy will show how these manufactured variants addressed different purposes and different demographic slices of the magic lantern media market.

[The Professional's Model] Electro Radiant Lantern, No. 10. The construction of this lantern is such as to especially commend it to exhibitors. A set of Achromatic Object Glasses, as used in No. 10 Lantern, is made up of four lenses of the finest and most accurately ground Crown and Flint Glasses, a concave lens of Flint with a

convex lens of Crown glass are paired in cells and placed at the proper distance apart in the focusing tube. The effect on the screen is to bring out a very sharp and well-defined image, free from blurred edges, prismatic color, etc., which invariably accompany the use of plano, or concavo- convex lenses. It accommodates slides of all makes now in vogue and is thoroughly well-adapted for dissolving effects. ["Dissolving effects" or "dissolving views" required the use of dual magic lanterns, projecting two images into the same circle on the screen. With "a simple mechanical arrangement," two different projected images could apparently dissolve into and emerge from one another. This impressive gimmick led Peck and Snyder to sell their magic lanterns, including the No. 10, in matched pairs. As the unknown copywriter rhapsodized, "The most beautiful effects that can possibly be produced. The effect is indescribably impressive."))

[The Art Model.] [The Electro Radiant Sketching Lantern pursued an application for the artists' market. It was essentially identical to the No. 10 model, but came without any bundled lanternware.] "Artists can save many hours of work and attain great accuracy of expression by using in connection with our Sketching Lantern a photographic negative of the subject to be produced. The picture may be thrown onto the paper or canvas, anywhere from miniature to twice life size. The sketching may be done by a boy or girl, saving the artists' time and talent. If the artist is not a photographer, an arrangement can generally be made with some photographer to furnish at a low figure a negative plate."

[The Kid Media Model. Note the free-and-easy attitude toward child employment.] ELECTRO RADIANT MAGIC LANTERN NO. 3. This Lantern was designed Especially for Youths, not only for its remarkable effects on the screen, but also for its limited effects on the pocket. With a No. 3 Lantern a boy may amuse a party of friends, or he may, by charging a small admission fee, earn considerable for any object he may set his heart on. An ingenious boy will have tickets of admission, programmes, music of some sort and numberless little devices to heighten the theatrical, magical and mysterious effect. All devices he will execute himself, filling leisure hours in writing out his tickets and programmes and making other arrangements to make his exhibition a success. Parents and friends should not ignore the instruction and other beneficial effects, and should by all means make their young people owners of a Lantern. [The No. 3 cost only eight dollars. The very similar No. 4 model was sold without a smokestack or chimney burner for a mere six dollars, though this must have increased the fire hazard considerably.]

[The Luxury Model] THE IMPROVED TRIPLEXICON, 100 CANDLE POWER. Price Complete in a Strong Wooden Box, $35.00 The chimney, which connects with the flame chamber, is made in two parts, one sliding into the other, telescope fashion. This allows of the most exact regulation of the current of air supplied to the flame to effect perfect combustion. The body of the lantern may be handled as comfortably, after being two hours in operation, as at the beginning of the exhibition. The reservoir, which will hold enough oil for two and a half hours' work, is completely

out of reach of the heat. Particular care has been taken in the mounting of the lenses to allow for their expansion by heat, thus avoiding the liability of breakage a brilliance and clearness of outline to be surpassed only be the best limelight stereopticons.

[To the modern skeptical eye these oily assurances of comfort and safety conjure up dire vistas of soot-blackened parlors, badly scorched boy-entrepreneurs, and audiences explosively drenched in sheets of flaming kerosene.]

I believe this to be a complete list of Peck and Snyder's magic lantern models as offered in the 1886 catalog:

The Electro Radiant No. 2, 2A, 2B, 2C, 3, 4, 5, 6, 8, and 10.

The New Improved Duplex Magic Lantern, Nos. 1 and 2.

Magic Lantern 8, 10, 12, 14, 16, 18, 20, 21, 22, 26, 30, 32, 36, 38, 40, 42, 44, 46, 48.

Wrench's Celebrated London Make Magic Lantern. Nos. 1, 2, 3, 4, 5, 6, 8.

The Favorite German Lantern.

New French Style Magic Lanterns Nos 814, 815, 816, 817, 818, 819.

The Improved Triplexicon.

The Gem Magic Lantern.

The wonder of it is that Peck and Snyder must have had a great many competitors. This catalog offers only a glimpse of what must have been an enormous market.

Source: Peck and Snyder's Catalog (aka Price List of Out & Indoor Sports and

Pastimes) 1886, reprinted 1971 by Pyne Press (LC# 75-24886, ISBN 0-87861-094-4)

ANATOMY OF A MAGIC LANTERN SHOW

From Bruce Sterling

The following, is the complete text of a playbill for a travelling American magic lantern show, circa 1880.

The playbill is apparently designed for poles, columns or door lintels,.as it is very long and narrow. It has a wide, spreadeagle variety of lavish circus fonts in different sizes.

Empresario, Mr. B. A. Bamber.
Price of the show, ten cents.
5th ANNUAL TOUR
————————
B. A. BAMBER'S
---GREAT----
DIME SHOW

New Attractions and Better Than Ever Before
Travels, Art, History. Astronomy, Fun, Electricity.

[A dashing woodcut of the balding, heavily mustached B. A. Bamber]

GRAND STEREOPTICAL DISSOLVING VIEWS SCENES IN MANY LANDS FROM GREENLAND'S ICY MOUNT, TO INDIA'S CORAL STRAND THE WONDERS OF THE WORLD. THE BEAUTIES OF THE WORLD.

Read Carefully Every Word of the Following Programme

PART I. THE PLANETARIUM Will be exhibited and

explained. This is an instrument (lately invented) for showing the Planets of the Solar System in their annual motion around the Sun; it also shows their relative size and distance from the Sun, the cause of Tides, Eclipses, Change of Seasons and Signs of the Zodiac. This part will be a lasting benefit to all who desire to know more about the wandering stars that reflect the Sun's light upon us by night. After this instrument has been exhibited Telescopic Views of the larger Planets will be reflected upon the canvas.

PART II. NATURAL SCENERY Comprises Views of the most Prominent Objects of Interest in both the Old and New World. All cannot travel and see these places, but whoever attends this Entertainment will see them reflected on canvas with a glow of beauty never to be forgotten.

PART III. THE ILL-FATED SHIP Comprises a series of Paintings, showing the sunshine and shadow of a Sailor's life.

SCENE 1.—Ship at dock in Liverpool Harbor, passengers leaving their native country.

SCENE 2.—Just out of the harbor, sailing on the blue waters of the Irish Sea.

SCENE 3.—A Storm arises, which rapidly increases the furling and reefing of sails.

SCENE 4.—Height of the Storm, rolling on the boundless deep and struck by lightning.

SCENE 5.—Horrible calamity at sea; ship on fire;

most on board perish in the flames.

SCENE 6.—The few who make their escape on a raft are now afloat on the wide Ocean.

PART IV. The Highland Lover's Courtship for Marriage Showing how it is done, also the result which usually follows; a caution to those about to embark on this kind of a ship.

PART V. STATUARY A Magnificent Collection of Statuary from the Centennial Art Gallery will be exhibited, besides other noted works of Sculpture, the beauty of which cannot be described; they must be seen to form any idea of their real beauty and grandeur. Among the many we mention "Flight of Mercury," "Ophelia," "Evening," "Forced Prayer," Council of War," &c, &c.

PART VI. MISCELLANEOUS These embrace a large collection of Paintings, Artistic Gems, Dissolving Views and Transformation Scenes, which have been procured at great expense, and for faithfulness in perspective and beauty in design, they stand unrivalled. The whole will be enlivened with NUMEROUS COMIC SCENES

Electricity Without Extra Charge A very fine Galvanic Battery is provided for any who may wish to try it. This is an excellent remedy for Rheumatism, Neuralgia and Headache.

Be sure to come before the show begins if you want to try it.

Positively Everything Advertised on this Bill will be Shown

REMEMBER, THE PRICE OF ADMISSION IS ONLY
10 CENTS FOR ANYBODY AND EVERYBODY
Doors Open at 7 O'Clock.
Begins at 8 O'Clock.

Travels, Art, History, Astronomy, Fun & Electricity—Bamber's Dime Show was entertainment shovelware to rival CD-ROM. First a weird gizmo, the so-called planetarium, presumably an orrery. Then astronomical slides, no doubt accompanied by a proto-Saganesque cosmic narrative from Bamber. Then telepresence—"all cannot travel," but a virtuality is beautiful and cheap. Then a melodramatic disaster—the repeated mentions of "rolling," "sailing" and "reefing" strongly suggests these so-called "paintings" were partially animated. Magic lantern slides were often quite mechanically complex.

A bit of mild bawdry and ethnic humor in part four. Then the statuary—their placement in the show seems odd and anticlimactic, unless the statuary included female nudes, which might make sense as the children have probably left by this time. Then, "miscellaneous" or basically the leftover contents of the professor's trunk from the previous four tours, with a bang-up ending of eye-boggling "dissolving views."

Bamber also boasts an interesting sideline in voltaic placebo snake-oil—"Electricity Without Extra Charge." People can be impressed by gadgets, entertained by gadgets, forced to laugh or weep by gadgets. The truly daring charlatan can even cure the sick by gadgets. The "magic" of the magic lantern was closer to the healing

magic of the witch doctor than we might credit today.

Source: THE HISTORY OF MOVIE PHOTOGRAPHY by Brian Coe, Eastview Editions, Westfield NJ, 1981, ISBN 0-89860-067-0

SILENT FILM, DIORAMA, PANORAMA

From Alan Wexelblat

This collection of essays deals with the philosophy, theory, and sociology of film viewing.

In “An Aesthetic of Astonishment: Early Film and the (In)Credulous Spectator” Tom Gunning takes on the myth that early film audiences ran in fear from a film of a train apparently coming at them. He discusses several of the (now dead) technologies that immediately preceded film and shows how they were used/presented in such a way as to achieve maximum amazement. He shows that while audiences may have been amazed by the new moving images, they were not apt to confuse these images for reality. An important debunking of popular mythology.

In “Cinematic Spectatorship before the Apparatus: The Public Taste for Reality in Fin-de-Siecle Paris,” Vanessa Schwartz discusses Parisian’s methods of self-amusement in the immediate pre-film period. Flanerie (the taking in of sights while strolling/shopping) translated itself into a bizarre entertainment spectacle whereby the Paris Morgue became a medium of reality display. Bodies of crime victims were put on display, ostensibly so the public could identify the people but in fact for entertainment. Her description of the many-days display of the corpse of a child is particularly interesting. She also discusses a couple of other dead techs—the diorama and the panorama—and talks about how the newspapers of the day combined ‘true crime’ stories and serial novels.

Source: VIEWING POSITIONS: WAYS OF SEEING FILM, Linda Williams (ed.),

Rutgers University Press 1995 ISBN 0-8135-2133-5, 1995.

LEAFLET GRENADES AND THE MONROE BOMB

From Hans Moonen

[Bruce Sterling remarks: the Dutch collector Hans Moonen has the largest archive of propaganda leaflets that I've ever seen. The "Monroe bomb" and propaganda grenades are new to me, but he seems very well-informed.] "That the Americans saw the importance of psychological warfare can be seen from the fact that Captain James Monroe of the USAAF invented a bomb for the spreading of leaflets.

"The so-called Monroe bomb was taken into service. This bomb consisted of a paperboard cylinder in which up to 80,000 leaflets could fit. These bombs were dropped like normal bombs. A small detonator caused the cylinder to open at any given height. The leaflets were spread over a large area. All makes of bombers were used: American Flying fortresses B-17 and later B-24. Ten of these bombs fitted exactly in the bomb bay of a B-17.

"The picture shows a ground crew loading the Monroe bombs into a B-17. In England, over 75,000 Monroe bombs were produced. The only thing was that on (some very few) missions a bomb didn't open. That's why unopened Monroe bombs were found in Holland sometimes. Even 25 years after the war the Dutch bomb disposal had to dig up one still filled with, tightly packed, readable leaflets! "I want to ask any visitor if they could help me to get original manuals (US / GB / German or

other) for this kind of leaflet-drop related equipment (bombs, shells, balloons etc.). “The shelling method “For short range combat propaganda, another technique was used: the shooting of leaflets with artillery grenades. This method was often used in North-Africa (1942/43) and after D-day on the front in Europe.

“For this purpose, smoke grenades were used. The smoke-cartridge was removed and replaced by small rolls of up to 400 leaflets. The British used a lot of 25 pounder grenades. See the picture of a unit filling grenades with leaflets. (The picture was taken in the vicinity of my hometown in the south of the Netherlands; I also know what leaflet is being filled here).

“The Americans used lots of 105 and 155 mm howitzer grenades in a similar way. A time fuse caused the grenade’s explosive charge to expel the leaflets in air over enemy trenches. The firing of the gun often ‘pushed together’ the leaflets in the grenade which causes a very characteristic folding pattern on the leaflets. Also the expelling charge often burned parts of the leaflets. That’s why those leaflets are mostly in a bad condition if seen on expositions.

“Nowadays still sometimes unexploded leaflet grenades are being found filled with readable leaflets.

SOFTWARE INNOVATION IN THE MAGIC LANTERN ERA

To the modern eye a magic lantern most resembles a kerosene-fired slide projector. This preconception overlooks the slides themselves, however.

Lantern slides were large, bulky, complex objects of glass, paint, wood and metal. Many had built-in mechanical features.

So the lantern's projected images were not necessarily static, but could be graced with limited animation. Some slides could even create complex, constantly moving screen displays.

Lantern slides came in several physical formats.

> Peck and Snyder's proprietary slides were 4 ½ by 7 inches.
> The "usual English pattern" was 3 ½ x 3 ½ and
> The "French pattern" was 3 ¼ by 4 inches.

But specialized slides could be over a foot long, containing gears, cranks, cogs, or even belts and pulleys. Slides were attached in front of the condensing lenses, outside the body of the lantern itself. They slid into place horizontally through metal runners at top and bottom.

Lever Action Slides
A lever protruded from one corner of the slide, attached to a second, overlapping pane of painted glass. When the lever was depressed or lifted the second glass rotated through a brief arc, resulting in a single animated

movement on the lantern's screen. The Peck and Snyder catalog enthuses: "The moving effects produced on the screen are very life-like. The horse is put in motion by the lever, and appears to be cantering. The children go up and down as natural as can be, and the audience can hardly believe that they are not alive. The No. 2 Electro Radiant Magic Lantern reproduces these pictures 8 to 12 feet in diameter. We conside the Lever one of the very best mechanical effects." Peck and Snyder sold lever-action slides for between $1.75 and $2.25. Brian Coe's History of Movie Photography describes double and even triple lever-action slides, but the truly elaborate ones were apparently rare. Peck and Snyder does not offer any doubles or triples.

Slip slides

Slip slides had two panes of glass, with a thumb-and-finger notch cut into one corner of the wooden frame. The moving pane of glass was gripped and pulled by hand, a very simple operation. Slip slides often used black patches to obscure and reveal details of the background slide. Coe describes sub-varieties of "slipping slides" that were pulled with tabs. Peck and Snyder: "Part of the picture is painted on one glass and the other on part on another glass. The two are arranged in a frame so that one glass slips over the other, and very comical effects are produced. It is a great mystery to the uninitiated, and they cannot understand how the transformations are made." Peck and Snyder retailed these for a thrifty seventy-five cents each.

Mechanical Slides

Rackwork and Pulley Slides. Early rotary slides sometimes used a belt-and-pulley drive, with two brass disks turned in contrary directions by belt drives and a little hand-crank. This technique was rivalled and eventually replaced by the neater and more accurate rack-and-pinion system. A single round disk of glass with a toothed brass rim could be cranked and rotated indefinitely. This caused repeated rotary animation on the screen. Rackwork slides cost $4.25 to $5.00 in Peck and Snyder's catalog. The catalog offers no pulley slides circa 1886.

Chromatropes

Says Peck and Snyder: "These are handsomely painted geometrical or other figures on two glasses, which, by an ingenious arrangement of crank pinion and gear wheels, are made to revolve in opposite directions, producing an endless variety of changes, almost equal to a grand display of fire-works." Chromatrope cranks could produce single rackwork rotation against a fixed background, or double counter-rotation of both disks of glass. Peck and Snyder's chromatropes could project various brightly colored psychedelic moire' patterns up to twelve feet across. Professional chromatrope displays in large urban theaters must have been quite mind- boggling. The Eidotrope was a chromotrope variant using counter-rotating disks of perforated metal, showing a swirling pattern of brilliant white dots on the screen.

"Tinters" or colored translucent sheets could be added to tint the display. Coe describes Eidotropes, but Peck and Snyder does not offer any Eidotropes for sale circa 1886.

C. W. Ceram's Archaeology Of The Cinema states that Eidotropes were powered by pulleys and "superseded" by Chromatropes. The Cycloidotrope (see Coe p 19) was a truly remarkable variant, a kind of lantern spirograph. A black disk of smoked glass rotated within the slide frame, and a stylus on a pivoted arm traced a pattern in the soot against the moving glass. This appeared on the screen as a brilliant white line tracing a regular geometric design, an increasingly complex animated display. The stylus could be re-set as the cycloidotrope rotated, producing interlocking rosettes and similar mechanical geometries. Peck and Snyder do not sell or mention this impressive but labor-intensive graphic device. Images very similar to those generated by the Eidotrope and Cycloidotrope are now quite popular in computer screen-savers.

Dioramic Slides.

These very elongated slides were twice as wide as normal slides, 4 ½ by 12 or 14 inches. Peck and Snyder: "These slides are exceedingly beautiful. The painting is artistic and elaborate, and the wonder is they can be sold so cheaply. A scene is painted on fixed glass, and over this is made to pass a long procession of figures—soldiers, vessels, trains of cars, caravans, as the case may be—with the most pleasing and wonderful effects." The colored background image was small and square, but the pane with little figures was over a foot long. The figures slid along in front of the painted background. Peck and Snyder sold dioramic slides for $3 each. Panorama slides. These landscape-style slides were over a foot long and could be gently drawn past the condensing lenses, "panning"

across the picture. Like diorama slides, they often had a procession of moving figures as well. They cost $3.35 to $4.50 from Peck and Snyder. Coe states that a London optician named J. Darker succeeded in attaching a kaleidoscope to the lens of a magic lantern in the 1860s. Says Coe: “His projection Kaleidoscope produced a remarkable effect when used to fill a large screen with a colorful, constantly changing pattern.”

(The Kaleidoscope itself, an optical toy which is very much alive, was invented by Sir David Brewster and patented in 1817.)

Source THE HISTORY OF MOVIE PHOTOGRAPHY by Brian Coe, Eastview Editions, Westfield NJ, 1981, ISBN 0-89860-067-0 Peck and Snyder’s Catalog (aka Price List of Out & Indoor Sports and Pastimes) 1886, reprinted 1971 by Pyne Press (LC# 75-24886, ISBN 0-87861-094-4) ARCHAEOLOGY OF THE CINEMA by C. W. Ceram, Harcourt Brace and World (1955?), LC # 65-19106

MECHANICAL ENCRYPTION SYSTEMS OF THE 1930S; THE COMPARATOR; THE RAPID SELECTOR

From Bradley O'Neill

Here's some information on pre-encryption/decryption technologies of the 1930s and 40s. These creatures were the stillbirths of Vannevar Bush's projects at MIT and OP-20-G (Naval encryption division).

Most people know Bush as grandaddy of info-science, and prognosticator of hypertext (in the famous article in a 1945 edition of *Atlantic Monthly,* Bush envisioned a hyper-linked bibliography system called MEMEX, an idealized machine that was never built).

Well, when I started looking into developmental background on BOMBE decryption devices for the German ENIGMA encryption system, I stumbled onto a source examining Vannevar Bush's role in creating Rapid Selector/Tabulating machines for the Navy and private industry, all inventions that predate Bush's idea of MEMEX.

THE COMPARATOR:
70mm Eastman-Kodak paper-tape based electronic crypto-analytic prototype, funded by the US Navy, built mostly at MIT, first assembled in 1938. The Comparator was plagued by years of mechanical setbacks. Bush wanted a "high-speed" (projected to be 100 times faster than 1920s tabulators) parallel processing analyser that utilized photo-cell light readings to index (and thus

decode) up to 50,000 character comparisons per minute. Very low memory capability caused printing/retrieval problems. Bush realized that without microfilm density, the processing speeds were also unachievable. And if microfilm was used, then the reading/recording capabilities would suffer from insufficient resolution.

THE RAPID SELECTOR

Begun in 1937. Bush's MIT team first built this analyser in 1940. Funding was dropped by a disgruntled FBI and subsequently picked up by various private foundations including Eastman and NCR (Bush was apparently an undaunted spinner of techno-dreams ala Steve Jobs). The Rapid Selector went through several incarnations, but was conceived as a specialized data- retrieval system for business records or scientific research. The Rapid Selector was a microfilm-based analyser consisting of a 7' tall relay rack, housing the film drives. Like its sister,the Comparator, it used a light- sensing reader system to allow speedy retrieval of microfilmed information. The user compiled a series of punchcard notes that were indexed into microfilm storage by a system operator/librarian. The Rapid Selector would then allow the user to cross-reference other researchers' additions to the user's "specialized area" without sorting through irrelevant texts. Bush saw the Rapid Selector as an eventual replacement for card catalogues. Although Bush conquered his basic speed/retrieval problems, the required coding system to access information ultimately proved prohibitively complex. The specialized typewriter for the code-punch was also unworkable. Burke's text is

full of other useful information, follies, and successes that orbit around the development of these pre-digital machines.

Source: Information and Secrecy: Vannevar Bush, Ultra, and the Other Memex by Colin Burke; Scarecrow Press, Inc. Metuchen N.J., 1994. LOC: HD9696.C772B87 1994

THE EXPERIENTIAL TYPEWRITER

From Bradley O'Neill

Built by Timothy Leary and Richard Alpert (Ram Dass) in the winter of 1962-1963, Cambridge, Mass. An instrument for recording and charting the psychedelic experience.

"The purpose of the ET was to deal with the 'words cannot express' aspects of accelerated-brain experience. The subject could indicate any of various levels of consciousness that they were unable to describe at the moment by pressing the appropriate buttons on the typewriter. The signal was recorded on a revolving drum, much the way temperatures are graphed in meteorological stations.

"After the session, when consciousness was operating at slower speeds, the subject would have leisure to examine the recorded data and describe the sequence of events fully and precisely."

I'd like a more detailed account of this curiosity, as Dr. Leary does not elaborate in *Flashbacks*. But it's definitely dead.

Source: Flashbacks by Timothy Leary, 1983, 1990; Putnam Publishing Group, New York. LC# BF109.l43A3 1990

DEAD CRYPTANALYTIC DEVICES OF WORLD WAR II

From Bradley O'Neill

Here are various cryptanalytic machines developed before and during WWII. An " notes those items for which I will submit more detailed working notes. I am listing all of them here beforehand, for purposes of scope, and to encourage any interested souls.

BOMBE - Electro-mechanical machines built by Britain and the US to attack ENIGMA.

COLOSSUS - Britain's special purpose electronic computer to attack the German FISH system.

COMPARATOR - Bush's tape based-electronic cryptanalytic machines.

COPPERHEAD - OP-20-G [Naval cryptology division] WWII advanced versions of tape-based electronic cryptanalytic machines.

ENIGMA - German encrypting device.

FISH - German teletype-like automatic encryption systems and devices.

FREAK [no joke!] - U.S. electromechanical cryptanalytic machine, WWII.

FRUIT - Special electro-mechanical adding machine built for OP- 20-G by NCR during WWII.

GOLDBERG - OP-20-G advanced version of Bush's Comparator.

HYPO - Analog optical crypanalytic machine built by Eastman-Kodak, during WWII.

ICKY - OP-20-G special microfilm machine.

IC MACHINE - Film plate machines, MIT-Eastman made for OP-20-G, WWII.

LETTERWRITER - Special data entry machines IBM built for OP-20-G, WWII.

LOCATORS - OP-20-G and SIS [US Army Cryptanalytic Agency] machines built for identifying locations of code items, but not for counting or tallying. Built during WWII.

MADAME X - SIS relay-based machine to attack German ENIGMA.

MATHEW, MIKE - U.S. electro-mechanical cryptanalytic machines, WWII.

PURPLE - SIS/OP-20-G analog machine built for attack on Japanese diplomatic ciphers.

PYTHON - OP-20-G electrical analog of Japanese enciphering machine, during WWII.

RAPID ARITHMETICAL MACHINE - An unbuilt Vannevar Bush computer of the 1930s.

RAPID SELECTOR - Bush's ill-fated bibliographic micro-film device.

RATTLER - U.S. Navy electronic machine to attack Japanese automatic encryption systems.

ROBINSON - Britain's tape-based electronic machines, similar to the COMPARATOR.

ROCKEFELLER ANALYSER - Vannevar Bush/MIT updated version of Differential Analyser, financed by Rockefeller Foundation, completed in late 1930s.

WAVELENGTH ANALYSER - MIT optical-electric analog scientific measuring device, 1930s.

WHIRLWIND - Postwar electronic digital computer built at MIT by group outside of Bush's circle.

There you are. A veritable fleet of dead (military) media waiting to be explored. These machines are, in many ways, 'missing links' in the popular conception of computer evolution.

Source: Information and Secrecy: Vannevar Bush, Ultra, and the Other Memex, by Colin Burke, Scarecrow Press, Metuchen N.J. 1994. LC# HD9696.C772B87 1994.

TONGAN TIN CAN MAIL

From Suzanna Layton

“When copra traders set up operations on the island (Niuafo’ou) near the turn of the century, a method of communications became necessary. At one time passing steamers would seal incoming mail for the island in ship’s 40-pound biscuit tins which were then thrown overboard to native swimmers.

“The swimmers had maneuvered a mile or more through the turgid surf, towing the outgoing mail that had been carefully soldered in tins. The swimmers and ship would exchange mail containers and each would be on their way. From this unique method of mail delivery, the island became known as Tin Can Island and the letters carried thus are called Tin Can Mail.

“The swimming mail lasted until 1931 when a shark killed a swimmer. From then on, mail was brought in by outrigger canoe.”

[Bruce Sterling remarks: in a further astonishing twist, the Kingdom of Tonga now makes a commercial business of selling Internet domain names. There is now an automatic registration site on the Web, Tongan Network Information Center (tonic.to) based in a server in the Tongan consulate in San Francisco. TONIC sells Tongan domain name registrations for a hundred dollars each, and is managed by former virtual reality entrepreneur Eric Gullichsen, a notable pioneer of modern dead media.]

Source: Tonga and Tin Can Mail Study Circle

EDISON'S ELECTRIC PEN AND EARLY DESKTOP PUBLISHING

From Darryl Rehr

Desktop Publishing is a phenomenon of the late 20th century. Modern products have made it possible for any office staff to produce material that looks professionally printed.

However, office managers have had other kinds of small-scale publishing methods available to them for more than a century. The words used to describe them were more modest, of course.

At first, they talked about office "copying," and later they called it "duplicating." Only today, with computers, coupled with high-definition laser output has the technology grown up enough to earn the term "Desktop Publishing."

Desktop Publishing's first century began in 1856, when British chemist William Perkins discovered the first synthetic dye, aniline purple. This dye pointed the way to a wide range of new inks, including "copying ink" used in the first practical method of reproducing business documents. An original written with copying ink was placed against a moistened sheet of tissue, the two were pressed together in a massive iron press, and a copy would appear on the tissue. Since the copy was backwards, the tissue had to be held up to the light to be read.

The copy press became a fixture in every Victorian office.

Today, they are sold in antique shops as “book presses,” their true function long forgotten.

Aniline dyes also made another copying process possible. It was invented during the 1870’s, and although it was sold under many brand names, generically it was known as the “hektograph.” The device used a stiff gelatin pad coupled with special hektographic ink made with aniline dye. A document written with the ink was pressed to the pad. The gelatin absorbed the ink after a few minutes, and the original was removed. Blank sheets were then pressed against the pad, and the gelatin released a little of the ink each time, producing a positive copy.

The hektograph was good for about 50 copies. 20th-century spirit duplicators (such as “Ditto”) were a later outgrowth of the hektograph and much easier to use. About the same time as the invention of the hektograph, the first stencil duplicators began to appear.

These used various devices to perforate waxed tissue paper, creating stencils through which ink could be passed. The first of these was Thomas Edison’s Electric Pen of 1876. This gadget used current to vibrate the point of a stylus, creating tiny holes in the stencil to form the image.

A simpler solution came from Eugenio Zuccato who invented the Trypograph in London in 1877. Zuccato put his stencil on the surface of an iron file. When he wrote with a plain stylus, the rough file surface punctured the stencil from below. Edison obtained a U.S. patent for a similar process in 1880, although he did nothing with it

for several years.

In 1881, David Gestetner, working in England, invented another simple stencil perforator. Known as the Cyclostyle, it was a pen with a miniature toothed wheel on the end. By writing on the stencil, the wheel rolled along and punched tiny perforations in the sheet.

The last major player to enter the stencil game was A.B. Dick of Chicago. Dick was a lumber merchant who needed a way to duplicate the often-needed inventory lists in his business. Experimenting on his own in 1884, he came up with a file-plate stencil process similar to Zuccato's and Edison's, but more practical. Dick saw real market potential in the product and applied for a patent only to find that Edison had beaten him to it. Dick contacted Edison, and proposed the idea of selling the device to the public. Dick's most brilliant idea in the venture, however, was not the invention itself, but his plan to use Edison's name on the label! Edison's name had true star quality in the 1880's.

Dick coupled it with an intriguing brand-name taken from the Greek, and in 1887 the Edison "Mimeograph" duplicator was born. For several years, the Mimeograph and Cyclostyle duplicators coexisted, each performing the same function using their slightly different methods. With each, finished stencils were placed in a wooden frame so that ink could be pressed through them with a roller. It was messy but effective.

At this earliest stage, however, neither device effectively exploited the Typewriter, another new invention which

seemed perfectly suited to be teamed with duplicators.

The Typewriter had been around for about ten years when the Mimeograph and Cyclostyle appeared. Duplicator stencils, however, were backed with thin tissue which was often torn to pieces under the pounding of typewriters. A.B. Dick pounced on the solution to the problem when he bought rights to an 1888 patent for a new stencil backed by a sturdy porous tissue.

The typewriter would penetrate the wax, but not the tissue. Suddenly, the potential for producing thousands of copies from a typewritten original was created.

In 1891, Gestetner helped the technology along another step, by creating an “automatic” printing device, which worked much faster than the old manual wooden frame. A rivalry between Dick and Gestetner might have developed, but instead, their relationship was cordial. In 1893, they agreed to share patents, each using the typewriter stencil and the automatic printer in his own products, and each prospering in the process.

The turn of the century brought the development of rotary stencil machines, which meant that copies could finally be “cranked out” in the literal sense. A.B. Dick’s version of this device was a single drum model with ink inside the drum and forced directly through the stencil. Gestetner marketed a double-drum design, inking the stencil with rollers, which picked up the ink from a tube. Other manufacturers introduced their own models, but for years the two principal names in the industry were Mimeograph from Dick and Cyclostyle from Gestetner.

As stencil duplicators developed for long runs, carbon paper began to replace the copy press for short runs.

Carbon paper was invented in 1806, but was not practical for making copies written with the light pressure of pen and ink. Typewriters changed the situation. Copying with carbons was called “manifolding,” and some typewriters were sold claiming the ability to make up to 25 carbon copies at once!

An alternative duplicating method for very long runs became available after the turn of the century in a device called the Gammeter or Multigraph. This was actually a small rotary printing press, with grooves in its cylinder allowing type to be easily set on the surface. Setting the type took more work than producing a stencil, of course, so the Multigraph’s use was limited. The 20th century brought other new potentials to “office duplicating” advancing it considerably toward “desktop publishing.”

Among the new devices was the Vari-Typer, an evolved form of the old Hammond Typewriter, which had been on the market since 1884. The Hammond was distinctive in that it typed with a single type element, a simple curved strip which could be quickly changed for a variety of typestyles.

In the 1920’s Hammond added variable pitch to its machines, making typestyles in widely different sizes practical for the same machine. Later, the Hammond was renamed Vari-Typer, and the Ralph Coxhead Corporation took it over. The Vari-Typer was electrified and equipped with differential spacing and line justification.

Lines were justified by typing them twice. The first typing determined the number of letters on the line, which was set on a dial. This altered the word spacing to align the right margin for the second typing.

No longer was this machine called a typewriter. It was known as a cold typesetter, and Vari-Typers using the basic Hammond design were in production until the 1970's. The Vari-Typer could be used to type Mimeograph stencils, although this was a bit cumbersome.

Much easier was its use with photo-lithography, which appeared in the 1930's. As today, an original was created on plain paper, and a litho plate was produced from it by photography. Back then it was not as easy as it is today, but the concept was the same. Special materials were also available allowing the original to be typed directly on a thin, flexible printing plate. Thousands of copies could be printed on a small offset printing press from a Vari-Typer original.

Such devices were used to produce the surrender documents signed by Japan aboard the Battleship Missouri at the end of World War Two.

The combination of typewriters, Vari-typers, Mimeographs, Multigraphs, offset litho machines and spirit duplicators carried our developing desktop publishing technology through to the end of its first century in 1956.

Electrostatic copying, which first appeared in 1938, was just beginning to make a big impact as the 1960's approached.

“Xerox” was starting to become a household word, but high-volume plain paper copiers would take a while to become the inexpensive fixtures they are today.

In 1956, computers had not reached desktop publishing capability, and the instant print shop was still years away.

The Vari-Typer, however, would soon find a competitor in IBM’s Selectric Typewriter, introduced in 1960, and later available in typesetting versions with all the features offered by Vari-Typers.

The first century of desktop publishing offered tremendous progress for people who wanted to turn out printed material on a small scale. However, the second century so far has been nothing less than amazing.

Who, after all, would have ever dreamed that an entire publication could be written, edited, typeset and composed before even the first drop of ink was applied to the first piece of paper?

Source: The Office Magazine; Early Typewriter Collectors’ Association

MILITARY TELEGRAPHY, BALLOON SEMAPHORE

From Bradley O'Neill

"Balloons were used for observation in the sieges of Conde (1793), Maubeuge (1794), and Charleroi (1784); in the battle of Fleurs (1794) and Gosselins (1794); and later in the campaign along the Rhine (1795).. In each instance two balloonist officers went aloft in a balloon held captive with two ropes by sixteen men.

"Messages to the ground crew were communicated by the use of red, yellow, and green flags some eighteen inches square; messages to the general were dropped in bags weighed down with ballast and marked by a pennant or streamer. No one might handle these last save one of the Ballooning Corps officers. The balloon made a great impression on the Austrians, who on one occassion attempted with near success to shoot it down, but oddly enough did not attempt to imitate it." [Author's footnote: At Valenciennes (1793) a French balloon was captured by the Allies, and with it a pigeon carrying dispatches. The enemy indulged their humor by eating the pigeon and by firing the balloon back into the town from a cannon.]

[This book is a real trip! Plum's headspace seems pretty visionary for his time. The first paragraph has all the gushy sweep of an Alvin Toffler book-on-tape or a speech by Labor Secretary Reich:]

"Ours is an age of rapid achievements. Cultivated aptitude has revolutionized the world. Performance has been

reduced to a minimum of time and space to a question of time. Long lives are compassed in an ordinary span: distances are no longer appall: we are making the most of time and least of space.the opinion of the world has become a powerful international factor."

Then Plum takes us through an expository evolution of speed in warfare via several advancements: running, fires, trumpets, reflections, posts, semaphore, balloon, cipher, and telegraph.

"In 1794, two companies of French military aeronauts were first deployed in balloons at Fleurs, Maubeage, Charleroi, Mannheim, Ehrenhreitstein, Solferino, and elsewhere.

"They were not used as couriers, but to observe an enemy below, and sometimes flag signals were used to telegraph from [balloon locations]. This was done in the United States Army on the Potomac and during the Peninsular campaign, in the [US Civil War]. On all such reconnaissances, the balloon was held by ropes.

"On several occasions, electrical telegraphic connection was had with the aeronaut in the sky. This was first accomplished June 17, 1861, when the War Department in Washington, was placed in instant communication with Professor Lowe, who, from his 'high estate', caused the operator at his side to telegraph as follows:

BALLOON 'ENTERPRISE' WASHINGTON, JUNE 17, 1861. TO THE PRESIDENT OF THE UNITED STATES: Sir: This point of observation commands an area of fifty miles in diameter. The city, with its girdle of encampments,

presents a superb scene. I take great pleasure in sending you the first dispatch ever telegraphed from an aerial station, and in acknowledging my indebtedness to your encouragement, for the opportunity of demonstrating the availability of the science of aeronautics in the military service of country. Yours Respectfully, T.S.C. Lowe”

[Note that the Yankee tradition of naming war/exploration machines “Enterprise” even extended to a balloon.]

Source: French Inventions of the Eighteenth Century by Shelby T. McCloy, Kernel Press, 1952. # T26.F8.M2 1952

MIRROR TELEGRAPHY: THE HELIOGRAPH, THE HELIOSCOPE, THE HELIOSTAT, THE HELIOTROPE

From Bradley O'Neill

HELIO-TELEGRAPHY: "As of late [read: late-mid 1800s in Europe/US] the rays of the sun are doing courier service where the electric telegraph could not be built or operated, and such has been the success of sun telegraphing, that it constitutes a new and rapidly developing wonder. This mode of signaling is variously designated as mirror telegraphing, heliographic, helioscopic, heliostatic and heliotropic, all of which seem to be essentially identical in the main principles. But the instruments by which the rays are concentrated and reflected differ somewhat, and hence some are better calculated than others to work at great distances.

The heliostat was invented by Gravesande, about a century and a half ago.[circa 1718?].

In 1861, officers of the United States Coast Survey, at work in the Lake Superior regions, demonstrated the usefulness of the mirror, equatorially mounted, for telegraphic purposes, and succeeded in conveying their signals with ease and rapidity a distance of ninety miles.

During the same year, Moses G. Farmer, an American electrician, a man of infinite invention succeeded in thus telegraphing along the Massachusetts coast from Hull to Nantasket. The next year some English officers introduced the system into the British navy, with

modifications and improvement, using at night an electric or calcium light. The signals communicated are made by alternately exposing and cutting off continuous rays of light reflected from one station to another.

MANCE HELIOGRAPH, “an instrument used by the English, telegraphing is done by pressing a finger key, whereby, flashes of light, of long or short duration, are emitted. These flashes and intervals or spaces are easily made to indicate what in the Morse alphabet are shown by dots, spaces, and dashes.In this way the Morse alphabet may be telegraphed as easily as by an electrized wire. Indeed, ungodly parties have before now, at church, telegraphed across the room without awakening suspicion, by a mere movement of the eyelids.

It is reported that during the seige of Paris (1870-1), messages were telegraphed therefrom twenty and thirty miles, by the reflection of calcium lights..

The Mance Heliograph is easily operated by one man, and as it weighs but about seven pounds, the operator can readily carry it and the tripod on which it rests.

During the Jowaki Afridi expedition sent out by the British-Indian government (1877-8), the heliograph was first fairly tested in war.

THE HELIOSTAT, “is said to be the first instrument for mirror telegraphy used in war [which war is not explicitly indicated, but likely the US Civil War]. The mirror receives and reflects the sun’s rays, and a clockwork attachment keeps the mirror position to receive the direct sunbeams,which in Nevada, U.S., are said to be so bright

as to be hurtful to the eye at a distance of forty miles. Behind the mirror, in the very center, some of the quicksilver is removed, leaving a very small, round, clear space in the glass, through which the operator looks and may watch the reflection from the next station.

THE HELIOTROPE reflects the rays by mirrors but has no clockwork.

Source: Plum, William Rattle, 1845-1927. The military telegraph during the Civil War in the United States, with an exposition of ancient and modern means of communication, and of the federal and Confederate cipher systems; also a running account of the war between the states. Microform. PUBLISHER Chicago : Jansen, McClurg & Co.,1882. PHYSDESC 2 v. : ill., port., maps, facsim. SERIES 1) Microbook library of American civilization; LAC 22395.

THE 17TH CENTURY APP STORE: SCHOTT'S ORGANUM MATHEMATICUM

From Bradley O'Neill

[This machine was essentially an encyclopedia for the various mathematical tasks any 17th century 'learned gentlemen' might face. The bone tablets mentioned herein can be thought of as 'applications' in the contemporary sense. Each tablet was a long strip swathed with specific calculation rules and tables for specific areas of learning. All of the tablets can be catalogued, retrieved, and cross-referenced from within a large slanted dais.. To my knowledge, this device was one of the first western efforts to collect disparate and specific mathematical applications together in one body.]

Built by Gaspard Schott, Rome, 1666. Based on John Napier's multiplying rulers (aka Napier's Bones) of the previous century, the Organum Mathematicum was "a large box in which are stored ten different sets of bone-like tablets for performing a variety of different tasks." There were tablets used for:

ARITHMETIC: a standard set of Napier's bones together with addition and subtraction tables.
GEOMETRY: tablets whose primary purpose was to solve problems encountered in survey work.
FORTIFICATION: tablets which would aid the gentleman soldier in constructing military fortifications.
CALENDAR: tablets used in determining the date of Easter

and the dates of the other major Christian festivals.
GNOMICS: tablets to calculate parameters to construct sun dials on all surfaces independent of their direction or inclination.
SPHERICS: tablets which would help in calculating the movement of the sun, determine the times of sunrise and sunset for any given day or year, and other similar problems.
PLANETARY MOVEMENTS: tablets to perform calculations to determine the motion of the planets and to cast horoscopes.
EARTHWORKS: two sets of tablets dealing with the calculations involved in cut and fill problems for the construction of canals and civil engineering.
MUSIC: tablets which would aid the novice in composing music and creating melodies.

[The Organum Mathematicum looks quite cumbersome, taking up the space of a large desk. Of course, portability in computation was not yet a big issue, so the size probably quite impressed users of the day.]

Source A History Of Computing Technology by Michael R. Williams; Prentice-Hall, 1985. LC#QA71.W66 1985

MOBILE PHONES USING TELEGRAPH WIRES

From David Morton

The “other” telegraphone—a combination telegraph/telephone from the turn of the 20th century. Poulsen’s well-known telegraphone is widely known as the first commercial magnetic recording device. There was, however, another product called the telegraphone introduced about the same time, and also sold in the U.S. by a firm called the American Telegraphone Company. The following passages are quoted from microfilmed documents from 1906 located in the AT&T Bell Laboratories archive at Warren, New Jersey.

“There has been much written about the use of the telephone by railroads for assisting them in their dispatching business. This use of the telephone has already been made by several railroad companies and only reason why the telephone has not become more popular is because there have been great drawbacks to its use in connection with the telegraph lines.

“There has been a considerable advance along that line recently and now portable telegraphones are on the market, by means of which it is possible to talk over several hundred miles of telegraph line without any trouble. the name telegraphone may be confused with the other instrument of the same name that was described in this magazine a short time ago, but it is entirely different and it merely means an instrument by means of which it

is possible to talk over a telegraph line at the same time that message are being sent without confusion.

Such instruments have been used on the Galveston, Harrisburg, & San Antonio railway for some time, and Mr. Percy Hewett, Superintendent of the Telegraph of that company, states that they are giving good service.

He writes as follows:

'We have equipped our line between San Antonio and Del Rio, with a branch from Spofford Junction to Eagle Pass. The wire on the branch is No. 8 iron. The telegraphone at Spofford is bridged between the two wires. We have equipped all of our cabooses with the instrument.

'For purposes of communication we use our duplex wire, which is a 210 pound copper. These instruments are giving first class service and are the means of saving serious delays in freights caught at blind sidings, or in case an inferior train reaches a meeting point with a superior train where the superior train has been for some reason delayed.

After waiting a few minutes the conductor attaches his telegraphone by using a connecting pole, and calls up the dispatcher, states what train he has, and asks in regard to the train which he was instructed to meet…'"

Source: "Sound Waves" [internal newsletter], November 1906, p 2. AT&T Corporate Collection, box 1362

PRE WWII SPEECH SYNTHESIS: THE VODER, THE VOCODER

From Bradley O'Neill

THE VODER
"At [the 1939] World's Fair a machine called a Voder was shown [created by AT&T]. A girl stroked its keys and it emitted recognizable speech. No human vocal cords entered into the procedure at any point; the keys simply combined some electronically produced vibrations and passed these on to a loud-speaker." page 44 by editors Nyce and Kahn "The American Telephone and Telegraph exhibit at the 1939 New York World's Fair featured "Pedro the Voder" (Voice Operated Demonstrator), an electronic human voice synthesizer which produced.English-language speech using 50 phonemes" page 94, Bush, ibid.

THE VOCODER:
"In the Bell Laboratories there is the converse of [the Voder] called a Vocoder. The loud-speaker is replaced by a micro-phone which picks up sound. Speak to it, and the corresponding keys move."

[Think your PC has limited voice capabilities? Consider the situation in the 1930s and 40s. Bush suggests how to improve the interface]

"Our present languages are not especially adapted to this sort of mechanization, it is true. It is strange that the inventors of universal languages have not seized upon the idea of producing [a human language] which is better

fitted the technique for transmitting and recording speech. Mechanization may yet force the issue, especially in the scientific field; whereupon scientific jargon would become still less intelligible to the layman.

“One can now picture a future investigator in his laboratory. His hands are free, and he is not anchored. As he moves about and observes, he photographs and comments.”

[Mobile photography would have come from Bush’s never-produced ‘Cyclops Camera’ headband, sporting a microfilm cartridge.]

“If he goes into the field, he may be connected by radio to his recorder. As he ponders over his notes in the evening, he again talks his comments into the record. His typed record, as well as his photographs, may both be in miniature, so that he projects them for examination.”

[That is, a “projection” on the Memex bibliographic/hypertext machine, a Vannevar Bush thought-experiment that was also never built.]

Source As We May Think, Vannevar Bush, 1945.

C. X. THOMAS DE COLMAR'S ARITHMOMETER

From Bradley O'Neill

[I don't believe this qualifies as an outright medium, but the Arithmometer was a commercial mainstay of 19th century calculation. Arithmometers were in fact produced up to World War I. This indicates the ever-increasing public demand for calculating machines during the early industrial era.]

THE THOMAS ARITHMOMETER
The first commercially produced calculating machine, produced by Charles Xavier Thomas de Colmar in France. Based on Leibniz's calculating machine, the device utilized stepped drum gears for calculation. However, the major innovation was to reverse the operating function in the result registers (up to sixteen digits), allowing for reliable and stable calculation over extended periods of time without gear re-alignment. The machine took up an entire desk and required two people to carry it. It spurred on many rivals, eventually leading to quite sophisticated calculating machines that overcame the pitfalls of the stepped-drum design. Thomas received France's Chevalier of the Legion of Honor for the product. Brad

Source: A History Of Computing Technology by Michael R. Williams; Prentice-Hall, 1985. LC#QA71.W66 1985

PHONOGRAPHIC DOLLS

[Many forms of media began as toys, magic, or parlor amusements. Some incubate in the toy market and then move to wider mass influence. Some stay toys indefinitely. Some toys die. The talking head, talking doll, talking automaton or artificial talking intelligence is an ancient ideal which seems to have a powerful attraction for the inventive mind.]

[Mary Hillier's Foreword well describes this highly entertaining, lavishly illustrated book, which abounds in curiosa for the enthusiast of dead mechanical tech.]

"This book seeks to trace the history of automata and travels through the curious realms where they were exhibited and among some of the amazing characters involved in their invention. The special emphasis in from the eighteenth century onwards when the awakening of technological interest produced both the frivolous and luxury toys to amuse people and the clever robot machines wich eventually were to transform industry."

"Inventions have often been produced by researchers who little dreamt of the far-reaching consequences. Those who first experimented with electricity had no inkling of how the new-found force would one day illumine and power the world and adapt itself for use in the manufacture of toys. Thomas Edison, assembling his first crude phonograph in 1877 was actually experimenting with a machine that could reproduce the message given by a voice on the telephone."

[I find Hillier's assertion that the phonograph was born as a telephone recording/answering machine to be particularly intriguing. Was the phonograph originally a network peripheral?]

"Only afterward, when others recognised the significance of significance of recording the human voice and realised the terrific potential of such an instrument for entertainment did he develop it further along these very lines. It was the realization of the 'talking head' man had dreamt of through the ages. Others researching along similar lines exploited the talking machine. The motorised phonograph with wax cylinders was presented to the public and for the first time actual facsimiles of the human voice were obtained and the 'industry of human happiness,' as it had been called, had begun. [Can anyone identify the source of this astonishing quote?] The search for a talking doll was over: no automaton could compete with true reproduction - however imperfect in the earliest attempts.

"Edison first took up a patent for a phonograph doll in 1878. [Note how quickly Edison sought a killer app in the children's market.] His first idea was to build up a doll around a phonograph, but it was obviously more practical to use factory made doll parts and place a miniature phonograph within. It does not seem that such a veritable talking doll was mass-produced by his company until 1889.

"When wound up, this precocious creature recited nursery rhymes by virtue of a little needle tracing grooves

on a wax covered disk. The unknown girls who recorded the words in his factory acheived a curious immortality. The doll was made up with a steel torso which contained the works but had a head of German bisque and jointed wooden limbs. The Edison factory is said to have turned out 500 such dolls a day but other manufacturers soon entered into competition producing similar novelties.

“In France the famous Jumeau doll-making firm produced Be’be’ Phonographe in 1893; her mechanism was covered by a small plate in her chest and she was wound from the rear. The doll herself had all the charm of the Jumeau type with bisque head, beautiful eyes, jointed arms and legs and the additional sophistication of speaking in French, English or Spanish (according to changed cylinders). She measured 25 inches as against Edison’s 22 inch baby.

“At the Paris Exhibition 1900, a special room was devoted to the Phonograph doll with girls actually recording at benches. ‘Each one sits before a large apparatus, singing, reading, crying, reciting, talking with all the appearance of a lunatic! She dictates to a cylinder of wax the lesson that the little doll must obediently repeat to the day of her death with guaranteed fidelity.’

“Edison’s phonographic doll set the fashion for dolls with a bigger repertoire in their performance (and cheaper imitations). The progress of talking machines outran the patents and there was, one suspects, a good deal of poaching of ideas on both sides of the Atlantic with all the variations produced both before and after the 1914- 1918 war. The Jenny Lind Doll Company of Chicago produced a

doll in 1916 which could sing, talk and recite.

“Some of the dolls must have been unwieldy indeed. The ‘Primadonna’ produced by the Giebeler Folk Corporation of New York was not only made of aluminium but when the real hair wig on the crown of her hinged head was lifted up it contained a turntable for playing 3 ½ inch records! The doll was made in sizes 25 or 30 inches and the mechanism in the body was wound from the back.

“In 1923 the Averill Manufacturing Company also designed a phonograph doll, called Dolly Rekord, in their famous Madame Hendren line.

“Talking dolls, one suspects, became far less of a novelty when the radio and gramophone proper became more generally in use, just as cinematograph toys were displaced by television. Each phase of development introduced its new toys. and some interesting and ingenious working models were allied to the gramophone and its revolving turntable. Some were actually distributed by the company involved in producing the machines (figures 84-86).”

[FIGURE 84. Page from Scientific American, 1890, showing Edison’s Talking Doll and manufacturing processes.]

[FIGURE 85. Rare phonograph doll, Siam Soo, 1909; she shimmies and twists her head when mounted on a record shaft, as the record revolves. “SIAM SOO She puts the O- O in Grafonola. Strikingly new and novel. Works on any phonograph with a Columbia Record. Patented.”]

[FIGURE 86. Uncle Sam appears to chase the Mexican bandit, Pancho Villa, as the record revolves.]

Source: AUTOMATA AND MECHANICAL TOYS, an illustrated history by Mary Hillier. Bloomsbury Books, London 1976, 1988. ISBN 1 870630 27 0.

IBM LETTERWRITER

From Bradley O'Neill

IBM LETTERWRITER: 1941-1942. Analytical/data processing machines cobbled together as a stopgap immediately following Pearl Harbor, built for the US Naval cryptanalytic branch, OP-20-G.

"[Letterwriters] linked teletype, tape, card, and film media together. From unpretentious beginnings as data input equipment, the IBM Letterwriters blossomed into a number of increasingly complex machines that were used for a wide range of analytical tasks. The Letterwriter system tied special electric typewriters to automatic tape and card punches and eventually to film processing machines. Such automation of data processing was badly needed at OP- 20-G. Without automation, [OP-20-G] would have been unable to receive and process its wartime load of a million words a day."

"The system centered about a special electric typewriter, a tape punch, and a tape reader. The typewriter was a modified version of IBM's expensive Electromatic machine. The tape punch and tape reader were bread-box sized metal frames filled with relays and sensing pins. The relays controlled reading and punching and were used to convert the teletype code to the signals needed by OP-20-G's other machines. Linked together, the punch, the reader, and typewriter covered the top of a large desk. It was hoped they would eventually allow the creation of machine-ready data directly from OP-20-G's new international telegraph system."

“Simple changes made the Letterwriter equipment useful for another very important but time consuming task, the analysis of [encryption device] wheel settings. When an analyst thought he had found the correct combinations on an enemy system he would set a copy of the encryption machine’s wheels, lugs, and plugboards and type in parts of the encrypted message. He then examined the output to see if it was sensible.”

“Despite their usefulness and reliability, there was a drawback to the Letterwriters. They were not rapid machines. Because of the limits set by the mechanical nature of typewriters and the punches, the system ran at eight characters per second or only 480 characters per minute.”

Source: Information and Secrecy: Vannevar Bush, Ultra, and the Other Memex, by Colin Burke, Scarecrow Press, Metuchen N.J. 1994. LC# HD9696.C772B87 1994.

THE ZUSE ZIFFERNRECHNER; THE V1, Z1, Z2, Z3 AND Z4 PROGRAM-CONTROLLED ELECTROMECHANICAL DIGITAL COMPUTERS; THE DEATH OF KONRAD ZUSE

[Konrad Zuse, legendary computer pioneer, died December 18, 1995. The following obituaries and personal reminiscences cast several interesting sidelights on the birth of digital computation and the mishaps of Zuse's museum-piece computers.]

From the Guardian newspaper in Britain:

FIRST ON THE DIGITAL TRACK by Jack Schofield
KONRAD ZUSE, who invented the digital computer while no one else was looking, has died in Berlin at the age of 85. He was born in Berlin-Wilmersdorf and built his first mechanical calculating machine in his parents' living room between 1936 and 1938. In Britain and the US. similar but later developments were supported for their military significance, but Zuse's work was largely ignored.

When he and his colleagues later proposed the construction of a 2,000-tube computer for special use in anti-aircraft defence, they were asked how long it would take. Zuse says they replied: "Around two years." The response to this was: "And just how long do you think it'll take us to win the war?"

Zuse started to develop his ideas about computing in 1934, a year before he graduated from the Technische

Hochschule with a degree in civil engineering. He then went to work for the Henschel aircraft company as a design engineer or statiker. This involved solving tedious linear equations, which stimulated Zuse to apply his ideas and try to build a system to solve them automatically. His first machine, the V1 (with hindsight renamed the Z1) was made of pins and steel plates, but it represented two dramatic advances.

First. it was a general purpose machine, whereas most calculating machines were dedicated to specific tasks.

Second, it used binary (on/off or stop/start) numbers instead of decimal ones, as Babbage's far earlier machines had done.

This made Zuse's machine far easier to construct, although it was to remain somewhat unreliable. Although both decisions seem obvious now, they were far from obvious at the time. Zuse's choice of a general purpose approach was based on his separation of the different elements: an arithmetic unit to do the calculations, a memory for storing numbers, a control system to supervise operations, plus input and output stages.

This is still the basis of modern computers. Babbage had taken the same line 100 years earlier with his analytical engine, but it proved too difficult to build. Zuse succeeded partly because he chose the binary numbering system instead of using decimals. Binary means counting in twos, which is far more long-winded than counting in tens. However, to count in twos you only need an on/off switch, which is very much easier to construct than the

10-position decimal equivalent. Each operation mav not do much work. but the speed of the simpler switching operation makes up for it.

Of course, mechanical switches are still somewhat primitive, and Zuse started to replace bulky mechanical ones in Z1 with second-hand electro-magnetic relays - the switches used in telephone systems.

At the time, Zuse's college friend Helmut Schreyer "suddenly had the bright idea of using vacuum tubes. At first I thought it was one of his student pranks." Vacuum tubes, or valves, would work the same way but work at least a thousand times faster.

Zuse was soon convinced it was the right approach, and this led to the design of the Z3, which was probably the first operational, general-purpose, programmable computer. Zuse sold the idea to the Aerodynamics Research Institute, and set up a 15-man company to construct it. The machine was completed by December 1941, though it was later destroyed by Allied bombing.

As Zuse recalled, the "construction of the Z3 was interrupted in 1939 when I was called up for military service. However, in my spare time, and with the help of friends, I was able to complete the machine." Only one of Zuse's computers survived the war: the Z4. This was started in 1942, but it was becoming increasingly difficult to find parts, and in 1943, the Berlin blitz began. The machine was moved around the city to avoid air raids, and then moved to Gottingen, before finally being shifted to Hinterstein, a small village in. Bavaria.

After the end of the war, the Z4 was moved to Zurich in Switzerland, and in 1950, this Ziffernrechner, or number calculator, was installed at the Federal Polytechnical Institute. Zuse's developments attracted the attention of IBM which seemed mainly interested in his patents - and Remington Rand, amongst others, but discussions came to nothing. In 1949, he founded his own computer company, Zuse KG, which developed a line of Z computers, and eventually employed about 1,000 people.

However, short of capital, he gradually sold out to Siemens, the giant industrial conglomerate.and devoted himself to research. In later life, Zuse received many honours, and in 1984 a research institute, the Konrad Zuse Centre for Information Technology (ZIB) was named after him. A copy of his first programme-controlled electro-mechanical digital computer, the Z3, was made in 1960 and put on display at the Deutsches Museum in Munich. A copy of the Z1 was constructed in 1989, and can be found in the Museum for Transport and Technology in Berlin. Konrad Zuse, scientist and inventor, born June 2, 1910 died December 18, 1995.

[J. A. N. Lee offers a second Zuse obituary.] The last of our great pioneers of the 1930's died Monday, December 18. Konrad Zuse, developer of the Z-1 through Z-4 machines was clearly one of those who foresaw the development of the computer and did something about it well before those whom we will acknowledge next year in Philadelphia.

Zuse's image suffered from his location both in geography

and time, since we now know that his work included in an elementary way many of the features of modern machines. I had the pleasure of meeting with Dr. Zuse on several occasions, the last at the IFIP World Computer Congress in Hamburg in August 1994 where he drew standing room only audiences in a conference that was not that well attended elsewhere.

I have only seen one obituary so far, and I am disappointed that it did not also mention his artistic capabilities also. His paintings were magnificent, and his recent portraits of German computer pioneers (prepared for the IFIP Congress) showed yet another side of this multi-talented pioneer. I was hoping that we could attract him to attend the ENIAC celebrations in February next, but sadly that opportunity is gone.

I for one will miss him. He was always the one with the joke and for greeting one with humor. I was in a meeting with him the day the Berlin Wall came down. I asked him what he felt about this, to which he replied “Now we can get on with our work!”

[And a third]

Konrad Zuse I learned this morning of the death of Konrad Zuse, at age 85. As many of you know, Zuse conceived of the notion of a general purpose digital computer, using binary arithmetic, while a student in Berlin in the 1930s. With the help of his parents and a few friends he set out to build one in his parents’ apartment.

At the outbreak of the Second World War he was released from service in the German army to work at the Henschel

Aircraft Company, where he was a stress analyst. He continued working on his computing ideas, and in December 1941 he completed a machine that computed in binary, using floating point, with a 64-word memory, and which was programmed by paper tape.

This machine is regarded as the first general purpose, functional digital computer in the world. It was destroyed during the war. Later on Zuse gave it the name "Z3," by which it is now known. In 1962 Zuse, now the head of a commercial computer company, built a reconstruction based on drawings that did survive.

This computer, which I saw in operation at the Deutsches Museum a few years ago, is now itself one of the oldest operable computers in the world! Zuse actively promoted his role as a computer pioneer, and he always stressed the historical claims of the Z3.

I think that he felt less proud of the fact that he also founded a company, since it did not survive (it was eventually absorbed by Siemens).

My guess is that as time goes on he may be more remembered for being one of the first "start-ups" as for his Z3.

Zuse was the last of the "first tier" of computer pioneers: Aiken, Stibitz, Eckert, Mauchly, Atanasoff, Turing.

Incredible to think that so many of them were alive while all the madness of computering in the past couple of years has been going on. I knew him personally and will miss him very much.

DEAD MEDIA 1897: THE CONSUMER CONTEXT

From Stefan Jones

I recently came into possession of a facimile edition of the 1897 Sears, Roebuck & Co. catalog of 1897 (Fred L. Israel, Editor; Chelsea House Publishers, New York, 1968). Unlike Johnson Smith's tome, this impressive book is carefully indexed and has page numbers. This made it easy to find the media technologies (dead and otherwise) for sale in America one hundred years ago.

While I intend to write two working notes on the things I found in Messrs. Sears' and Roebuck's catalog, I thought it might be valuable to list all of the various media and communication devices in the book. By comparing the number of items in each category, and the number of pages devoted to each, we can gauge, very roughly, the relative importance of the various media to the American public 100 years ago.

BOOKS

A wide variety, are offered in a 12 page section. Some have paragraph length descriptions; most are simply listed by title. Stationery: writing, and drafting supplies are offered in another 12 page section. Supplies for painters: including several cameras obscura, are described in a two page section.

TELEGRAPHS

Telegraphs are the lead item in the short (three page) section devoted to electrical devices. Several varieties of

keys, relays and sounders are available, along with batteries and accessories. Telegraph related items take up about a page. They catered to both students (the cheapest set, with battery, is $3.00) and industrial users. Sears offered to estimate the cost for private telegraph lines.

TELEPHONES

This section occupied about one column (one third of a page) of the electrical section. Three models of telephone, plus separate transmitters and receivers, were available.

CAMERAS

About two dozen cameras, plus many accessories and developing supplies, were available. Sears also offered a catalog of "professional studio outfits." Stereoscopes: Between surveyor's supplies and thermometers are two columns (page 468 - 469) devoted to steroscopes and views. Sears offers 7 stereoscopes and hundreds of views. The latter are very loosely grouped into "subjects" (nature, humor, sites of Europe, Life of Christ, the World's Fair), and cost between 5 - 10 cents each, or 40 cents to $1.00 per dozen.

MAGIC LANTERNS

Both juvenile (13 models) and professional (8 models) lanterns were available, along with several dozen named slide sets, a book, lime gas generator, and a operator's lamp. The juvenile magic lanterns could be had for as little as $.75 (including slides!). The most expensive was $8.00. Some of the "professional" lanterns were monstrous beasts. The largest ("No. 61100, Our Special Stereopticon") was illuminated by lime light (gas

generator sold separately), cost $98, and looks like a twin barreled Victorian laser cannon. It was designed with “dissolving views” in mind. Sears also offered a separate Magic Lantern catalog, with even more lantern models and more slides.

PHONOGRAPHS

A single phonograph, actually, the nearly identical “graphophone” that competed with Edison’s device, is offered, along with accessories, and a few dozen cylinders. These take up a paltry half page.

Source: The 1897 Sears Roebuck Catalogue (Chelsea House Publishers, New York, 1968)

18TH CENTURY MULTIMEDIA: LOUTHERBOURG'S EIDOPHUSIKON

[The eighteenth-century Eidophusikon has been variously described as a mechanical theater, a miniature stage, a diorama, a panorama, or a physiorama. Featuring lighting, mechanical motion, sound effects, architectural simulation, dramatic special effects and something akin to a storyline, the Eidophusikon would probably be described today as "multimedia" or "virtuality."]

"Even more intriguing was the mechanical theatre of Philippe Jacques de Loutherbourg (1740-1812) which he called the Eidophusikon. Loutherbourg was born at Strasbourg, son of a miniature painter to the court of Darmstadt. Trained as a painter himself, success came quickly to him.

The spirit of the age was one of inspired inventiveness and when he arrived in London in 1771 he was introduced to David Garrick the actor manager at Drury Lane who 'loved all art and artists' and designed scenery for him. He was one of the first to build actual miniature stage maquettes and in love with the world of theatre he set up the Eidophusikon in 1782 at his home for public performance.

This soon had the whole London art world flocking to see it. There was a miniature stage which moved its scenery by means of pulleys and produced the illusion of changing sky effects, clouds, storms, sunrise by a moving backcloth of tinted linen lit from behind by lamps. Loutherbourg

called it his ‘movable canvas’ and accompanied with telling sound effects as tiny mechanical actors appeared automatically and reenacted some such drama as Milton’s Satan arraying his troops on the Fiery Lake. His work had a lasting effect on the London stage and the art of mise en scene, for he emphasized the need of lighting and picturesque scenery.”

PROSPECTUS OF AN EXHIBITION TO BE CALLED THE Eidophusikon.

W. DALBERG, A German Artist, in reviving this Exhibition, (originally produced by the celebrated De Loutherbourg,) begs leave to present to the Nobility and Gentry, a description of his intended Exhibition.

The Interior will be a Model of a beautiful Classic Theatre; the dimensions of the stage, 10 feet by 12; devoted entirely for Picturesque Scenery, Panoramas, Dioramas, and Physioramas.

The following is a Programme of the Scenery:

SCENE 1. A view from the summit of One Tree Hill, in Greenwich Park, looking up the Thames to the Metropolis; on one side, conspicuous upon its picturesque eminence, will stand Flamstead House; and below, on the right, that grand mass of building, GREENWICH HOSPITAL, with its imposing Cupola, cut out of pasteboard, and painted with architectural exactness. The large group of Trees forming another division, beyond which the towns of Greenwich and Deptford, with the shore on each side stretching to the Metropolis. In the distance will be seen the hills of Hampstead, Highgate,

and Harrow; and the intermediate space will be occupied as the pool, or port of London, crowded with Shipping, each mass of which will be cut out of pasteboard, and receding in size by the perspective of their distance. On the rising of the Curtain, the scene will be enveloped in that mysterious light which is the precursor of daybreak; the mist will clear away, the picture brighten by degrees, until it assumes the appearance of a beauteous summer's day, gilding the tops of the trees and the projections of the lofty buildings; the clouds will pass to a clear and beautiful moon-light night. To make the view as true to Nature as art will allow, the Shipping and Steam Boats will sail up and down the river.

SCENE 2. Diorama of the "Ladyes Chapel," Southwark, with the effects of Light and Shade.

SCENE 3. The effect of a Storm at Sea, in which will be described all the characteristic horrors of wind, hail, thunder, lightning, and the roaring of the waves, with the loss of an East Indiaman.

SCENE 4. A moving Panorama of English Scenery, from Windsor to Eton, the Exhibition of which was so universally admired at the Drury Lane Theatre.

SCENE 5. A Calm, with an Italian Sea Port, in which will be represented the rising of the Moon, the Mountains, and the Water will be finally contrasted by a lofty Light House of picturesque

Source: AUTOMATA AND MECHANICAL TOYS, an illustrated history by Mary Hillier. Bloomsbury Books, London 1976, 1988. ISBN 1 870630 27 0.

KARAKURI; THE JAPANESE PUPPET THEATER OF CHIKAMATSU

“In the book Karakuri Zui published in 1797 (kindly translated for me by Suzume Matsudaira) an historical account is given of the founding of a famous mechanical theatre and the family who carried it on for over 100 years. Early in the 17th century, a man called Yasui Doton created a favorite pleasure spot in Osaka by joining two branches of the Yohori River with a canal. On 25th May 1662, a little theatre for the performance of karakuri was opened here by Takeda Omi. The performances may be judged to have been a clever combination of working devices, conjuring and showmanship. During the next 100 years there were at least five generations who adopted the name of Takeda Omi or Takeda Izumo.

“The founder, Takeda Omi I, was born in Awa and seems originally to have made his name as a clockmaker. Originally he made ‘sand clocks’ [sand pouring from a hopper to drive a series of gears and wheels.] A famous clock he presented to the Emperor of Japan worked by lead weights suspended from a key-wound cylinder. This was his piece de resistance; he took eight years to construct it. The ‘Eternal Clock’ not only struck the time of day but showed the seasons, the months and the days. It brought Takeda great fame and more especially permission from the Emperor to open a theatre for the mechanical toys which. Takeda had exhibited publicly to earn a living.

“After establishing the little theatre by the waterside and

running it for some twelve years, Takeda left the operation of it to his young brother Kiyotaka (Takeda Omi II). The repertoire. is pictured in a lively manner in a little three-volume book published in 1730, Karakuri Kimmo Kagamigusa ('Instruction in Kamakuri') with woodcut illustrations by the well-known Ukiyo-e artist Kawaeda Toyonobu. The show was obviously intended mainly for adults although a few children are also watching the curious mixture of wizardry, trickery and mechanical expertise.

"Among 28 separate items pictured in Karakuri Kimmo Kagamigusa some seem to have been worked by actual clockwork (always with wooden cogs and gear wheels) others by purely physical power, driven by running sand or water movement or even on a system of levers and pulleys.

"One of the acts is a fortune-telling doll pointing in turn to portraits of different gods. From the snatch of conversation it is clear that this also involved a sort of lottery. One of the cleverest inventions was a little tumbling man: 'An acrobatic doll that turned head over heels down three steps.' This. seems to have inspired later European toymakers who were producing a miniature version based on the same idea by the end of the eighteenth century.

"The fame of the theatre and these makers of automata spread, and through the first half of the eighteenth century there is reference to them in various books. Kagami Choja Kagami 1714 described a very rich man's

house and how it contained an artificial tiger made by Takeda Omi I. It blew wind from its mouth into the guest room when the weather was hot like a sort of automatic fan.

“The Karakuri performances enjoyed such a vogue that competitors also opened up other theatres. A young man called Yasagoro was spoken of as an unrivalled master of the art in 1705 and especially good at ‘Water Magic:’ the close proximity of the river meant that wheels and machinery could be worked by water power.

“With the second generation of Takeda Omi the mechanical devices were put to a more serious purpose. The great Japanese playwright Chikamatsu, who devised dramas in the classical tradition of the Kabuki stage, was no more than a child of eight when the Takeda theatre opened in 1662. By 1705 when he was already famous, we find Chikamatsu settling down as the playwright of another prosperous Osaka theatre, Takemoto, run by yet another member of the Takeda family (Takeda Izumo, himself a playwright). Instructions which accompany some of his plays include such comments as ‘Grand karakuri in which Princess Jamateru changes into a mermaid,’ or ‘Princess Ikoma’s spirit runs after Izuta along the pine tree branch. Grand karakuri will be shown in this scene.’ [Takeda Omi III had his greatest triumph in Edo (now Tokyo) in 1741.]

“This was the greatest performance in his lifetime and created such a furore that the crowd rushed his theatre and the doors were closed at opening time for three

consecutive days. Apart from their skill in performance, the dolls must have been most beautifully constructed and attractive in appearance since they appealed to so many contemporary artists. But perhaps the public taste became more sophisticated. It is possible also that the standard of performance had deteriorated. We are told that by 1758 the theatre performed 27 programmes a day, starting at 8 in the morning and ending at 4 in the afternoon. By 1772 the last of the theatres had closed down and a tradition which had flourished for over 100 years died.

“In modern times enthusiasts have skillfully reconstructed some of the toys after Takeda’s originals, and using the same materials, Professor Tatsukawa built a model of the tea-serving doll which worked so successfully it was given a programme on television.”

Source: AUTOMATA AND MECHANICAL TOYS, an illustrated history by Mary Hillier. Bloomsbury Books, London 1976, 1988. ISBN 1 870630 27 0.

DEAD MEMORY SYSTEMS

From Bradley O'Neill

1. THERMAL MEMORIES

"The idea of thermal memory was tried by A.D. Booth, who, through the lack of other suitable material being available in Britain after the Second World War, was forced to experiment with almost every physical property of matter in order to construct a working memory. The device was never put into production because of the inherent unreliability of the system.

"Booth's thermal memory consisted of a small drum whose chalk surface was capable of being heated by a series of small wires. These wires would locally heat a small portion of the surface of the drum and, as the drum rotated, these heated spots would pass in front of a series of heat detectors. When a hot spot was detected, it was immediately recycled back to the writing mechanism which would copy it onto a clean (cool) part of the drum. The back of the drum was cooled (erased) by a small fan so that, by the time the drum had rotated to a bring the same area under the heating wires again, a fresh surface was available to receive the recycled information."

2. MECHANICAL MEMORIES

Built by A.D. Booth in post-WWII, mechanical memory consisted of a series of rotating disks, each of which contained a tiny pin which was allowed to slide back and forth through the hole, and as the disk rotated, a solenoid was used to push the pins so that they protruded from one side of the disk or the other. A small brush made

electrical contact with those pins which were sticking out of one edge of the disk. It was this brush which enabled it to read the binary number stored by the pin positions.
“By putting a number of such disks together on one shaft, it was possible to produce either a serial storage unit (where one number is stored on each disk and the readout is done bit by bit as the disk rotates) or a parallel storage unit (where one number is stored on the corresponding positions of a series of disks and the readout of all the bits of a number takes place at the same instant).” [Booth constructed a ‘disk-pin memory device’, which looks like a small typewriter. About 20 reading heads are lined up along the spool, which houses the rotating disks. Booth’s ARC computer used this technology at one point in its early development.) pages 308-311

3. ACOUSTIC MEMORIES
The first reliable memory system.. Utilized in the following computers: EDSAC EDVAC UNIVAC 1 the Pilot ACE SEAC LEO 1
“The basic concept behind the device was to attempt to delay a series of pulses, representing a binary number, for a few milliseconds which, although a very short time, was a relatively long period as compared to the electronic cycle time of the machine. After they had been delayed for a short time, the pulses would be fed back into the delay system to again store them for a further short period. Repeated short delays would add up to a long-term storage.”
“The mercury delay-line was developed by William

Shockley of Bell Labs and was improved upon by J. Presper Eckert, one of the people who designed and built ENIAC..

“(T)he mechanism would take a series of electrical pulses and convert them into sound waves by the use of a piezoelectric quartz crystal. The sound waves would then make their way, relatively slowly, down the mercury-filled tube. At the far end of the tube, the sound waves would be detected by another quartz crystal and the pulses, amplified and reshaped, would then be fed back into the front of the delay again.”

[Various problems including computer temperature, modulation/demodulation electronics, and delay time ultimately doomed this memory format. In the 1950s, advances led to the magnetostrictive delay, extinct by the 1970s.]

OTHER DEAD MEMORY STORAGE SYSTEMS:

4. Electrostatic storage (early CRT based systems)

5. Rotating Magnetic Memory (used in proto-disk drives, as in the ‘Mail-a-Voice’ recording machine)

6. Static Magnetic Memory (magnetic cores)

Source: A History of Computing Technology by Michael R. Williams; Prentice-Hall, 1985. LOC#QA71.W66 1985

VICTORIAN TALKING PICTURES: THE KINETOPHONE

From Andrew Siegel

“I was quite amazed to learn in Mark Schubin’s September column [’Synching Fast’] of the existence of sound films dating back before 1900. Yet more amazed was I to read that said films had been transferred successfully to videotape. “Can you tell me where I might see these films, or better yet, acquire copies? Joe Salerno Industrial Video Services Bellaire, TX

“Mark Schubin responds: In 1894, Century Magazine carried an illustration of a projection room with a phonograph attached to a film projector for synchronized sound. The process was known as either Kinetophone or the Kinetophonograph. William Dickson claimed to have demonstrated sync-sound motion pictures as early as 1889, but that date has been disputed by others. Between the Century illustration and other American and European sources, however, there’s little doubt that there were sound movies sometime in the Nineteenth century.

“More recently, while poring through the archives of Sveriges Radio (the Swedish Broadcasting Corp.), American Art Shifrin came across some Edison sound recording cylinders of unusual size. These turned out to be Kinetophone cylinders. Searching various archives, Shifrin found 48 existing Kinetophone cylinders and seven existing Kinetophone films, six of which match sound cylinders.

“Films were transferred to 1-inch videotape, and, after much construction of appropriate playback mechanisms, the sound was synchronized to the images and recorded on the same tape. The results were shown at a meeting of the New York section of the Society of Motion Picture and Television Engineers in 1983. Neither picture nor sound quality match today’s standards, but there’s no question that they are sync-sound movies. Exact dating of these films has not yet been determined.

“Shifrin would be willing to show you the tape version if you are in the New York area. He would also very much like to continue to pursue the “Kinetophone Project,” improving the transfer of both sound and image with modern digital techniques and searching for more old sound movies.

Source: Videography Magazine, December 1995, Letters to the Editor, pp. 20-21.

CLOCKWORK WALL ANIMATION—LIVING PICTURES

From Bill Wallace

“Animated or ‘living’ pictures made by Schoenhut, a Philadelphia toy maker, adorned Victorian walls. In one entitled A Good Joke (ca 1890) two clerics enjoying their wine move their arms and jaws while rocking with laughter. Concealed behind the lithograph is an array of clockwork, string belts, cardboard cams, and wire levers with counterbalancing weights. The scene is animated by a belt-driven cam from a slow-moving shaft in the clockwork while the highest speed axle carries a fast-moving fan that acts as a governor.

“Other patterns for living pictures were provided on flat, lithographed printed sheets to be cut out and animated according to the pleasure of the assemblor.” Also intriguing, but brief, is the description of the serinette, a miniature hand-operated barrel organ “used by 18th century ladies to teach canaries to sing.” The illusionist Houdin allegedly built an automaton of a young lady winding a serinette, followed by her mechnical bird singing. Dead media within dead media.

Source: Mechanical Toys, by Athelstan and Kathleen Spilhaus, Random House, 1989, $7.99 ISBN 0-517-0560-4

SKYTALE, THE SPARTAN CODE-STICK

From Nick Montfort

Parker, Parageographer and Professor of Classics at the University of Texas, writes in a note to his 1964 translation of the Lysistrata, on page 121 of the paperback edition:

“Askytale, a tapered rod which was Sparta’s contribution cryptography. A strip of leather was wound about the rod, inscribed with the message, and unwound for transmission. A messenger then delivered the strip to the qualified recipient, who deciphered it by winding it around a rod uniform in size and shape with the first. Any interceptor found a meaningless string of letters.”

If I correctly recall my conversations with Professor Parker on the matter of this code-stick, the device is pronounced something like SCOO-TA-LA.

In the Lysistrata, the women of Sparta and Athens conspire to deny their husbands sex until the two cities end their ongoing war. The men, therefore, wander around with hard-ons the whole time. The code-stick appears in Aristophanes’s comedy in the following scene between an Athenian commissioner and a Spartan messenger: (From page 92 of Parker’s Translation)

COMMISSIONER [Throwing open the Spartan’s cloak, exposing the phallus.] You clown, you’ve got an erection!
HERALD Hain’t got no sech a thang! You stop this-hyer foolishment!
COMMISSIONER What have you got there, then?

HERALD Thet-thur’s a Spartan epistle. In code.
COMMISSIONER I have the key. [Throwing open his cloak.] Behold another Spartan epistle. In code.

Source THE LYSISTRATA OF ARISTOPHANES, a Modern Translation by Douglass Parker. Mentor Books, NY 1964, 1970.

THE PIGEON POST OF ANCIENT SUMER

Ancient Inventions by Peter James and Nick Thorpe is an extraordinarily interesting new book that deserves a place of honor on the shelf of any dead tech enthusiast. Some of its speculations (the ancient Peruvians may have had hot-air balloons, the Parthians apparently had chemical batteries) seem a tad far-fetched; but the book is all the more interesting for that. This book is remarkably erudite, well- documented, very wide-ranging, over six hundred pages long, and its illustrations are particularly apt. The book's brief chapter on "Communications" in very close in spirit to my idea of an eventual tome on Dead Media, if I ever get around to writing one.

"Airmail Service "The earliest mention of domesticated pigeons comes from the civilization of Sumer, in southern Iraq, from around 2000 BC. Most likely it was the Sumerians who discovered that a pigeon or dove will unerringly return to its nest, however far and for however long it is separated from its home. The first actual records of their use as carrier birds comes from Egypt. By the twelfth century BC pigeons were being used by the Egyptians to deliver military communications. And it was in the Near East that the art of pigeon rearing and trainind was developed to a peak of perfection by the Arabs during the Middle Ages.

"The caliphs who ruled the Moslem Empire after the death of Muhammed in AD 632 developed the pigeon post into a regular airmail system in the service of the state.

Postmasters in the Arab empire were also the eyes and ears of the government, and with the local postal centers stocked with well-trained pigeons there was little chance of the caliphs failing to be warned of potential troublemakers in the provinces.

“The state airmail was occasionally employed for more lighthearted purposes. Aziz, the caliph of North Africa between AD 975 and 976, one day had a craving for the tasty cherries grown at Baalbek, in Lebanon. His vizier arranged for six hundred pigeons to be dispatched from Baalbek, each with a small silk bag containing a cherry attached to its leg. The cherries were safely delivered to Cairo, the first recorded example of parcel post by airmail in history.

“The Arab pigeon-post system was adopted by the Turkish conquerors of the Near East. Sultan Baybars, ruler of Egypt and Syria (AD 1266-1277), established a well-organized pigeon post throughout his domains. Royal pigeons had a distinguishing mark, and nobody but the Sultan was allowed to touch them. Training pigeons for postal work became an industry in itself, and a pair of well-trained birds could bring as much as a thousand gold pieces. The royal pigeon post was also invaluable as an advance warning system during the Mongol invasions of the thirteenth and fourteenth centuries. When Timur the Mongol conquered Iraq in AD 1400, he tried to eradicate the pigeon post along with the rest of the Islamic communications network.

“The Chinese seem to have learned the art of pigeon

training from the Arabs. Strangely, for a civilization with such a well-organized bureaucracy, the state never established an intelligence network using carrier pigeons, which were generally used only for commercial purposes. The Arabs also reintroduced the skill to medieval Europe, where it had lapsed after the fall of the Roman Empire in the fifth century AD. After the collapse of the Roman light telegraph system, the pigeon post was left as the fastest means of communication in the world. And so it remained unto the perfection of the electric telegraph (by Samuel Morse in 1844) and radio (by Guglielmo Marconi in 1895).

“It was normal practice, even well into this century, for navies, military installations and even businessmen to have pigeons on the payroll. The range of tasks for which pigeons have been employed has changed little since ancient times.”

Source: Ancient Inventions by Peter James and Nick Thorpe Ballantine Books 1994 $29.95 ISBN 0-345-36476-7

THE PIGEON POST IN THE SEIGE OF PARIS

Since discovering this privately printed work, I've come to suspect that the strange story of the pigeon post during the seige of Paris is the sine qua non of dead media. In the 1870s the pigeon post was a hobbyist's niche medium. Under the intense conditions of warfare between major industrial powers, this medium mutated and grew explosively.

With the energy of a whole nation diverted into a desperate need to communicate with the capital, there emerged a sudden technical nexus of hot-air balloons, magic lanterns, and photography (all of these were experimental technologies, all of them pioneered by the French).

Unknown entrepreneurs suddenly became the linchpin of a seamless national communications system, combining pigeons, balloons, telegraphy, trains, messenger boys, magic lanterns, typesetting, handwriting and microphotography.

There was explosive, repeated growth in bandwidth, until the message-space within one gram of weight suddenly became too cheap to meter (though it was still metered). Large-scale currency transfers took place through pigeons (via microdot mail-orders). Encoded, compressed post- cards were invented (the depeches responses). Cryptography was used (by and for the government). There was hacking by the system administrator (when

Dagron the microfilmist and war profiteer suddenly became the de facto postmaster of Paris, he discovered that he had many friends who didn't care to bother with normal allocation of channels).

And last but not least, information warfare took place, practiced by the besieging Prussians, who used forged messages sent through captured pigeons. It was all over in 6 months, a skyrocketing arc of development followed by near-total media extinction, commemorated with medals, folklore and bronze pigeon statuary, but never to be repeated on such a scale again.

John Douglas Hayhurst, O.B.E., would appear to be (or have been) primarily a postal historian and philatelist. His slender 45-page history is a real treasure
"As had been expected, the normal channels of communication into and out of Paris were interrupted during the four and a half months of the siege, and, indeed, it was not until the middle of February 1871 that the Prussians relaxed their control of the postal and telegraph services. With the encirclement of the city on 18th September, the last overhead telegraph wires were cut on the morning of 19th September, and the secret telegraph cable in the bed of the Seine was located and cut on 27th September.

Although a number of postmen suceeded in passing through the Prussian lines in the earliest days of the seige, others were captured and shot, and there is no proof of any post, certainly after October, reaching Paris from the outside, apart from private letters carried by unofficial

individuals.

“Five sheep dogs experienced in driving cattle into Paris were flown out by balloon with the intention of their returning carrying mail; after release they were never again seen. [So much for “Sheepdog Post,” a truly abortive medium.]

Equally a failure was the use of zinc balls (the boules de Moulins) filled with letters and floating down the Seine; not one of those balls was recovered during the seige. [A pity for enthusiasts of floating zinc-ball media.]

“Millions of letters were carried outward from Paris by balloon but free balloons could not offer a reliable means of inward communication since they were at the mercy of the wind and could not be directed to a predetermined destination. The only balloon which made even a start of a return flight to Paris was the Jean Bart 1 which left Rouen on 7th November but, after a first hop which took it 20 km towards Paris, the wind changed and further attempts were abandoned. During January 1871, a fleet of free balloons was being assembled at Lille but the armistice prevented it from being put into operation. Self- propelled dirigible balloons were then in their infancy and whilst, on 9th January, the Duquesne, fitted with two propellers, left Paris bound for Besancon and Switzerland, it got only as far as Reims.

For an assured communication into Paris, the only successful method was by the time-honored carrier pigeon, and thousands of messages, official and private, were thus taken into the besieged city. “

“Savelon has deduced the monthly statistics as:

September & October 1870 : 105 released, 22 arrived
November 1870: 83 released, 19 arrived
December 1870: 49 released, 12 arrived
January 1871: 43 released, 3 arrived
February 1871: 22 released, 3 arrived

“The weather was not the only hazard facing the pigeons: there were their natural enemies the hawks and there were countrymen with their shotguns seeking food for their families. The best pigeons would have been the first to be used and as time passed the birds would have been less trained and so less likely to return safely to Paris. It was therefore no mean achievement that, on 59 occasions, they did succeed in getting back to their lofts. Their achievement was commemorated in the monument by Bartholdi and Rubin at the Porte des Ternes in Paris which was unveiled on 28th January 1906 and melted down by the Germans in 1944; around the central representation of a balloon were four pedestals each bearing a pair of bronze pigeons. “

Source: The Pigeon Post into Paris 1870-1871 by John Douglas Hayhurst
Published by the author at 65, Ford Bridge Road, Ashford Middlesex 1970
Dewey: 383.144 H331p University of Texas Library

THE PIGEON POST IN THE SEIGE OF PARIS, PART 2

“The service was formally terminated on 1st February 1871

The successful operations must have been performed by about 50 birds only. These 50 pigeons served France well; they carried official despatches of great importance as well as an estimated 95,000 private messages which went far to keep up the morale of the besieged Parisians.

“The very last pigeon to complete its return to Paris must, if La Perre de Roo can be believed, have been one from Niepce captured in in November 1870 by the Prussians and which was presented to Prince Frederick Charles of Prussia, the commander of the Second Army. He sent it home to his mother Princess Charles of Prussia who placed it on the royal pigeon cote. Two years later, tired of its Prussian lodging, it escaped and flew back to Paris.

“The photographic reproduction of messages “The first pigeons each carried a single despatch which was tightly rolled and tied with a thread, and then attached to a tail feather of the pigeon, care being taken to avoid old feathers which the bird might lose when in molt. From 19th October, the despatch was protected by being inserted in the quill of a goose or crow, and it was the quill which was attached to the tail feather. Although a pigeon could have carried more, the maximum weight it was asked to carry was about 1 gm, and, as the service developed, the aim was to get the greatest possible

number of messages inside this weight. Initially, the messages were written out by hand in small characters on very thin paper

“A great step forward was taken in early October from the idea of Barreswil (or Barreswill) a chemist of Tours who had been the co-author in 1854 with Davanne of La chimie photographique. He proposed the application of photographic methods with prints of a much reduced size and of which an unlimited number of copies could be taken. His death in late November robbed him of the satisfaction of seeing his proposal accepted and extensively applied.

“The messages were written, still by hand, but in big characters on large sheets of card which were pinned side by side and photographically reduced. A further improvement occurred when Blaise succeeded in printing messages on both sides of the photographic paper.

“Yet another improvement was the introduction of letter-press as a partial replacement of manuscript.”

[Hayhurst’s tale continues and the highly intriguing figure known only as “Dagron” makes his appearance on the dead media stage.]

“At the Exposition Universelle of 1867 in Paris, a photographer, Dagron, had demonstrated a remarkable standard of microphotography which he had described in “Traite de Photographie Microscopique” published in Paris in 1864. Arrangements were made for him to leave Paris by balloon, accompanied by two colleagues, Fernique and Poisot, the latter being his son-in-law. For

making the journey by balloon, Dagron was to receive 25,000 francs (to be paid by the delegation at Tours) and Fernique 15,000 francs (to be paid before he left Paris). In the event of their deaths during the journey, their widows would each have an annual pension of 3,000 francs for life.

"They departed on 12th November in the appropriately named balloons Niepce and Daguerre, but the latter, with the equipment and pigeons in it, was shot down, fell within the Prussian lines and was lost. The Niepce was also shot down and landed in Prussian-held territory, but Dagron and his companions just escaped capture, losing still more of their equipment and becoming separated.

"Shorn of his equipment and finding unsatisfactory replacements at Tours, Dagron failed to achieve what he had promised by way of.. images 'prenant le nom du point,' in other words, microdots. Dagron had sought to reproduce a page of the Moniteur in 1 sq mm

Dagron finally attained success on 11th December. Thereafter, all the despatches were on microfilm, with a reduction of rather more than forty diameters, a performance that even today evokes admiration and yet he was achieving it a century ago. These later microfilms weighed about 0.05 gm and a pigeon would carry up to 20 of them.

"The introduction of the Dagron microfilms eased any problems there might have been in claims for transport since their volumetric requirements were very small. For example: one tube sent during January contained 21

microfilms, of which 6 were official despatches and 15 were private

“In order to improve the chances of the despatches successfully reaching Paris, the same despatch was sent by several pigeons; one official despatch was repeated 35 times and the later private despatches were repeated on average 22 times. The practice was the send off the despatches not only by pigeons of the same release but also of successive releases until Paris signalled the arrival of those despatches.

“When the pigeon reached its particular loft in Paris, its arrival was announced by a bell in the trap in the loft. Immediately, a watchman relieved it of its tube which was taken to the Central Telegraph Office where the content was carefully unpacked and placed between two thin sheets of glass. The photographs are said to have been projected by magic lantern on to a screen where the enlargement could be easily read and written down by a team of clerks. This should certainly be true for the microfilms but the earlier despatches on photographic paper were read through microscopes.

“The transcribed messages were written out on forms (telegraph forms for private messages, with or without the special annotation ‘pigeon’) and so delivered. The first private messages got to their destinations fairly quickly, but with the increasing volume of traffic during and after November and the deterioration of the weather from mid-December, from handing in to delivery could easily span two months.”

“The despatches “The content of nearly every despatch, official and private, which was photographed is known today. As has already been said, the letterpress of each set of private despatches was used to provide a permanent printed record and a total of 580 pages were bound together in six volumes, a set of which is in the Musee Postal.

“The official despatches were in a mixture of numerical cypher and clear language. The greater part of all the official despatches was in manuscript; messages in manuscript could be produced more quickly than in letterpress.

“Before leaving the official despatches , it is appropriate to mention two bogus official despatches sent by the Prussians. When the Daguerre fell within enemy lines on 12th November, 6 pigeons were saved from the Prussians and used to notify Paris of the loss of the balloon. The remaining pigeons were caught by the Prussians who later released 6 of them with messages calculated to dismay Paris. One message was: ‘Rouen 7 decembre. A gouvernement Paris—Rouen occupe par Prussians, qui marchent sur Cherbourg. Population rural les acclame; deliberez. Orleans repris par ces diables. Bourges et Tours menaces. Armee de la Loure completement defaite. Resistance n’offre plus plus aucune chance de salut, A Lavertujon’

“The pigeons reached Paris on 9th December going to the loft of Nobecourt, whose father carried the message to Rampont. The fraud was apparent; it was known that

Nobecourt had been captured and Lavertujon, a French official, was actually in Paris. Another message in similar terms arrived addressed to the editor of Figaro. These messages were tied to the pigeons with ordinary thread, whereas the French always used wax thread; further evidence of the attempt at deception. The conclusion that the message had come from the enemy was, however, scant consolation for the bitterness of learning almost immediately that they were partly true: Rouen and Orleans were in Prussian hands."

"[The pigeon post service] permitted the transmission of postal orders with a maximum value of 300 francs. 1,370 orders with a value of 190,000 francs were sent by pigeon."

"The method of operation was announced to the public inside and outside Paris in a special supplement to No 7 of the Gazette des Absents (one of the miniature newspapers published for carriage out of Paris by balloon) and again in No 8. In a letter written in Paris and addressed outside, a correspondent could ask four questions, each capable of being answered by a 'yes' or 'no.' With the letter would go a card purchased at a post office for the price of the 5 centimes postage stamp affixed to it. The recipient of the letter then entered in four columns his answers as oui or non on the card, taking care to get the order right, affixed a 1 franc postage stamp to the card, and sent it to the designated post office. [The cards were sent to the microfilmist Dagron at his labs in Tours and Bordeaux.] The message, consisting of the address, the ouis and nons transcribed as o's and

n's, and the replier's name, was included in a page among messages in clear language, and the whole photographed and, in due course, formed part of a despatch. There were about 30,000 messages so abridged, representing about one-quarter of all the private messages.

"Also included in the private despatches were messages under the heading 'Services et Autorisations' which were intended to be official messages. There were many abuses and numerous messages which were so sent were personal message from officials with access to the service. Dagron himself sent many messages on behalf of others; these can be recognized by the real sender's name being followed by that of Dagron.

"The success of the pigeon post. did not pass unnoticed by the military forces of the European powers and in the years that followed the Franco-Prussian War pigeon sections were established in their armies. The advent of wireless communication led to a diminution of their employment although in certain particular applications pigeons provided the only method of communication. But never again were pigeons called upon to perform such a great public service as that which they had maintained during the seige of Paris."

[Dagron died in Paris on 13th June 1900 at the age of 81.]

Source: The Pigeon Post into Paris 1870-1871 by John Douglas Hayhurst
Published by the author at 65, Ford Bridge Road, Ashford Middlesex 1970
Dewey: 383.144 H331p University of Texas Library

THE PIGEON POST AND THE BALLOON POST

From Marcus J Ranum

“The use of homing pigeons to carry messages is as old as Solomon, and the ancient Greeks, to whom the art of training birds came probably from the Persians, conveyed the names of Olympic victors to their various cities by this means. Before the electric telegraph this method of communication had a considerable vogue amongst stockbrokers and financiers.

“The Dutch government established a civil and military pigeon system in Java and Sumatra early in the 19th century, the birds being obtained from Bagdad.

“Details of the emplyment of pigeons in the siege of Paris in 1870-71 will be found in the article Post and Postal Service: France. This led to a revival in the training of pigeons for military purposes. Numerous private societies were established for keeping pigeons of this class in all important European countries; and, in time, various governments established systems of communication for military purposes by pigeon post.

“When the possibility of using the birds between military fortresses had been thoroughly tested attention was turned to their use for naval purposes, to send messages between coast stations and ships at sea. They are also found of great use by news agencies and private individuals. Governments have in several countries established lofts of their own. Laws have been passed

making the destruction of such pigeons a serious offence; premiums to stimulate efficiency have been offered to private societies, and rewards given for destruction of birds of prey.

“Pigeons have been used by newspapers to report yacht races, and some yachts have actually been fitted with lofts. It has also been found of great importance to establish registration of all birds. [mjr: bird escrow? Clipper birds?] “In order to hinder the efficiency of the systems of foreign countries, difficulties have been placed in the way of the importation of birds for training, and in a few cases falcons have been specially trained to interrupt the service in war-time, the Germans having set the example by deploying hawks against the Paris pigeons in 1870-71.

“No satisfactory method of protecting the weaker birds seems to have been evolved, though the Chinese formerly provided their birds with whistles and bells to scare away birds of prey.

“In view of the development of wireless telegraphy, the modern tendency is to consider fortress warfare as the only sphere in which pigeons can be expected to render really valuable services. Consequently, the British Admiralty has discontinued its pigeon service, which had attained a high standard of efficiency, and other powers will no doubt follow the example. Nevertheless, large numbers of the birds are, and will presumably continue to be, kept at the great inland fortresses of France, Germany, and Russia. [POST AND POSTAL SERVICE: FRANCE] “The

ingenuity of the French postal authorities was severely tried by the exigencies of the German War of 1870-1. The first contrivance was to organize a pigeon service carrying microscopic despatches prepared by the aid of photographic appliances. The number of postal pigeons employed was 363 if which number 57 returned with despatches.

“During the height of the siege the English postal authorities received letters for transmission by pigeon post into Paris by way of Tours subject to the regulation that no information concerning the war was given, that the number of words did not exceed twenty, that the letters were delivered open, at 5d a word, with a registration fee of 6d prepaid as postage. At this rate the postage of the 200 letters on each folio was L40, that on the eighteen pellicles of sixteen folios each, carried by one pigeon, L11,520. Each despatch was repeated until its arrival had been acknowledged by balloon post; consequently many were sent off twenty and sometimes more than thirty times.

“The second step was to establish a regular system of postal balloons, fifty one being employed for letter service and six for telegraphic service. To M. Durnouf belongs much of the honour of making the balloon service successful. On the basis of experiments carried out by him a decree of the 26th of September 1870 regulated the new postal system. Out of sixty-four several ascents, each costing on the average L200, fifty-seven achieved their purpose, notwithstanding the building by Krupp of twenty guns, supplied with telescopic apparatus, for the

destruction of the postal balloons. Only five were captured, and two others lost at sea.

“The aggregate weight of the letters and newspapers thus aerially mailed by the French post office amounted to about eight tons and a half, including upwards of 3,000,000 letters; and besides the aeronauts, ninety-five passengers were conveyed.

“The heroism displayed by the French balloon postmen was equalled by that of many of the ordinary letter carriers in the conveyance of letters through the catacombs and quarries of Paris and its suburbs, and, under various disguises, often through the midst of the Prussian army. Several lost their lives in the discharge of their duty, in some cases saving their dispatches by the sacrifice.”

Source: Encyclopedia Britannica 11th edition

EVEN MORE ABOUT THE PIGEON POST

[Gerard Holzmann is from the Computing Science Research Center at AT&T Bell Labs. Bjorn Pehrson is with the Department of TeleInformatics at the Royal Institute of Technology in Sweden. This book is obviously a labor of love involving years of tireless efforts in the archives, and it's hard to imagine a better book being written about the history and the technical details of optical telegraphy. Truly a must-have item for any serious dead media researcher; the book is worth the price for the meticulous bibliography alone. As a bonus, the entire first chapter is about long-distance media that are even older and dead than optical telegraphy—including pigeon post.]

"It is said that the outcomes of the Olympic Games in ancient Greece, around 776 BC, were sent by pigeons. But even in those days this must have been old news. As noted in a book by David Woods [A history of tactical communications techniques, New York, Arno Press, reprint 1974]: "in the days of the Pharaohs the Egyptians announced the arrival of important visitors by releasing pigeons from incoming ships. This may have been common as early as 2900 BC.'

"The writer Harry Neal noted another ingenious use of pigeons from a few centuries later. He stated that King Sargon of Akkad, who lived ca. 2350 BC in Mesopotamia, had each of his messengers carry a homing pigeon. If the messenger was attacked en route, he released the pigeon. The return of the pigeon to the palace was taken as a warning that the original message had been 'lost,' and

that a new messenger should be sent, presumably by another route.

“Homing pigeons were also used by the Romans, around the fourth century AD. In 1641, John Wilkins referred to it as follows [”Mercury, or the secret and swift messenger, showing how a Man may with Privacy and Speed communicate his thoughts to a Friend” 1641, republished in Foundations in Semiotics Vol 6 1984] ‘Lypsius relates out of Varro, that it was usual for the Roman magistrates when they went unto the theatre, or other such public meetings, whence they could not return at pleasure, to carry a pigeon with them; that if any unexpected business should happen, they might thereby give warning to their friends or families at home.’

“The system was still in use some eight centuries later. Woods reports that in the twelfth century Genghis Khan (1167-1227) used a pigeon relay system to communicate messages across Asia and much of Europe.

“Another seven centuries later, in 1918, the British Air Force kept over 20,000 homing pigeons, handled by 380 pigeoneers. The system was organized by Colonel A. H. Osman. Woods quotes him as follows: ‘A small balloon was constructed with a metal [release-] band worked by clockwork. To this band was attached a small basket containing a single pigeon with a message holder on its leg, and to each basket was attached a small parachute. The balloons were liberated in favourable conditions of wind and at intervals automatically released from the special ring a single basket with a bird. These were

dropped into Belgian and French territory when occupied by the Germans, and in French and Flemish a request was made to the finder to supply intelligence information that was needed, at the same time giving the finder hopefulness and cheer as to the ultimate success of the allies' cause and promising reward for the information supplied.

"Woods adds a sobering note: 'The Germans tried to stop this activity by replacing captured pigeons with their own birds, and then arresting and shooting anyone foolish enough to sign his name and address to the note.'

"With this much history, it is not surprising that pigeons were still used in 1981 by a group of engineers at a Lockheed plant in Sunnyvale, California, to transmit negatives of drawings to a test station 40 km away. As Jon Bentley described it: [More Programming Pearls, Confessions of a Coder, Addison-Wesley 1988] The pigeon took just half the time and less than one percent of the dollar amount of the car (the birds worked, literally, for pigeon feed). Over a 16-month period the pigeons transmitted hundreds of rolls of film and lost only two."

Source: The Early History of Data Networks by Gerard J. Holzmann and Bjorn Pehrson, IEEE Computer Society Press, 1995 TK 5115 H67 1994 ISBN 0-8186-6782-6

VIDSCAN

From Matthew Porter

VidScan The only information I could find about this (Dead? Stillborn?) medium is from a two-page advertisement in the first issue of MONDO 2000 magazine. (This was the Fall 1989 issue. My copy of the issue says #7 on the cover, since it followed Issue #6 of its predecessor publication, REALITY HACKERS. The cover shows a goggle-eyed Todd Rundgren reading REALITY HACKERS #6.)

The first page of the two-page VidScan ad describes the new medium. VidScan was to have been a paperless magazine distributed over regular broadcast or cable TV signals. The magazine would be broadcast in the form of a 30-second commercial spot, which the reader would record on a VCR and then read by viewing the tape on freeze-frame; each frame of the 30-second spot would be a "page" of the magazine. The ad states that "We now have the capability to freeze video frames without 'jitter.' Jitter-free imaging is the necessary prerequisite for this convergent technology.

"New computer animation software and sophisticated 24-bit color graphics software combined with new 16 and 24-bit color NTSC frame-buffer cards open up the capacity to transmit sophisticated still images over broadcast and cable television channels." (The 30-second spots may have been interesting to watch at full speed, too. Something like Max Headroom "blipverts"?)

The second page of the two-page ad is a questionnaire about the prospective VidScan reader's access to TV and computer hardware, as well as questions about local broadcast and cable TV outlets (probably for the purpose of finding carriers for the 30-second VidScan spots). The ad states that the information gathered through these questionnaires would be used "in convincing advertisers (a notoriously monolithic lot) that they should buy a frame or two."

The ad does not say anything about the content of the VidScan paperless magazine, but given the ad's placement in MONDO 2000 and its hype of the technology involved, I expect it was to have been aimed at a tech-head audience.

The ad promises that anyone who sends in the questionnaire and a SASE would receive a subscription to the newsletter INSIDE VIDSCAN, including the table of contents for the VidScan magazine and a transmission schedule. The address was (is?): Future Media—Inside VidScan PO Box 11632 Berkeley, CA 94701

I never did send in my questionnaire, and I never heard anything about VidScan after this advertisement. I don't know if an issue of the paperless magazine was ever broadcast. Certainly today VidScan is an idea whose time has gone—paperless magazines are here, thanks to the internet and the World Wide Web, with far greater capabilities than flipping frame-by-frame through a videotape. But the idea was an interesting one in 1989.

It would have been a great to see the infrastructure of a stagnant medium—television—give birth to some strange

new mode of publishing.

Source Mondo 2000 Fall 1989 issue

BOOTLEG CONCERT RECORDINGS OF THE 19TH CENTURY, PAPIER-MACHE RECORDS

From Dan Howland

Pirate tactics (side 2, band 2) (Original source: Peter Dawson, “Fifty Years of Song”, Hutchinson & Co Ltd)

“In order to get popular songs recorded by artists who possessed recording voices, it was necessary to carry out a fair amount of pirate tactics. Songs had to be taken down in some way or other as they were being sung, either at a music hall or theater. A miniature recording phonograph was taken into the theater or hall to record the melody. A stenographer took down the words verbatim. It was sometimes necessary to make three or four visits before a satisfactory result was obtained. From these records and the stenographer’s notes an orchestration was made, and an artist selected to make the record.” [This “miniature recording phonograph” must have been small enough to be hidden on the pirate’s person. How small were the cylinders and the horn? Did they fit, say, in a top hat? Note that these live bootleg recordings were not released, but were used to re-create the performance by someone other than the original artist. It was difficult enough to make a decent recording under the ideal conditions of a recording studio, let alone on remote.] Neophone records (side 2, band 9) (Original source: Joe Batten, “Joe Batten’s Book”, Barrie & Rockliffe

Ltd)

“Neophone records were made of papier-mache, and were advertised as ‘Warranted Indestructible’. To prove this, Dr. McKaylis (sic?), the inventor of the Neophone Indestructible Record, would assemble a group of potential buyers at the top of a four floor building, then standing at the corner of Worship Street and the City Road, and demonstrate by throwing a record out of the open window into the street below. A boy then dashed down the stairs and retrieved the record. This was then played, and as it emitted its normal noises, this was clear evidence that it was none the worse for its rough treatment. But, although customers did not buy records to drop on the heads of unsuspecting pedestrians, yet all might have gone well had not the records, when displayed in shop windows, curled up in the sun and assumed pathetic, surrealistic shapes.” [Not only is it dead media, but it curled up and died.] Talking Tapes, the records of the future (side 2, band 19)

“Will the talking machine record of the future be made on a tape? A number of inquirers are asking themselves and others that question now. In Poulsen’s Telegraphone the sounds are recorded on and reproduced on a metal strip. Could a talking machine record be made in the same way?” The Multiplex Grand Graphophone (side 2, band 23)

“The Multiplex Grand Graphophone built for the Paris Exposition of 1900 monopolizes a large share of public attention. This is the largest talking machine ever

constructed. The cylinder is of giant size, and there are three recordings on each cylinder. There are three horns which amplify the sound, which comes simultaneously from the three reproducers tracking 'round the same cylinder. The machine is constructed so that the music may be divided into parts; one horn playing bass or contralto, the second, tenor, and the third, a piano or orchestral accompaniment." The Photophone (side 4, band 15) "Professor A. O. Rankin (sic?) foreshadows a new sort of gramophone which will be known as the Photophone. It is really an optical gramophone in which a beam of light is photographed onto moving film. The fluctuations of this beam of light give a record of sound, so that the film actually records the words or song transmitted, which can be produced at leisure by simply passing the film at the same speed between a source of light and a selenium cell connected up with a battery and a telephone receiver." [Some of this documentary LP set consists of period gramophone and phonograph recordings from the 1890's to the 1920's; the items transcribed here were read by actors when the documentary was made in 1970. Some of these items have specific citations in the liner notes, while others are listed under the following blanket explanation:]

"The majority of the spoken items on this set of records have been taken from contemporary newspapers and journals, including 'Scientific American,' 'The Times,' 'Frank Leslie's Illustrated Newspaper.' 'Punch,' 'New York World,' 'The Talking Machine News,' 'The Phonogram,' 'The Sound Wave,' 'Musical Opinion,' 'The Daily

Telegraph,' 'The Daily Mail,' 'The Standard' and 'The Phonorecord.'"

Source The Wonder of the Age, Mr. Edison's New Talking Phonograph, a boxed set of two 12 LP records with separate sheet of notes, Argo, ZPR-122-3, (P) 1970, Great Britain

KIDS' DEAD MEDIA 1929: THE MIRRORSCOPE, THE VISTA CHROMOSCOPE, THE ROLMONICA, THE CHROMATIC ROLMONICA

From Stefan Jones

If you have ever read a comic book, then you almost certainly know about the Johnson Smith Company. They're the folks that have been placing jam-packed advertisements in the backs of DC and Marvel comics since the dawn of time. You know: the ones that push whoopee cushions, fake dog crap, ventriloquism kits and glow-in-the-dark yo- yos. In addition to supplying generations of class clowns with stink bombs and squirting daisy buttoneers, Johnson Smith's mail order business offers more respectable educational and recreational items. I recently reread my reprint edition of the 1929 Johnson Smith catalog—and a genuine copy of the 1947 catalog that my brother picked off a garbage heap—with the intention of finding some examples of Dead Media. I was somewhat disappointed, particularly in the 1947 catalog, but I did find some items of interest in the 1929 reprint edition. Note: I'd love to supply page numbers, but there are none. The reprint is at least 300 pages long, with no index or table or contents. I am still finding new things after owning the thing for over a decade. Many of the media we are familiar with today were already well established by 1929.

The catalog offers: Two portable, spring-driven

phonographs. Nothing radical here. If it weren't for the crank, one of them would look like the Beany & Cecil portable my sister and I got when we were toddlers. Two movie projectors ("Be a Movie King. Oh Boy! Some Sport! Surprise the bunch—have a barrel o' fun!" Keystone Moviegraph, No. 6575, $5.75; Keystone Rewind Model Moving Picture Machine, No. 6198, $12.50.). These had electrical lamps, but were hand-cranked. The kits came with a free roll of film (Johnson Smith's choice, apparently), tickets, badges and arm bands for the crew, and a "U-Draw- Em" slide for announcements.

Both models could also be used to project "lantern slides." Johnson Smith sold "Extra Reels of Movie Film" for $5.00. These were *generic* pieces of motion picture entertainment; the buyer got what the folks in Racine had on hand. (Note that if these potluck offerings were on nitrate stock, an unlucky junior theatre operator would be getting bombs even if the features on the reels happened to be good.) Interestingly, the projectors—and all other electrical devices in the catalog—had power cords that ended in screw-type plugs shaped like the base of a light bulb. Two opaque projectors. ("The Mirrorscope or Projecting Lantern: The MIRRORSCOPE is a great improvement upon magic lanterns because you have an UNLIMITED SUPPLY OF PICTURES free of cost. Post-Cards, photographs, engravings from illustrated papers and, in fact, any opaque object, such as moving works of a watch, living insects, and so on, can be projected upon the screen in exactly the same manner as the transparent slides in a magic lantern.") The cheaper model (No. 6011,

$5.00) had one “carbon electric” bulb; the fancier two. Stereoscope slides were still around.

A two-page spread invited browsers to “See the Wonders of the World Through THE VISTA CHROMOSCOPE. Magnified Life-Like Views and Scenes of America, Europe, The Holy Land, The World War, etc. Interesting! Instructive! [DRUM ROLL PLEASE!] Educational!” Despite the hype, this appears to be a standard stereoscope. Its chief advantage was that it was cheap

(No. 6608, Vista Chromoscope (without the Views), $1.50)
Stereo pairs, also offered in the catalog, cost $.35 for a set of 25. Thirty-nine sets are offered. They range from #48101, Historical Spots of America, to #48139, Big Cities of Europe. Some of the sets caused me to raise an eyebrow

(#48108, “A Trip to the Philippines with Uncle Sam’s Soldier Boys,” #48121, “French Cook and Comic Lover Series. No. 1”)
Hmmm.

Near the beginning of the catalog is a small section devoted to musical instruments. Most of these are variants of the kazoo and harmonica. The capper: two nifty items that qualify as genuine dead media: The Rolmonica and The Chromatic Rolmonica.

(No. 4470, THE ROLMONICA, Complete with 1 Roll, $1.50)

The engraving shows a flat box, opened clamshell style, with a projecting mouthpiece and two metal crank

handles. A sliver of a roll is visible within; it looks quite a lot like a small player piano roll.

“ROLMONICA The Pocket Player Piano Mouth Organ that Plays with a Music Roll ANYONE CAN PLAY IT WITHOUT PRACTICE A Wide Selection of Rolls to Choose From A VERITABLE POCKET SIZE JAZZ-BAND!”

“Rolmonica is an automatic harmonica, that plays a music roll just like a player piano. It is a whole brass band all in one—the biggest sensation of the musical world in the last few years.” [etc.]

“The Rolmonica has a very simple mechanism, yet so strongly built that it may be entrusted without hesitation to children. The volume can be regulated by the user. When sounding at is [sic] full power reproducing a band performance, it can be almost deafening in the strength of its tones, yet it will deliver with perfect clearness a pianissimo passage in an instrumental solo.” [I imagine parents regretting the Rolmonica’s sturdy construction after a few nights of “Turkey in the Straw” played at “deafening” power.]

Over a hundred rolls are offered at $.10 a piece. They range from the familiar (“Swanee River,” “Yankee Doodle,”) to the obscure (“It’s Unanimous Now,” “True Blue Lou,” “Chant of the Jungle”). It’s possible that a *lot* more than the hundred or so titles shown in the reprint version were available; the numbering scheme runs from 201 to 263 on one page and 477 to 536 on the second page. A significant number of the popular songs of the day may have been transcribed on these things.

(No. 4471, THE NEW CHROMATIC 16-NOTE ROLMONICA, $2.50)

The first part of the copy, verbatim: “The tremendous success and popularity of the Rolmonica has induced the manufacturers to bring out this new 16- note CHROMATIC ROLMONICA. This new model is larger than the $1.50 12-note model described on the following page and is ENTIRELY CHROMATIC. [Do not confuse this with cheap imitations that only have a thin *veneer* of chromatic!] “This enables you to get a larger range of music, to play in various keys, and to get the beautiful tremolo effects as produced on the regular harmonica, which is impossible with the lower-priced Rolmonica. The CHROMATIC ROLMONICA is a bigger and better Rolmonica, still built to conveniently slip into the pocket upon the same happy principle of the player-harmonica operating with a music roll, but with certain additions and refinements of its tone varieties and combinations, so that now in the CHROMATIC ROLMONICA you have an instrument that enables you to play your favorite composition, either classical or jazz, with all the trimmings.” [If you can read that last sentence of copy out loud without taking a breath, YOU may have the lung capacity required to take full advantage of the CHROMATIC ROLMONICA!]

Only sixty rolls are available for the Chromatic Rolmonica; they are apparently incompatible with those made for the lesser model (“Do not confuse these with the Rolls for the ordinary Rolmonica.”) Judging from the trademarked Rolmonica logo proudly displayed on the

top of the page, these were gadgets with name recognition.

The Rolmonica company also had heavy hitters pitching product for them: In one of the very few photographs in the entire catalog, five of the early Little Rascals are seen blowing and cranking away.

Their ring-eyed dog, Pete, is seen cowering at the bottom of the picture, a paw over one ear.

Source: The Whole Fun Catalogue of 1929, Chelsea House, New York, 1979 (ISBN 0-87754-079-9)

THE SPEAKING PICTURE BOOK; SQUEEZE TOYS THAT ‘SPEAK’

From Bill Wallace

“A most beautiful toy that demonstrates synthetic speech is the Speaking Picture Book, made in Germany in 1895. The mechanism, which produces nine different animal sounds, consists of seven bellows with complicated flute pipes with stops reminiscent of the Kratzenstein pipes. When the cover is opened, one reads a verse about a cow, sees a picture of it, and follows an arrow pointing to a string. When the string is pulled, a realistic moo sounds out.

“This Victorian toy, primitive though it is, is probably still the best synthetic speech toy to reach the market, and was certainly the predecessor of the Vocoder and of modern electronic voice synthesizers.”

There is also some discussion of toy animals that emit accurate sounds when the toy is turned or squeezed—crude examples can still be found today, but the variety and accuracy of older specimens probably represent a lost art.

My favorite toy of this kind is a 1940s piggy bank designed for war-bond savings, bright yellow and painted with Hitler’s face. Whenever a coin was deposited, der Fuhrer squealed.

Source Mechanical Toys by Athelstan and Kathleen Spilhaus, Random House, 1989, $7.99 ISBN 0-517-0560-4

REFRIGERATOR-MOUNTED TALKING NOTE PAD

From Trevor Blake

The Talking Note Pad is around three inches high, one deep and eight long. It is constructed of white plastic, with a small clear plastic hinged compartment, one large red Message Waiting button, one small gray on/off button, one L-shaped Record slider, a volume knob, a microphone and a speaker. It was powered by four AA batteries.

The Record slider causes the Message Waiting button to pop out. The Talking Note Pad is labeled as follows:

PATENTS PENDING
MAVERICK IND. INC.
UNION NJ 07083
USA TN-100 SERIES
MADE IN TAIWAN.

Magnets were apparently mounted on the back so the Talking Note Pad could be affixed to refrigerator doors. The most significant feature of the Talking Note Pad is the 20 Second Tape beneath the clear plastic Delorian- like hinged door. The tape is approximately one inch by one inch by ¼ inch.

The ribbon inside is very close to if not identical in width to a standard cassette ribbon, and is wound in a central-feed loop like an 8-Track or radio station cart.

The Tape is removable, and labeled as follows:

20 SECOND TAPE

#88020 Made in Taiwan
MAVERICK INDUSTRIES INC.
UNION NJ 07083 USA

It seems unlikely that this 20 Second Tape component was used in many other recording/playback devices, if any at all.

THE EXPERIENTIAL TYPEWRITER

From Larry Schroeder

[Following excerpts outline the article. I give the terminal summary in full, and move it to the beginning in lieu of an abstract. Breaks not indicated.]

Summary A communication device - the Experiential Typewriter - is described, consisting of a twenty-key manual keyboard linked to a moving pen-recorder. Subjects are pretrained in a code of experiential categories. The recording paper then gives a moment-to-moment record of the flow of experience.

The uses of such a device are outlined in

1) recording the flow of experience
2) session programming
3) ESP research
4) correlation of experiential with physiological recordings,
5) developing languages of consciousness.

Different codes should be developed for different kinds of experiential research. A code based on “The Psychedelic Experience” and an illustrative experiment using a single subject are presented.

The communicating device known as the Experiential Typewriter was designed by Dr. Ogden Lindsey of the Harvard Medical School and William Getzinger, electronic engineer with MIT’s Lincoln Laboratory.

Certain requirements had to be met: the device should

allow for touch tying of messages by subjects lying or sitting in darkened rooms. The keyboards had to be separate and the keys had to be engineered to fit the structure of the hand and fingers. The recording had to be set up so that a separate finger- movement had to be made to register an experience.

It was anticipated that during high points of sessions subjects would lose contact with the instruments and might hold down a key for long periods.

To avoid this eventuality, each time a key is depressed a mark is made on the polygraph, but if the key is held down no further impression is recorded until the key is released.

Mr. Getzinger's description of the four major parts of the typewriter is as follows:

1. Twenty-pen Recorder a. The registration of reactions is accomplished by an Esterline-Angus Operation Recorder with internal wiring modified so that operation with pulsed D.C. is possible.
2. The Console d. The phone recept connects with a similar recept on the left-hand keyboard to allow spoken communication between keyboard location and console location. e. The round button on the sloping panel energizes a lamp in a similar button on the left-hand keyboard, and vice versa, thus allowing simple visual signaling between keyboard and console.
3. Connecting Cables
4. The Keyboards

The Keyboard of the Experiential Typewriter

The usefulness of the Experiential Typewriter depends on the meaningfulness of the experiential language to be coded.

At this point, ad hoc languages should be set up for each session: for each raid into the uncharted.

We divided the two ten-unit boards of the typewriter into:

Game-concepts from conventional language: left-hand keys.
Hallucinatory, revelatory, and transcendental experiences: right-hand keys.

Experiential Modes Based on Self Games

1. Bodily sensations (e.g., pain, itch, tickle)
2. Moods and emotional states
3. Interpersonal felings towards others
4. Cognitive modes of perception Experiential Modes Based on Cultural Games
5. Awareness in terms of body-maintenance games, including sex
6. Awareness in terms of social-cultural games, including family
7. Awareness in terms of aesthetic-recreational games
8. Awareness in terms of intellectual-scientific games
9. Awareness in terms of religious-philosophic games
The Negative Experience Key The right thumb key (of the left hand) is a master key which can modify any other key to indicate a negative experience.
10. Negative modification or interpretation of experience

[The right-hand keys are reserved for the, uh, far-out stuff.] Transcendental and Transitional-Experiential Modes [Discussion includes “DPIs,” direct process images, “LFIs,” learned form images, and “trans-language” based on the Tibetan Book of the Dead.]

The Two Basic Transcendental States 20. Awareness of physical energy processes, phenomenologically labeled “void,” “white light,” “pure energy,” “vibratons,” etc.

19. Biological processes. Phenomenologically the subject experiences the life energy directly and without the imposition of any conceptual LFI. The Four Basic Transitional States
12. Immediate sensory awareness (without cognitive contact)
13. Revelation
17. Ecstacy-unity-liberation
18. Hallucinations
11. Internal modifier of awareness [used to signify an internal (eyes-closed) awareness].

Example of Experiment Using the Experiential Typewriter

[This used a simplified 10-key typewriter, a lad of 24, and 250 gamma of LSD. Results are summarized and comments follow.]

The subject reported drifting off into areas of reduced awareness during [the last part of the test]. He was apparently no longer aware of the room, the E.T. and the task.

Source: Timothy Leary. HIGH PRIEST. College Notes and Texts, Inc., New American Library, NYC, 1968. Library of Congress 68-9031.

Timothy Leary. The Experiential Typewriter. Psychedelic Review #7, pp 70-85. University Books, New Hyde Park, NY, 1966.

KIDS' DEAD MEDIA 1937: THE AUTO-MAGIC PICTURE GUN

From Charlie Crouch

Auto-Magic Picture Gun Manufactured by Stephens Products Co., New York City, ©1937, patent pending.

This device is a hand-held, miniature filmstrip projector made to resemble a small automatic pistol.

It was used to project still pictures from an internal 16mm film loop onto a screen. Each film loop contained 28 frames, and was advanced using a ratchet film advance mechanism, operated by the trigger.

The Picture Gun used a small bulb and two AA batteries to provide the projection light. The company's literature promotes the Picture Gun for general entertainment and education, but it was also used for business purposes.

The one film loop I have was produced for Shell Oil Company. Titled "The Return of Jimmy Whitaker," it concerned a gas station attendant who gives instructions on pump-side selling and merchandising. [My uncle ran a GMC truck dealership.]

An accompanying flyer pictures a line of accessories including:

1. Auto-Magic Film Rolls in sets of 3 (25c per set). Ten sets, or thirty films, are listed in the flyer with subjects ranging from nursery rhymes, to ships of the world, to Cortez in Mexico. Some of the films are available in Spanish. All films are promoted as made from non-

inflammable safety film.
2. An Auto-Magic Theater to show pictures in realistic stage surroundings. (25c)
3. A Flash Light Attachment to connect the gun to larger external batteries, either 2-cell or 3-cell models. (25c)
4. Spare lamps available for either 2.5 or 3.8 volts (10c)

THE ‘WRITING TELEGRAPH;’ GRAY’S TELAUTOGRAPH; THE MILITARY TELAUTOGRAPH; THE TELEWRITER; THE TELESCRIBER

From Bruce Sterling

[Mr Coe’s lovingly detailed, too-brief work is soaked with heartfelt nostalgia for the world of dead telegraphy.]

“It was not until 1886 that inventors became interested in the idea of transmitting handwriting by wire. The first machine, the ‘writing telegraph,’ actually saw some limited commercial use. The writing was received on a moving paper tape, and since there was no pen-lifting mechanism on the receiver, all of the individual letters were joined by a continuous line on the tape.

“Telegraphic writing soon attracted the attention of Elisha Gray, the man who lost the telephone patent to Bell. Gray developed a practical machine, which he patented and christened the “telautograph.” Gray’s machine had a pen-lifting mechanism, and the received message was written in conventional format on a wide sheet of paper.

“A company called the Gray National Telautograph Co. was chartered in 1888 and purchased the patent rights to the machine from Elisha Gray. The telegraphic writing created a sensation at the 1893 World’s Fair in Chicago. An improved machine in 1895 staged an impressive demonstration in transmitting handwriting 431 miles

from Cleveland to Chicago.

“In 1900, Foster Ritchie, a former Gray assistant, perfected a new design that represented a great improvement over the original. This was the machine that was marketed for the next 30 years. At this time, telautographs were normally short-range instruments. They had technical limitations that prevented reliable performance at distances much over five miles.

“Even with its limitations, the telautograph managed to find a sphere of useful applications and held its share of the market in competition with the rapidly expanding telegraph and telephone industry. It remained a device that was little known to the general public since the applications were mostly in large metropolitan areas. A typical application was in the old Dearborn Street railroad station in Chicago where a telautograph in the main concourse kept baggage and mail handlers informed of train movements.

“Perhaps the ultimate triumph of the telautograph came in the late 1890s when it was selected by the U.S. Army for fire-control communication in the coastal defense system.

“First tested at Fort Wadsworth, New York, the system was eventually installed in the most important coastal forts of both Atlantic and Pacific coasts. The nineteenth-century equivalent of Star Wars, the coastal defense guns were the wonder of the age. Before the days of air power and submarines, the only defenses needed against enemy attack were the coastal artillery batteries placed to

protect important seaports. As typified by the guns at Sandy Hook and Fort Hancock, New Jersey, that protected New York harbor, the installations utilized the highest technology then known and were shrouded in extreme secrecy. In an 1898 article, the Scientific American lamented that no one from the media had been permitted to inspect the Sandy Hook installations since 1895.

“The guns were aimed on the basis of data received from observers stationed some distance away, and a reliable method was needed to transmit the data. Telephone or telegraph was not practical due to the deafening noise in the gun pits when the battery was firing. Special military models of the telautograph were designed to enhance ruggedness and reliability. The receiver units at the guns were enclosed in heavy brass, waterproof cases suspended on shockproof mounts. A plate- glass window enabled the message to be read without opening the case, and a small electric bulb illuminated the paper for night reading. None of the coastal guns was ever fired at an enemy, although there were active concerns when tension mounted with Spain in 1898.

“Redesign of the telautograph instrument that took place between 1940 and 1960 incorporated the latest developments in electronics. The modern versions are not limited in range and will operate on any channels normally used for telecommunication, including microwave and satellite facilities. Large numbers of the telewriters, or telescribers, as they are now called, are still in use throughout the world. Hospitals, hotels and factories find them ideal for quick, errorless interchange

of written information. The current machines are a far cry from the first models, yet they still do the same thing—transmitting a written message by wire. Officials of the Telautograph Corp. say that facsimile machines have now taken over most of the needs for communication that were first filled by the ‘writing telegraph’ of 1888.”

Source The Telegraph: A History of Morse’s Invention and its Predecessors in the United States by Lewis Coe TK 5115 C54 1993 McFarland and Company, Publishers ISBN 0-89950-736-0

THE HELIOGRAPH AND THE HELIOTROPE

From Bruce Sterling

“One of the most successful and widely used visual signalling systems, the heliograph, did not appear until 1865, long after most visual systems were considered obsolete. The factor that established the heliograph was the existence of the Morse alphabet of dots and dashes, widely used for land telegraph and submarine cable operations. The ancients understood the principles of reflected sunlight, but no one ever got around to devising a code for the letters of the alphabet. Signal codes of some type had existed long before Morse, but none of them ever reached a level of universal acceptance, and they were mostly forgotten by the time Morse published his code.

“Early in the nineteenth century, Gauss, a German mathematician, had discovered the tremendous potential of the sun’s rays reflected from a plane mirror. Through experiments he was able to demonstrate that even a small mirror one inch square could send flashes that could be seen over a distance of seven miles. The silvered glass mirror, invented in 1840 by Justin Liebeg, paved the way for the heliograph.

“Like the American army, the British did not have a separate Signal Corps organization until the 1860s. The first British signal school was established at Chatham in 1865. Shortly after, a young officer named Henry Christopher Mance (1840-1926) became interested in

signalling with the sun. Mance, later to be knighted for his achievements in engineering, knew of the use of mirror instruments called heliotropes in the triangulation of India. The Indian survey, one of the great engineering projects of the nineteenth century, required accurate location of high mountain peaks to serve as control points fot the ground survey. Bright fire pots were used at night and the heliotropes by day. It is not know whether any Morse code signalling was done by heliotrope, but it is certain that prearranged signals were exchanged.

“The simple and effective instrument that Mance invented was to be an important part of military communications for the next 40 years. Limited to use in sunlight, the heliograph became the most efficient visual signalling device ever known. In preradio days it was often the only means of communication that could span ranges of up to 100 miles with a lightweight portable instrument.

“The Mance instrument employed tripod-mounted mirrors, with one mirror linked to a key mechanism. The key tilted the mirror enough to turn the flash on and off at the distant station in accordance with the dots and dashes of the Morse code. Range was line-of-sight, with atmospheric conditions establishing the upper limit. The British army found the Mance heliograph ideally suited to field operations in India and Afghanistan. It was used to transmit daily reports and orders to and from the remote mountain posts and for tactical communications when troops were in the field. (One hundred ten years later, TV pictures were to show Afghan guerilla units using British pattern heliographs in their conflict with the Russians.)

The present Afghans have found the helio useful for the same reason as their British enemies of old; namely, a simple uncomplicated mechanism that requires no batteries or complex maintenance.”

Source The Telegraph: A History of Morse’s Invention and its Predecessors in the United States by Lewis Coe TK 5115 C54 1993 McFarland and Company, Publishers ISBN 0-89950-736-0

THE HELIOGRAPH

From Bruce Sterling

“In 1877, Chief Signal Officer Albert J. Meyer of the U. S. Army obtained some heliograph instruments from the British for experimental purposes. Meyer sent the instruments to Gen. Nelson A. Miles, who was assuming command of the Yellowstone Department in Montana. Miles became an enthusiastic users of the heliograph. When he was transferred to Arizona in 1886 to take command of the Apache Indian campaign, he saw it as the ideal place for heliograph operations. There were few roads and telegraph lines, and widely separated army commands were often at a disadvantage through lack of communications. Miles established a heliograph communications network throughout a large part of Arizona and New Mexico, taking advantage of strategically located mountain peaks for relay stations.

“The annual report of the secretary of war for the year 1895 contains the chief signal officer’s report on the Glassford expedition that established the world’s heliograph distance record. It reads as follows:

“In developing the more important electrical communication devices of the Signal Corps, other methods of signalling that are absolutely essential adjuncts have received due attention. Heliography is perhaps the most important of these methods to a rapidly moving army, operating over a country where the use of electrical instruments is inadvisable or temporarily impracticable. ‘The former world’s record for long range

heliographing was surpassed 58 miles during the year though the zealous and intelligent exertions of Capt. W. A. Glassford, Signal Corps, and a detachment of signal sergeants by the interoperation of stations on Mount Ellen, Utah, and Mount Uncompahgre, Colorado, 183 miles apart. This unprecedented feat of long distance intercommunication by visual signals was made on Sept 17, 1894, with Signal Corps heliographs carrying mirrors only 8 inches square. It was accomplished only after much discomfort and some suffering, due to severe storms om the mountains and to the rarefied air to which the parties were subjected for ten days. The persistence, skill and ingenuity of Captain Glassford and of the signal sergeants engaged in this result are highly commendable.'.

"Remnants of some of the old heliograph stations are still found on the mountaintops today. At Fort Bowie, Arizona, ceremonial demonstrations of the heliograph are sometimes staged on Bowie Peak, an important relay point during the Indian campaign. The American army at first used the Mance pattern instruments from England. Later the United States had its own version that employed a leaf shutter to interrupt the light beam for keying instead of the mirror-tilting method used by Mance. The heliograph was used in the Spanish-American war in 1898. By the time of World War 1, wireless and field telephones had pretty well taken over the army's communications, but heliograph instruments were kept on hand until the mid 1920s. Some were kept at Corregidor in the Philippines for backup communication with the mainland in case of radio failure.

“The last great use of the heliograph was during the Boer War in South Africa, where both sides used it. The terrain and climate, as well as the nature of the campaign, made the heliograph the logical choice. For night communications, the British used some naval searchlights, brought inland on railroad cars, and equipped with leaf-type shutters for keying the beam of light into dots and dashes. In the early stages of the war, the British garrisons were besieged in Kimberly, Ladysmith, and Mafeking. With land telegraph lines cut off, the only contact with the outside world was via light-beam communication, helio by day, searchlight at night.

“In an effort to improve communications, five Marconi ‘mobile wireless units’ were sent out from England. Unfortunately, with wireless still in its infancy, these units were of little value. In the siege of Ladysmith, telegraph lines were cut off on November 2, 1899, and from then until the relieving army arrived on February 28, 1900, the heliograph was the only connecting link with the outside world. Cloudy days were tedious for the inhabitants of Ladysmith because no news could be received. One person recorded such a day in his diary, writing, ‘Heavy weather had settled upon us and had blinded the little winking reflector on Monte Cristo Hill.’

“As the relieving army, commanded by Sir Redvers Buller, approached the city, his signal officer, Capt John Cayzer, attempted to establish communication by helio. There were problems with Boer operators who intercepted the British flashes. When Cayzer finally reached a station claiming to be British, he devised a test. ‘Find Captain

Brooks of the Gordons,' he signalled. 'Ask him the name of Captain Cayzer's country place in Scotland.' Captain Brooks, when found, did not immediately grasp the purpose of the question and remarked, 'Well, I always thought Cayzer was an ass, but I didn't think he'd forget the name of his own home!'

"Canada was the last major army to keep the heliograph as an issue item. By the time the mirror instruments were retired in 1941, they were not much used for signalling. Still, the army hated to see them go. One officer said, 'They made damn fine shaving mirrors!'"

Source The Telegraph: A History of Morse's Invention and its Predecessors in the United States by Lewis Coe TK 5115 C54 1993 McFarland and Company, Publishers ISBN 0-89950-736-0

RUSSOLO'S INTONARUMORI

From Frank Davis

"Luigi Russolo, an Italian Futurist, lauded the modern era's beautiful machine clangor. A painter, not a musician, Russolo was nonetheless committed to being the Futurist movement's musical activist. His 1913 manifesto "The Art of Noises" rejected inherited preferences for harmony in favor of the dissonant masterpieces that serenade us everyday without our conscious awareness. Conventional pianos, violins, harps, and horns were inferior to 'the crashing down of metal shop blinds, slamming doors, the hubbub and shuffling of crowds, the variety of din from stations, railways, iron foundries, spinning mills, printing works, electric power stations, and underground railways.'"

"To realize his dream of a life when 'every factory will be transformed into an intoxicating orchestra of noises', Russolo created Intonarumori (Noise Intoners) - gangly speaker boxes that transmitted such chainsaw melodies as an internal combustion engine gurgling in ten whole-tones. He concocted four main noise families: the Exploder, the Crackler, the Buzzer, and the Scraper; the pitch and timbre of each were manipulated by a side lever."

[It is of note that Russolo's influence can be seen years later in not only the name of a once popular British sampling collective, The Art Of Noise, but also in the industrial movement of the 80's with such groups as Throbbing Gristle and Einsturzende Neubauten re-

discovering the “noise as music” principle.]

Source: ELEVATOR MUSIC by Joseph Lanza St. Martin’s Press 1994 ISBN 0-312-1-0540-1

THE AGFA GEVEART FAMILY CAMERA

From Adrian Bruch

In early 1981 Agfa Gevaert Australia released the "Family" camera. I think it was also released in Europe. This was a fixed-focus lens, modern design super 8mm film camera with easy to use controls (meaning a minimal opportunity for enthusiasts to fiddle and adjust anything).

The accompanying "Family" projector held a 25', 50', or 200' spool of colour film. The film was internally projected onto an acrylic screen (similar to a telecine screen) and had no capability to play sound.

The camera sold for under $400 Australian. It could shoot one still frame (snapshot) whenever the still button was pressed. Or it could shoot normal motion footage. The camera had a built-in hole puncher, which made a small dot on the sprocket.

When the dotted frame was projected on the Agfa "Family" player it would hold for 8 seconds, thus showing a still frame. The projector/player had an optional attachment for the Kodak instant camera, so that users could print out favourite snaps.

The Agfa Family Camera failed to be marketed successfully. Several things caused its demise within 18 months.

First, the State Electricity Commission refused to allow the release of the existing model until the wiring of the player was rewired to Australian standards. (This reduced the profits considerably.)

Second, the Kodak Instant camera infringed Polaroid patents and was withdrawn from worldwide markets.

Third, the rival video camera portapak technology arrived in Australia. By the time the Agfa “Family” was withdrawn from the market it was reduced in price to less than $99.

Agfa Australia claims to remember nothing of this camera, but I found a camera repairer who will allow me to use the manuals, or take photos of his own camera/player if that is of use.

THE CED VIDEO DISC PLAYER

From Dan Howland

“VIDEO DISC PLAYER “SGT-100W RCA VIDEO DISC PLAYER with CED (capacitance) pickups; plays video discs like record player plays LP records. Unit is ‘play only’ device and discs must be ‘flipped’ to Side 2 for complete play.

Functions FOR-REV for ‘Rapid Access’ & ‘Visual Search’ plus ‘Pause.’

This manually-loaded CED-type player will NOT play laser-type video discs. 6x17x16, 24 lbs sh. “

Used-operational, but some adjustments may be required! $33.00” “SGT-100W, ‘AS-IS complete, not tested,’ just as we find it! May be it will work and maybe it will not! NO RETURNS! $16.00”

“USED CED VIDEO DISCS for use with above; titles as recent as 1985. Write for list! Discs may have ‘blip-skips’ during play. If intolerable, advise us within 10 days of intent to exchange; 2 lbs sh. Used, $10 each. 2-disc movies, $15.00/set.

“AS-IS DISCS, not tested—NO RETURNS! $5 ea.”

[The CED disks themselves resemble giant floppy discs, approx 12” square (but a wee bit longer than wide). Like 8-track tapes, another clunky dead medium, the CED discs have a label glued to the plastic shell. Apparently, inside the shell is a grooved (vinyl?) disc.]

Source: the CURRENT catalog of Fair Radio Sales, 1016 E. Eureka St. P.O. Box 1105, Lima OH 45802, (419) 223-2196, 227-6573, FAX (419) 227-1313.

EIGHTEENTH CENTURY ENGLISH MAIL HACKS

From Bruce Sterling

[It's very clear that the postal system is not a dead medium. However, the physical and economic structure of the posts has undergone profound, elaborate changes over the centuries. Early postal systems often doubled as espionage networks, and were often proverbially corrupt. Before the introduction of the flat-rate penny post in Britain, prices were high, yet geographically and socially inconsistent. Posts were also riddled with off-the-books "franking" privileges exercised by various privileged classes of users. Recipients were billed for posting through a 'collect on delivery' practice. These structural weaknesses in the postal system created a booming underground in black-market mail-fraud. Alvin F. Harlow's avuncular and chatty history takes a deep prurient interest in these illicit goings-on.]

"There were scores of devices for the sending of a few elementary facts by mail without paying for their carriage. One of the commonest media was the newspaper, which at that time the post carried free of charge. A line drawn under the name of a Whig politician meant that the sender was well; under a Tory meant 'not so well.' There were other signals which told other things. Apparent instructions to the post written on the wrapper were secret messages. Among those which the Post Office detected and for which it assessed fines were, 'With Speed,' 'Send soon,' 'To be punctually forwarded,' 'With

my compliments,' 'Postman, be you honest and true,' 'It is requested that this letter be delivered without delay, otherwise a complaint will be made to headquarters;' all of which meant something entirely different.

"Business men had code systems based on the writing of the address. One man's address might be varied thus: William Henry Perkins, 97 Pump Court, London William Henry Perkins, Pump Court, London Wm. Henry Perkins, 97 Pump Court, London Wm. Henry Perkins, Pump Court, London William H. Perkins, 97 Pump Court, London William H. Perkins, Pump Court, London W. Henry Perkins, 97 Pump Court, London W. Henry Perkins, Pump Court, London Will H. Perkins, Wm. H. Perkins, W. H. Perkins, William Perkins and so on were other variants; then a change could be made by putting Mr. before each of the names, or adding Esq. after them. Mr Perkins' address could be differently stated: 'At the sign of the Golden Dog,' or 'Opposite St. Somebody-or-Other's Church.' Actually hundreds of changes might be made, all of which were recorded in a key book and each one having its meaning; the state of the market, bids, quotations, orders, cancellations, notice of arrival and transmission, etc.

"The manner of using the collect-on-delivery postage system for the free transmission of news is illustrated by an anecdote told by the poet Coleridge. While travelling in the north of England he halted at a wayside inn just as a postman was offering a letter to the barmaid. The postage was a shilling. Sighing sadly, the girl handed back the letter, saying that she was too poor to pay it. Coleridge,

over the girl's objection, insisted upon paying the shilling. When the postman was gone, she opened the letter and showed the poet that it was only a sheet of blank paper; but there were a few hieroglyphics on the back of it, alongside the address, which she had glanced at while she held the letter and which told her the news. 'We are so poor,' the girl explained, 'that we have been forced to invent this method of franking our letters.'

"Franks were the curse of the mail service then, not only in England, but in America and other countries as well. One twelfth of the letters sent from London went free. Members of Parliament and government officials by the hundred were authorized to frank letters, and few of them were averse to handing out whole batches of letter paper with their names written thereon to friends and constituents. By one clever scheme of the evaders of postage, a frank was made as elastic as a rubber band. Three or four friends or associates in as many cities would agree to use the name of one of them in their correspondence. A at London would then send a letter to B at Dublin, having the cover wafered and sealed so that it could be opened without breaking the seals. B would write a letter, enclose it in the same wrapper. and without changing the name would mark out his own address and write C's address in Edinburgh, as if B had removed to that place. C would receive the letter, alleging that B was visiting him, write another letter and enclose it to D at York. Thus one frank would carry at least three or four letters before it became so covered with addresses as to arouse suspicion."

Source: OLD POST BAGS: The Story of the Sending of a Letter in Ancient and Modern Times by Alvin F. Harlow D Appleton and Company, New York 1928 383 H227o University of Texas

THE PIGEON POST FROM THE SEIGE OF ACRE TO WWI

From Bruce Sterling

[Harlow's charmingly dated work takes an extensive interest in the pigeon post.]

"It is said that during the siege of Acre by Lion- Hearted Richard of England, the town kept up communication with Saladin, the Saracen leader, by pigeon. Another good story is that during the siege of Ptolemais the crusaders captured a pigeon carrying to the city news that the sultan was bringing an army to its relief, and would arrive in three days. The captors substituted a forged letter in which the sultan was made to say that he could do nothing at the moment, and released the bird again; and by this the town was so much discouraged that it promptly surrendered. When the sultan arrived three days later he found the stronghold in the hands of the Christians. " it seems probable that they were used by the Venetian Admiral Dandolo in the siege of Candia in 1204, at the siege of Haarlem by Frederick of Toledo in 1572 and of Leyden by the Spaniards in 1575, and coming down to a later day, at the seige of Antwerp by the French in 1832.

"Early in the nineteenth century, when the lottery craze was in full blast, pigeons were sometimes used to hasten the announcement of the winning number, especially by shrewd tricksters. This was common between Paris, a great lottery center, and Brussels, a large consumer of

lottery tickets. One operator, by means of very swift pigeons, gave his Belgian confederates the winning numbers, which they proceeded to buy up, if possible, before the official news arrived. In this manner the schemer acquired a considerable fortune; but his device was finally discovered, and being somehow construed as fraudulent, he spent the rest of his life at hard labor in the galleys of Toulon.

“Nathan Meyer Rothschild, head of the London branch of his family’s banking business, was one of the earliest of modern financiers to use pigeons to bring the latest market news from other capitals of Europe. He spent considerable sums on his pigeon cotes, and was always ready to buy birds noted for unusual speed. There is a story that he received by pigeon the new of the French defeat at Waterloo, which he at first pretended had been a British defeat, and thus made a killing on the Stock Exchange.

“Pigeons were thereafter used by stock brokers, especially in England and France (where they were called pigeons de la Bourse) until the invention of the electric telegraph. They usually flew between London and the French coast in an hour and a half.

“Julius Reuter, founder of the great press-dispatch service bearing his name, used pigeons in his first press line. there were telegraph lines from Paris to Brussels, and from Berlin to Aix-le-Chapelle; and to hook these two together he established a pigeon line between Brussels and Aix.

“Probably the most famous pigeon messenger service in all history was that which was carried on during the German siege of Paris in 1870-1871.

“One by one the great city’s communications with the outer world were severed. A telegraph line cunningly hidden in the bed of the Seine was discovered by the Germans and cut. The Director-General of Posts and Telegraphs caused light copper balls to be made, in which letters were floated down the Seine by night; but the enemy soon discovered the trick, stretched a net across and gathered them all in.

“Parisian balloons continued to land in various parts of Europe, sometimes just where they should not be. One travelled all the way to Norway and landed eight hundred and forty miles from Paris. Another fell into the North Sea and the aeronaut was drowned, but his letters were saved. The Germans devised anti-aircraft guns, but did not hit any of the mail carriers. One aeronaut told of seeing cannon balls come almost to his basket, then fall back. Some balloonists fell in or near the German lines and underwent heroic adventures.

“The Parisian balloons were made of thin cotton cloth, covered with two or three coats of a varnish composed of linseed oil and oxide of lead, and were inflated with the illuminating gas used to light the streets. From Metz, during its seige, smaller balloons made of various materials were sent out without human occupants. The correspondent of the Manchester Guardian planned the first one, which was made of strong white paper and

inflated by means of a wisp of lighted straw under it, the stock of coal in the city being too small to permit the use of gas. It carried eight thousand letters in a rubber cloth wrapper, accompanied by a note promising one hundred francs reward to anyone who found the package and took it to the nearest postmaster or the mayor of the commune and got a receipt for it. Others sent out later were made of thin paper lined with muslin, or of varnished cotton cloth, inflated with atmospheric air by means of a rotary fan.

"After this modern demonstration of the value of pigeons, they were taken up by nearly all the European armies, and special attention given to their breeding and training. During the recent Great War in Europe they were extensively used. The First and Second American Armies in France had one thousand birds each, and the Third Army six hundred and forty. Counting the instruction and breeding sections, we had over five thousand three hundred pigeons in France.

"In the Meuse-Argonne offensive, 442 American pigeons were used, and 403 important messages delivered by them. One bird delivered fifty messages. The pigeons were carried from their automobile 'lofts' to the trenches in baskets slung on soldiers' backs. There were gas-proof bags for the baskets in case of a gas attack. But a pigeon might be liberated during such an attack and come through safely, presumably because it rose above the gas. The pigeon-veterans' home at Fort Monmouth still houses many veterans of the Great War, some of them bearing honorable scars. 'Cher Ami,' who lost a leg on the Verdun front, frequently delivered messages over a thirty-

kilometer front in twenty-four minutes. ‘The Mocker’ had an eye shot out. ‘President Wilson’ was liberated with an important message on November 5, 1918, during an intense machine gun and artillery fire, and reached his loft at Rampont, forty kilometers distant, in twenty-five minutes. On the way one leg had been shot off and his breast pierced by a bullet. The message was still hanging to the ligaments of the torn leg. A few months ago President Wilson was still alive at Fort Monmouth.”

Source OLD POST BAGS: The Story of the Sending of a Letter in Ancient and Modern Times by Alvin F. Harlow D Appleton and Company, New York 1928 383 H227o University of Texas

MUYBRIDGE'S ZOOPRAXISCOPE

From Rich Burroughs

[Eadward Muybridge was an Englishman, originally named Edward James Muggeridge, but it seems he changed his name for some extra flash. In the mid 1870s he was charged with murdering his wife's lover, according to Robinson. I'm assuming he was acquitted, as that was near the beginning of his experiments and I didn't see any accounts of them being interrupted do to jail time.]

[Muybridge's Zoopraxiscope was basically a renamed phenakistiscope, according to Robinson. Ceram says that Muybridge made some improvements on the earlier device. What seems to have set Muybridge apart was his technique of photography.]

C. Francis Jenkins in "Technological History of Motion Pictures and Television": "But it is to the persistence of Eadward Muybridge that we are indebted for the most scientific research in motion analysis, work which he began in 1879. His animal studies became classics with artists. Wet plates only were then available and he used above half a million of them in a plurality of cameras arranged in order along a track over which his subject was required to pass."

"The story goes that a wager between the Governor of California and one of his friends led Eadward Muybridge to set up his series of cameras. The year was 1877, and the point in the dispute was whether a galloping horse

ever had all four legs off the ground at the same time. To settle the question, Muybridge stationed twenty-four cameras side by side along a race track. Twenty-four threads were stretched across the track, and as the galloping horses broke these, it tripped the shutters. (Later a clockwork device tripped the shutter.)"

[Photos in Ceram's book show both the arrangement of cameras that is described, and the results. A photo of the Zoopraxiscope (the projector) and some of the disks is on page 124. By the way, Ceram's book is filled with excellent photos of dead media. I highly recommend it.] [Muybridge's photography was not limited to animals.]

Burnes St. Patrick Hollyman in "Film Before Griffith": "He [Alexander Black] saw Muybridge's exhibition of moving horses and scientific studies of motion as well as the Zoopraxiscope, which included a picture of a dancing girl in costume."

"Initially Muybridge's aim was to produce instantaneous single photographs; the production of rapid series was incidental. Over the next few years however Muybridge produced and published innumerable series of photographs of every kind of human or animal motion. In the early 1880's he took the step of re-synthesising [sic] his analysis of motion, projecting the short cycles of movement he had recorded by means of a projecting phenakistiscope, which he called a zoopraxiscope."

"The projected images were still not, properly speaking, photographic: Muybridge was obliged to re-draw them onto the glass disks he used in his projector, copying

them by hand from his photographic originals."

[The disks were flat and circular, and loaded onto the projector's side in a vertical position. The images ran in succession around the edge of the disk.]

[Muybridge's work was to influence Etienne Marey, and Thomas Edison. Edison developed the Kinetoscope after viewing Muybridge's system.]

"On February 27, 1988, Mr. Muybridge interviewed T.A. Edison as to the possibility of combining his Zoapraxiscope [sic, I have seen the name of the machine spelled at least three different ways] projector with Edison's phonograph, but without result, though Mr. Edison did exploit such a combination some years later."

Robinson confirms this: "Edison met Muybridge, whose zoopraxiscope evidently gave him the idea for a machine that could record and reproduce images as his phonograph recorded and reproduced sound. He promptly charged his English-born laboratory head, W.K.L. Dickson, with the task of developing something on these lines, and issued the first of a series of caveats designed to protect the tentative researches carried on at his establishment at West Orange, New Jersey."

Source: Archaeology of the Cinema, C.W. Ceram, First American edition, Harcourt, Brace & World, New York;

"The History of World Cinema," David Robinson, Stein and Day, New York, 1973; "Film Before Griffith," John L. Fell, editor, University of California Press, Berkeley and Los Angeles, 1983; "A Technological History of Motion Pictures and Television," Raymond Fielding, editor, University of California Press, Berkeley and Los Angeles, 1967.

THE PLAYER PIANO

From Eleanor J. Barnes

I was listening last night to a CD of George Gershwin playing his compositions, derived not from tinny, crackly, bass-deficient 78s, but from piano rolls he made himself. The album is called “Gershwin: The Piano Rolls” and the liner notes are copious on the technology and history of piano rolls as a means of transmitting music otherwise available only as sheet music.

It struck me that though today we usually think of the player piano (when we think of it at all) as a novelty instrument, it is really not an instrument for playing by a musician, but a playback device for recorded music, just as was the hand-cranked Victrola, hence it, and piano rolls, are a (now-dead) medium.

Notes excerpted from the liner notes for the 1993 CD, “Gershwin Plays Gershwin: The Piano Rolls.”

“George Gershwin’s virtuosic piano technique and ebullient style bring the Jazz Age to life in this digital recording of 12 of the composer’s piano rolls. Rare tunes never before recorded in any form [sic] are joined with Gershwin’s singular performance of ‘Rhapsody in Blue,’ all transferred from the original 1920s rolls to a contemporary concert grand piano. Using the Yamaha Disklavier, a computer-driven descendant of the player piano, Artis Wodehouse has captured note-for-note Gershwin’s own arrangements of his music, in a landmark recording as entertaining as it is historic.”

“George Gershwin recalled that one of his first musical memories went back to the age of six:

‘I stood outside a penny arcade listening to an automatic piano leaping through Rubinstein’s Melody in F. The peculiar jumps in the music held me rooted. To this very day I can’t hear the tune without picturing myself outside the arcade on 125th Street, standing there barefoot and in overalls, drinking it all in avidly.’

“The player piano was a central force in American musical life between 1900 and 1930. Referred to variously as automatic pianos, pianolas and reproducing pianos, players of all types were found not only in penny arcades, but in homes, concert halls, restaurants, saloons, stores; virtually anywhere music was heard. Player pianos are normal acoustic pianos except that an internal piano-playing mechanism works as a computer using air pressure instead of electrical energy. The paper piano rolls are the ‘software’ used to activate the notes to play. A punched hole in a paper piano roll causes a corresponding note to play as it goes across a ‘reader’; a five-note chord has five perforations, and so on. Air pressure in player pianos is established by foot-pumping the bellows te exhaust the air. In later models, the bellows were motor-driven.

“Gershwin’s second contact with a player piano was more sustained than the chance encounter in the penny arcade. At around the age of 10, he began teaching himself to play at the home of a friend who had a player piano. Slowly foot-pumping through the roll, the boy placed his fingers

over the keys as they were depressed by the roll-playing mechanism. This method of learning was so successful that when a piano intended for brother Ira Gershwin was hoisted into the family's flat, Ira recalled that 'No sooner had the upright been lifted through the window of the front room than George sat down and played a popular tune of the day. I remember being particularly impressed by his left hand."

"Gershwin's keyboard skills led him to make piano rolls, beginning when he was a song-plugger and continuing through his early career as an accompanist to vaudevilians and as a rehearsal pianist on Broadway. Before the late twenties, only a player piano could compete with a live performance for sonic presence. The phonograph was still in its infancy, and the old 78 discs produced a thin, bass-weak sound. While Gershwin was growing up (he was born in 1898) player pianos and piano rolls became a huge, lucrative and lavish industry. Happily, Gershwin's roll making years trace the rise of the player piano; of the approximately 130 rolls he made, the first was issued in 1916 and the last in 1927.

"Unfortunately, improvements in the sound of the much less expensive phonograph and radio undermined the popularity and perceived affordability of player pianos. During the late 20's the once thriving roll industry declined, crashing decisively at the onset of the Depression in 1929. As with many other smart and successful musicians of the era, Gershwin went on to make disc recordings and to host his own radio program.

“Making piano rolls that were spin-offs of his other keyboard work was a relatively easy way for Gershwin to make some quick extra money. Pop piano rolls had to be made and released quickly because they capitalized on the popularity of tunes that had recently been released as sheet music. Intended either for singing or dancing, stereotyped formats and stock devices permeated the medium. Still, roll arrangers were always looking for new musical tricks to amaze and excite the prospective purchaser. One such trick was to overdub; many more notes could be encoded into a roll than a single pianist could lay down by hand. The result was a full, busy and exhilarating sound…

“Gershwin recorded two types of rolls. The first (his Perfection, Mel-O-Dee and Universal rolls) was designed for playback on player pianos equipped with levers, knobs and/or buttons that the player pianolist foot-pumping the roll could interactively manipulate to create an expressive performance. The pianolist could often see a dynamic line ranging from soft to loud printed on the roll and follow it to guide the interpretation. The second and more technologically sophisticated type of roll (Gershwin’s Duo-Art and Welte rolls) were called reproducing rolls. These were intended for playback on instruments called reproducing pianos that could automatically execute dynamics..

“The last selection on this CD is Frank Milne’s 2- roll arrangement of An American in Paris…

“The piano used to play the rolls for this recording [the

CD] is a 9-foot Yamaha Disklavier grand piano. This instrument was chosen because its computer capability offered unprecedented opportunities to refine the performances. In addition, this particular Disklavier piano is a high-quality full-sized concert grand producing a richness of sound and dynamic range which until now has been unusual for piano rolls recorded for CD.

“Disklaviers are fitted with a computer and optic sensors that record a hand-played performance on floppy disk. On playback from the disk, the Disklavier’s keys move up and down like the old player piano.

“A rare 1911 88-note Pianola was used for this project for those of Gershwin’s rolls requiring a pianolist’s interpretive intervention. During the heyday of the player piano this comparable piano-playing device was also available for roll playback. A heavy, bulky machine, the Pianola is equipped with expression levers and felt-tipped fingers and can be rolled up to any piano. Its fingers are positioned over the keys, and a roll is inserted. Foot-pumping activates the roll to move the fingers; the pianolist can play with expression by skillful foot-pumping and manipulating the expression levers.

“When the 1911 Pianola operated by Artis Wodehouse played the rolls on the Disklavier, the Disklavier in turn recorded the same way it does any live pianist. The best takes of each roll captured on disk were then further edited to improve the interpretation. Finally, the 9-foot Disklavier was taken to the auditorium of the Academy of Arts and Letters in New York City where it played

Gershwin's rolls from a floppy disk for the microphone, as if Gershwin's ghost were present at the session.

"Gershwin's reproducing rolls were prepared quite differently. Using a piano roll reader, Richard Tonnesen of Custom Music Rolls converted the paper rolls into computer files which specified the location and length of each hole on the roll. Computer programmer Richard Brandle wrote a computer simulation of the reproducing pianos which translated the computer files into MIDI representing the notes, their duration and position in time and relative loudness as executed by the old reproducing pianos. The resulting performances could be played on any Disklavier from floppy disk. Placed in front of the recording microphone, the Disklavier concert grand then played Gershwin's reproducing rolls from floppy disks for the CD recording.."

Liner Notes by Artis Wodehouse

ATARI VIDEO MUSIC

From Nick Montfort

The cover to the manual has an image of a headphone-wearing woman with a pair of VR-like goggles. On the outside surface of these goggles, a pixelated geometric pattern with rainbow colors is overlaid. The Atari Video Music, however, does not look like a set of VR goggles. It looks like a stereo rack component.. It plugs into the stereo for input and TV for output. From the manual cover:

“Video Music adds a totally new dimension to the high fidelity listening experience. For the first time ever, you actually SEE the music you hear. You can explore a limitless pattern of brilliant shapes, patterns and colors, visually synchronized on your TV screen to the music from your stereo system.

“Video music generates images from digital selection, responding within milliseconds to the intensity and tempo [I wish I could figure out the tempo of a piece of music within milliseconds!] of the music being played. You can control colors, shapes, and patterns while creating an audio-visual concert. Or, set the controls to automatic and let the unit function with its own random selection.” There are four buttons for shape (solid, hole, ring, and auto), as well as knobs for gain, color, and contour, and buttons to set the scan rate. The manual explains the complex-looking process of adjusting the image, with illustrations suggesting the different results you can get. The obligatory amusing anecdote about this

dead medium comes from Zap, pages 49-50:

“Bob Brown, an engineering supervisor from Atari, has just designed Video Music, a game [Atari’s manual does not claim that this thing is a game] that hooked up to the TV set and the stereo so that the sound from the stereo produced psychedelic visuals on the TV screen. It was Atari’s most off-the-wall product. The man from Sears asked what they were smoking when they designed it, and one of the technicians stepped out from the back room and produced a lit joint.”

Source: VIDEO MUSIC MANUAL (Owner’s Manual Model No. Model C-240), Atari, Inc. (No date, but previous to 1978);

ZAP: The Rise and Fall of Atari, Scott Cohen, McGraw-Hill, 1984. ISBN 0-07-011543-5.

THE ELCASET CARTRIDGE TAPE AND PLAYER

From David Morton

The Elcaset was a cartridge tape format introduced by several Japanese electronics firms in the late 1970s for use in high fidelity audio home systems.

“Basically, Elcaset is a king size cassette [i.e. Large cassette, hence the name] measuring about six by four inches, versus about four by two and a half inches for the Philips cassette. It is three quarters of an inch thick; the Philips is a half-inch thick.

The Elcaset runs at 3 ¾ ips [inches per second]; the Philips at 1 7/8 ips.

“The Elcaset was a compromise between the all-out performance of an expensive reel-to-reel deck and the convenience of a cartridge format. The machines were heavy, sturdy devices more like professional equipment in construction than most home tape recorders.

Although the tape was stored in a plastic cartridge, when it was inserted in a player a loop of tape was drawn into the workings of the machine, where the precision mechanism pulled it smoothly past the tape heads: “In the new format the tape transport is responsible for accurate movement of the tape past the tape heads. The tape is ‘pulled’ out of the Elcaset and moved between guides built into the transport. In the Philips system, tape movement accuracy is controlled by guides built into the cassette.”

The tape was divided into six tracks; four were used to store two stereo music programs, the other two were control tracks used to store cueing information. Machines used a form of Dolby noise reduction and some (like the TEAC AL 700) could use optional, external Dolby units to achieve slightly better performance. Introduced at a time when ordinary audio cassettes could not meet reel-to-reel performance, the Elcaset seemed to have some appeal for serious home recording enthusiasts.

However, the machines were more expensive than high-end cassette units ($650-1200) and record companies never offered a catalog of recorded Elcasets. The machines were pulled off the market within a couple of years, following slow sales. Models actually offered for sale included the JVC LD-777 ($800), the Sony EL-5 and EL-7 ($630 and $880), the TEAC AL-700 ($1100), and the Technics RS-7500US ($650). Marantz announced a line of Elcaset recorders, but I have not confirmed that they actually were offered.

Source: Larry Zide, “Will the Elcaset Make It,” High Fidelity’s Buying Guide to Tape Systems (1978), pages 28- 30 “Elcaset” Hi-Fi/Stereo Buyers Guide volume 13 (January/February 1978), pages 48, 82.

BELL LABS HALF-TONE TELEVISION

From Trevor Blake

[In discussing how an image may be sliced into elements for transmission, the half-tone process used in newspaper photography is explained. Immediately following is this curiosity.]

“It is evident from this discussion of half-tone reproductions, that in television, it is really not necessary to transmit and reproduce the entire scene as a single unit each 1/20 of a second. We may split up the scene viewed by the television transmitter, into elementary dots, transmit electrical vibrations corresponding to the brightness or darkness of each individual dot, and reproduce the dots in the same relative order and position at the receiving end. Then our received picture will be made up of a number of dots similar to a half-tone, and if the elements are small enough it will be acceptable. This system has actually been used by Dr. Ives at the Bell Telephone Laboratories, but since a separate circuit was necessary for each element or dot (2,500 circuits in all in this particular apparatus), the system was very complicated and commercially impractical.”

Source: RADIO PHYSICS COURSE / An Elementary Text Book on Electricity and Radio by Alfred A. Ghirardi, E. E. Second Edition, Revised and Enlarged, Eighth Impression June 1937 Radio & Technical Publishing Co. 45 Astor Place, New York City

POPULAR SCIENCE 1932: NAUMBURG'S VISAGRAPH, THE ELECTRIC EYE LINOTYPE, ORDERING MUSIC BY PHONE

From Dan Howland

"BLIND CAN NOW 'SEE' PRINT AND PICTURES "FOR the first time blind persons may actually 'see' pictures and read newsprint and typewritten letters, through the medium of their fingertips, with a device that was demonstrated the other day in New York City. Termed the "automatic visagraph" by its inventor, Robert E. Naumburg, it scans a printed page with an electric eye. Black and white outlines of letters and drawings are transformed at high speed into raised and magnified lines, punched by a vibrating needlelike point upon moving sheets of aluminum foil.

"In this device the inventor has radically improved an earlier model demonstrated a year ago, which he called his 'printing visagraph' [P.S.M., July '31, p. 40]. That machine, resembling an office desk in size and appearance, transformed ordinary bookprint into embossed letters that could be read with the fingers. It was hailed as an amazing development, though the user had to perform rather complicated adjustments in inserting the book, and though smaller type than bookprint was beyond its reach. These handicaps have now been removed.

"So far improved is the new 'automatic visagraph' by a

modified scanning system that it will reproduce the type of newspapers, magazines, and virtually anything in print. Even such things as radio diagrams and maps, hitherto inaccessible to a blind person because not even an attendant could read them to him, are now made 'visible.'

"To read a book with the latest model, two of the pages are thrust through a slot, with no effort to straighten the book or align it. The volume is pushed automatically across a transverse slit, beneath which a fast-moving electric eye scans the printed line. [Picture captions - punctuation verbatim]

"This totally blind girl is reading a novel in ordinary bookprint with the aid of the new visagraph in which and electric eye scans the printed page so raised letters appear on aluminum foil beneath the girl's fingertips. Left, radio diagram, typewriting, and handwriting made 'visible' for blind" [One wonders how "visible" a blind person using the visagraph to read this issue of Popular Science would find the resulting bas-relief of a halftone of a photograph of a bas-relief of "a radio diagram, typewriting, and handwriting."]

"This form of visagraph reproduces a map from a newspaper so that it can be "read" by a blind man"

"Electric Eye Sets Type Rapidly Without Aid of Human Hands "HIGH-SPEED typesetting without the intervention of the human hand is forecast by the recent demonstration of an automatic linotype machine. Controlled by an electric eye, it transforms typewritten 'copy' directly into lead type. The only limit to its speed is

said by its Charlotte, N.C., inventor to be that of standard linotype machinery.

“Copy for use in the automatic typesetter is written upon a special typewriter which prints a symbol composed of from one to six dots beneath each letter and space. The letters are only for the guidance of writer and editor, for the dot symbols alone actuate the typesetter.

“Each symbol has been chosen to represent a certain letter. When a sheet of this copy is fed into a special carriage that replaces the usual linotype keyboard, an electric eye scans the lines of dots. Each symbol, according to the number and pattern of dots, actuates the proper lever that sends the corresponding letter of type sliding from the type magazine into place. The lines of type are then cast into slugs in the conventional manner.”

“PHONOGRAPH RECORDS SELECTED BY PHONE “CUSTOMERS of a British dealer in phonograph records now choose their purchases by telephone. The enterprising merchant fitted a talking machine with an electric pick-up and amplifier, and plays over the selections before a telephone fitted with a hornlike transmitter. The telephone subscriber then places his order for the desired records.”

“NEW ROBOT CAMERA IS DANCE PARTNER “A MOVIE camera that bobs up and down in the motions of a dance has been introduced for realistic close-ups in ballroom scenes. Cams in the automaton’s rubber-tired wheels may be adjusted for a waltz, foxtrot, or tango, and the actress goes through the steps in the robot’s wooden arms. It is

powered by electric motors.”

Source: Popular Science Monthly, June 1932

PIESSE'S SMELL ORGAN

From Richard Kadrey

The Smell Organ by Joseph H Kraus

"Which one of us has not listened to the enrapturing tones of the church organ or the pipe organs in motion picture play houses, and not awakened to its appeal? Now an entirely new organ has been developed, which instead of inspiring and thrilling audiences by sound, translates music into corresponding odors.

"The suggestions comes from Dr. Septimus Piesse, a French chemist, who claims that every perfume produces its own particular effect on the end organs of smell terminating in the mucosa, mucous membranes lining of the nose. The organs are called the olfactory cells, and just as every note has its effect upon the ear and as the colors have their effect upon the retina of the eye, so this transposed music, the music of smells, will have its effect upon the olfactory organs.

"The range of notes has been carefully plotted, the heavier odors being assigned to the low notes, and sharp pungent odors to the high notes. Thus, starting with the bass clef three octaves below middles C, the musical notes, and the odors assigned to them, (are listed on a separate list at the end of this piece). [The smell organ would be used to play olfactory transcriptions of classical music.]

"Of course, the combination of odors will creates a smell entirely different from any individual qualities of the various perfumes and it is necessary that, in the soft,

dreamy compositions, the odors blend harmoniously. Discords will have a decidedly unpleasant effect but inasmuch as the composers did not dwell upon discords to any great extent, the audience will be saved the rather unusual embarrassment of smelling disagreeable combinations. Some music would perhaps have to be changed and the odors carefully graduated so that no particular perfume will predominate, except when the loud pedal, or rather in the smell organs, the strong odor pedal is trod upon.

“It is, therefore, up to the perfumer to combine the mixtures in much that same way that an artist blends colors, or as a good florist makes a bouquet. If it is desirable to insert a little contrast into the bouquet, the appropriate blossoms or grasses are used, and so the perfumer likewise would have to employ the proper aromas.

“The arrangement of the apparatus is such as to include five or more octaves of colors.. These odors have been discovered and placed in their particular location after painstaking research, the odors being arranged in bottles and sprayed up into the air by an atomizer-like action.

“In each of these bottles, we may note the atomizer or sprayer attachment. These atomizers are actuated by keys on the piano. Pressure upon any of these keys closes a circuit, which operates a solenoid, or suction type magnet, the latter releasing a valve and permitting compressed air from an air compressor and storage tank to blow the odorous vapor upward. In back of the

individual spray nozzle is a funnel-shaped pipe likewise connected to a compressed air supply source. These create a constant drift of air blowing the odors upward and this draft is further facilitated by large rotary fans at the rear of the theatre. The strong pedal under the piano keyboard connects with the air supply compartment and operates an auxiliary valve which admits a further supply of air and consequently increases the amount of perfume and directly increases the strength of the odor.

“It is possible that to rid the room quickly of any odor, ozonized air may be permitted into the funnels.”

BASS CLEF
C Patchouli
D Vanilla
E Clove Bark
F Benzoin
G Frangipane
A Storax
B Clove
C Sandalwood
D Clematis
E Rattan
F Castorium
G Pergulaire
A Balsam Of Peru
B Carnations And Pinks
C Geranium
D Heliotrope
E Iris
F Musk

G Pois De Senteur
A Balsam Of Tolu
B Cinnamon
C Rose

TREBLE CLEF
C Rose
D Violet
E Cassia
F Tuberose
G Orange Flower
A New Mown Hay
B Arome
C Camphor
D Almond
E Portugal
F Jonquil
G Syringa
A Tonka Bean
B Mint
C Jasmine
D Bergamot
E Citron
F Ambergris
G Magnolia
A Lavender
B Peppermint
C Pineapple
D Citronel
E Vervain
F Civet

Source: June 1922 issue of (the now long dead) magazine, Science and Invention, as reprinted in Experimental Musical Instruments magazine

SCOTT'S ELECTRONIUM

From Richard Kadrey

Invented by composer Raymond Scott (a sample of whose works are collected on Reckless Nights and Turkish Twilights, and immortalized in countless cartons, most recently Ren & Stimpy) spent the last years of his life working with electronic composing systems that he designed.

One of his devices, the Electronium , has been described as "one of the first applications of artificial intelligence in music composition." (Justin Green)

Raymond Scott: "A composer (guidance control) asks the Electronium to suggest an idea, theme or motive. He listens to these on a monitor speaker. When happy with one of these ideas, he stops the Electronium and starts recording.

"Faster, slower, a new rhythm design, a hold, a pause, a second theme, variation, extension, elongation, diminution, counterpoint, a change in phrasing, an ornament.ad infinitum.whatever the composer requests, the Electronium accepts and acts out his directions." The only photo I've seen of the device makes it look like an old analog computer flanked by Bauhausian monitors.

Source: MUSICAL LEGENDS OF AMERICA, by Justin Green (with thanks to Irwin Chusid). Tower Pulse! magazine, p. 26, July 1994

CANDLE-POWERED RADIO

From Alan Wexelblat

“In 1962 I began to design and develop a new type of communications device. An unusually gifted graduating student, George Seegers, did the electronic work and helped build the first prototype. The resulting one-transistor radio, using no batteries or current and designed specifically for the needs of developing countries, consisted of a used tin can. This can contained wax and a wick that burned (just like a wind-protected candle) for about twenty-four hours. The rising heat was converted into enough energy (via thermocouples) to operate an earplug speaker. The radio was, of course, non-directional, receiving any and all stations simultaneously. But in emerging countries, this was then of no importance: there was only one broadcast (carried by relay towers placed about fifty miles apart).

“Assuming one person in each village listened to a ‘national news broadcast’ for five minutes daily, the unit could be used for a year until the original paraffin wax was gone. Then more wax, wood, paper, dried cow dung (which has been successfully used as a heat source for centuries in Asia), or for that matter anything else that burns could continue to keep the unit in service. All the components: earplug, speaker, hand-woven copper radial antena, and ‘earth’ wire terminating in a (used) nail, tunnel diode, and thermocouple, were packed in the empty third of the can. The entire unit was made for just below 9 cents (1966 dollars).

“After further developmental work, the radio was given to the U.N. for use in villages in Indonesia. No one, neither the designer, nor UNESCO, nor any manufacturer, made any profit or percentages out of this device since it was manufactured as a ‘cottage industry’ product.”

Source: From Design for the Real World written by Victor Papanek. I’m not sure this is a dead tech or still in use.

CAHILL'S TELHARMONIUM

From Richard Kadrey

[Until I can get a copy of the definitive work on the Telharmonium (The Telharmonium: A History of the First Music Synthesizer by Reynold Weidenaar, NYU, 1988), here are notes from various sources.]

From the review of Weidenaar's paper published in CMJ. The review contains some interesting basic info about the Telharmonium: Reynold Weidenaar tells the story of Thaddeus Cahill and his siblings, who constructed the Telharmonium, a mammoth electrical generating plant and distribution system designed to provide music for millions over telephone lines.

It is the hopeful tale of a vestige of the Industrial Age: five U.S. patents, begun in 1895; three completed instruments, including the commercial models in 1906 and 1911; multimillion-dollar investments in Telharmonic Music by otherwise astute capitalists; the euphoria of inaugural triumphs in 1907 at Telharmonic Hall in New York City; and the very early success at piping music into the very correct Manhattan restaurants and other venues.

It is a sad tale, involving the construction of massive alternator tone wheels that tantalizingly predated amplification technology; a business marriage with the New York Telephone Company that soured when Telharmonic Music proved to interfere with phone service

(note: according to another source, the Telharmonium's

signal was too much for the old switching systems, and tended to blow them out)

Thaddeus Cahill's fixed ideas about Just Intonation, and the problems his 36-note-per-octave keyboard caused Telharmonium performers; Lee DeForest's early radio transmissions of the Telharmonium, and Cahill's inability to perceive the implications; an ill-fated second season at Telharmonic Hall, that was exacerbated by the financial panic of 1907; the deterioration of the Telharmonium into a musical freak show, and the failure of the licensee companies in 1908; and an abortive comeback in 1911 that struggled all the way into 1918.

It is a poignant tale of the wooden refusal of the Cahills to realize that a (200-ton) musical instrument chipped from iron was an anachronism even in the early 20th century; Arthur T. Cahill's crusade to carry forward the ideas of brothers Thaddeus and George following their deaths; and Arthur's circulation of a letter as late as 1951 trying to find a refuge for the first Telharmonium.

Arthur had been keeping the historic 14,000 lb Telharmonium prototype in storage at his own expense for almost 50 years, and finally sought "a permanent and a public home for this priceless monument to man's genius." There were no takers, and not even a small part of this incredible music machine is now available to wonder at.

[From SINGING THE BODY ELECTRIC, by Mark Sinker. The Wire, September 1995, issue 139. An article looking at various early electronic instruments:]

“The first and most fabulous monster is Thaddeus Cahill’s Telharmonium: 200 tons, 60 feet across, taking up a whole floor and the basement below. It looked, surviving pictures tell us, like a church organ mated with a weaving loom.

Cahill, a Canadian, built it in Holyoke, MA.; partially funded by the New England Electric Music Company.it cost a then-phenomenal $200,000, and was moved in 1906 to Telharmonic Hall in New York. The idea was to transmit ‘Telharmony’ across America, to hotels, restaurants, theaters and private homes, via local telephone exchanges.

The Telharmonium itself was a kind of keyboard-operated dynamo organ; the bulk of the machine consisted of vast teethed gears on engine-driven spinning shafts which caused alternating currents in batteries and magnets.

There were no loudspeakers in those days; radio was only five years old, and Lee DeForest’s audion tube, which amplified signals many thousand-fold, wouldn’t exist for at least another decade- so it fed straight into the telephone system. Unfortunately, it needed huge voltages and caused interference over the rest of the telephone network, such as it then was- so that one day an enraged businessman burst in, broke it up and threw the machinery into the Hudson river, or so the story goes.

“Actually, there were no less than three Telharmoniums, spread over some 20 years: the first Cahill had started in 1895 in Washington, DC, patented in 1897, finished in

1900; the Holyoke-NYC model was the second; a third begun in 1908, was finished in 1911 and certainly still in use in 1916. But the mid-teens radio broadcasts into the home were the coming thing, and the project went broke for lack of subscribers.

“For a short while, however, the Telharmonium was big news. A story in McClure’s Magazine, ‘New Music for an Old World,’ brought it to the attention of Ferruccio Busoni, a virtuoso classical pianist and critical intellectual, Italian by birth, German by temperament, respected all across Europe. Busoni (whose pupils included Edgard Varese) cited the Telharmonium in a polemic he was then writing (for some reason he calls it the ‘dynaphone’).

His 1907 ‘Sketch of a New Aesthetic of Music’ proposed that music pass beyond its 19th century framings- harmony as the possible combination of a mere 12 notes, a highly selective and conventional instrumentation- the embrace the ‘infinite’ gradations within the octave structures: ‘The question is important and imperious, how and on what are these tones are to be produced. Fortunately, while busied with this essay, I received from American direct and authentic intelligence which solves the problem in a simple manner. I refer to an invention by Dr. Thaddeus Cahill. He has constructed a comprehensive apparatus which makes it possible to transform an electric current into fixed and mathematically exact number of variations.’

“At which point Busoni hurtles intoxicatingly into an

airborne rhetoric that flatters Cahill's 200 ton apparatus: 'Who has not dreamt that he could not float on air? And firmly believed his dream to be reality? Let us take thought, how music may be restored to its primitive, natural essence; let us free it from archectonic, acoustic and aesthetic dogmas; let it be pure invention and sentiment, in harmonies, in forms, in tone-colours (for invention and sentiment are not the prerogative of melody alone); let it follow the line of the rainbow and vie with the clouds in breaking sunbeams; let Music be naught else than Nature mirrored by and reflected from the human breast; for it is sounding air and floats above and beyond the air; within Man himself as universally and absolutely as in Creation entire.'"

SOVIET BONE MUSIC SAMIZDAT RECORDINGS

From Nick Montfort

This was apparently just an unusual way of producing vinyl records (themselves a dead medium), only briefly described here. However, as this form of record reached a certain geography that was otherwise cut off, and since bone music had its own network of distribution and underground production, I think it's worth mention. The comment in parenthesis is Brodsky's.

"In the Fifties every city youth had his own collection of so-called bone music. 'Bone music' was a sheet of X-ray film with a homemade copy of some jazz piece on it. The technology of the copying process was beyond my grasp, but I trust that it was a relatively simple procedure, since the supply was steady and the price reasonable.

"One could purchase this somewhat moribund-looking stuff (talk about the nuclear age!) in the same fashion as those sepia pictures of Western movie stars: in parks, in public toilets, in flea markets, in the then famous 'cocktail halls"

[Bruce Sterling adds: Artemy Troitsky's BACK IN THE USSR, a history of the Soviet pop underground, also describes the very extensive Soviet practice of creating and circulating illegal recordings on used X-ray plates.]

Source: A Western Boyhood, in Russia, by Joseph Brodsky. Excerpt from his essay Spoils of War, in the recent book ON GRIEF AND REASON. Harper's Magazine, March 1995, p34.

THE TALKING VIEW-MASTER

From Dan Howland

While the View-Master is not a dead medium, this 1970s variation certainly is. The Talking View-Master uses a special disc set consisting of a standard View-Master disc (fourteen 10mm X 12mm [16mm film?] slides making up seven stereoscopic views, sandwiched between two 9cm cardboard discs) and a smaller, free-spinning phonorecord behind it.

The two discs are inserted into the viewer/player, the first scene is located by pressing and releasing a lever, and a red reset button is pushed.

Then a Sound Bar on the front of the machine is pushed, which activates the “turntable” motor and presses the stylus into the first track. Thereafter, the stylus will advance to each subsequent track with every press of the Scene Change Lever.

On this model, only the motor which spins the phonorecord is electrical; the sound is transmitted mechanically from the stylus to a speaker cone. In order to allow enough light to reach the slides through the translucent record, there is a single sheet of clear plastic (65mm X 100mm) molded into two fresnel lenses on the side facing the light source.

This is not an entirely successful solution; with common household light sources like lamps, it is difficult to get an equal amount of light to each eye.

Talking View-Master Stereo Viewer is sturdy and easy to

use. PUT in the reel. CLICK the lever.
PRESS the sound bar.
SEE in 3-D, and HEAR cartoon favorites, travel thrills, adventures in science. Operates on two ‘C’ batteries, not included

Another model featured a built-in light, volume adjustment and was two-tone blue. (Not pictured is the 80’s talking viewer, completely redesigned and not compatible with the earlier talking reels.) It is worth noting that while standard, non-talking View-Master reels were first marketed in 1939, they are still compatible with currently available viewers.

Source: personal observation; thrifted one this past weekend. TALKING VIEW-MASTER. Manufactured by GAF (General Aniline & Film). Circa 197?. Two-tone beige plastic. 125mm X 125mm X 200 mm. Power supply: two C batteries.

DEAD PHOTOGRAPHIC PROCESSES

From Mark Simpkins

Brief notes from this fairly comprehensive encyclopedia, with possible avenues for further research. I realise some of this is not radically unknown, but it needs recording. The term 'Photography' came from the Greek phos, photos, 'light,' and suffix graphos, 'writing'. The word was first suggested to William Henry Fox Talbot by Sir John Herschel in a letter dated 28th February 1839. Obsolete printing processes.

[Note that the encyclopedia entry for this section suggests that these processes are prototypical rather than obsolete.]

CALOTYPE or TALBOTYPE. Paper sponged over with or floated on solutions of silver iodide and potassium iodide. When partially dry, the excess potassium iodide was removed by bathing in distilled water. Paper was sensitized in a solution of silver nitrate, acetic acid and gallic acid. After printing a feeble image was brought up to the required strength by an application of a solution similar to the silver nitrate sensitizer. Talbotypes produced rich warm brown images.

FLUOROTYPE. Paper washed with solution containing 2 per cent potassium bromide and ¼ per cent sodium fluoride in distilled water. Sensitized by floating in a solution of 15 per cent silver nitrate for two minutes. Very sensitive to light. The inventor claimed an image of a brightly lit scene could be obtained in the camera by an

exposure of only half a minute. The image was feeble though, and had to be intensified by brushing over with a weak solution of sulphate of iron. Fixed with hypo and washed.

CYANOTYPE. Invented by Sir John Herschel in 1842. Blue print process, mostly used for copying drawings giving a white image on a blue background. Still in use [at least at time of this 1965 edition].

PELLET PROCESS. Variation of cyanotype, gives blue image on white background. Introduced by H. Pellet in 1878.

FERRO-GALLIC and FERRO-TANNIC PAPERS. Introduced by A. Poitevin in 1861. Image formation relied on similar action to cyanotype (the reduction of ferric salts by light). Image formed by combination of ferrous salts with gallic or tannic acid, yielding a deep purple or brown insoluble organic compound.

ALBUMEN PROCESS. Paper coated with egg white before sensitization by floating on a silver nitrate solution. Resultant prints were toned with gold chloride. Remained in use for the next thirty years, superseded by printing-out papers using collodion or gelatin as a vehicle for the sensitizing salts.

ARGENOTYPE. Invented by Herschel in 1842. A silver image produced by utilizing the action of light on ferric salts. Printed out in daylight.

KALLITYPE. Introduced by W.J.Nichol. Sensitizer was ferric oxalate, reducing to ferrous oxalate. Yielded warm

sepia tones.

PALLADIOTYPE, PLATINOTYPE. The papers for these processes was purchased ready prepared [unlike the previous processes which were do-it-yourself.]. The final print consisted of a deposit of platinum or palladium on the paper support. Palladium was introduced during World War I when platinum was difficult to get. Both produce rich blacks unobtainable with silver. The image was permanent. These papers were very sensitive to damp. Special precautions had to be taken when opening the tin in which they were sold to keep them dry. During printing the paper had to be protected by covering the back with a sheet of rubber. Out of use due to scarcity and high cost of materials.

URANIUM PRINTING. The action of light reduced uranyl nitrate to a viscous compound. Produced a brown image, unless silver nitrate was used in the development, which produced a grey image due to deposited silver.

POWDER PROCESSES. Several processes were popular for a time, especially on the Continent. Certain substances such as sugar, dextrine or gum, treated with potassium bichromate, lost their natural tackiness when exposed to light. A dark powder was dusted over an exposed plate (or paper). This powder would adhere in proportion to the degree of the action of the light on the hardening of the coating. Plumbago or graphite powder was used. The plate was protected with a collodion coating. The same principle is still used, employing certain resins, in various photomechanical processes.

PIGMENT PRINTING; OZOBROME PROCESS. Poitevin made photographic prints on paper coated with gelatin mixed with colouring matter and sensitized with potassium bichromate in 1855. This led to the carbon printing process. In 1905 Thomas Manly invented the ozobrome process which eliminated the use of bichromated paper; the pigment image was made direct from a bromide print as in present day carbo process.

ARTIGUE PROCESS. Invented by M. Artigue of Paris. Gum, mixed with any desired colour pigment and sensitized with potassium bichromate, was coated on paper or other support and after exposure under a negative was developed in a soup-like mixture of sawdust and water. Capable of producing very delicate results.

OIL PRINTING. Introduced in 1904 by Rawlins, based on early lithographic transfer procedures of much earlier date. Depended on the action of light on bichromated but unpigmented gelatin coated paper. The bromoil process is based on this and is still used today by some pictorial photographers.

CHROMOTYPE. Described by Robert Hunt in 1843, a process by which either a positive or a negative could be obtained depending on the length of exposure, the latter presumably by solarization.

BREATH PRINTING. Discovered by Sir John Herschel. Latent images could be prepared which could only be seen when breathed on or subjected to a moist atmosphere. Paper was coated with the dissolved precipitate formed under certain conditions by the

addition of silver nitrate to ferro-tartaric acid. Printed under a negative in sunlight the paper so prepared would, by the right exposure, be impressed with a latent image which was not visible unless breathed on or subjected to a light aqueous vapour, when it acquired an extraordinary intensity.

DIAZOTYPE. Designed in 1891 for printing photographically onto fabrics on which a range of colours could be produced. Prints could be made on paper but the colours were dull and whites impure. The term is nowadays generally applied to a number of similar processes.

PINATYPE. A transparency was made on a soft emulsion of the lantern plate variety and developed in a tanning developer. The “printing plate” so obtained was bated for about two minutes in an engraving black or photographic brown pinatype dye. The dye was held in suspension by the gelatin in direct proportion to the extent to which it had been hardened by light action during printing. The plate so charged with dye was then washed free of the surplus dye and finally brought in contact with a sheet of paper coated with plain gelatin. The two were squeegeed together and left for several minutes, when the dye in the plate was transferred to the virgin gelatin. When separated, the gelatin bore the dye image. Any number of prints could be made by dyeing-up the printing plate and repeating the imbition process.

WOTHLYTYPE. A printing-out paper invented by J. Wothly of Aachen, 1864. The paper coated with collodion

containing uranium and silver nitrate, was considerably more sensitive than the albumen paper then in general use, but the claim for permanence, due to the uranium, was not fulfilled, and after a couple of years the Wothlytype was abandoned.

Source: The Focal Encyclopedia of Photography (2 Volumes) 1965 edition, 2nd reprint. Editorial Board: L.A. Mannheim, Daphne Buckmaster, Frederick Purves, P.C. Poynter, Norah Wilson, Paul Petzold, A. Kraszna-Krausz.

THE LUBA LUKASA

From Mark Simpkins

The Lukasa was a mnemonic device once used by the Luba people of Zaire. The Lukasa is a hand-held flat wooden object.

The flat part is divided into male and female sections, and either studded with beads and pins, or covered with incised ideograms. It was used to teach lore about cultural heros, clan migrations and the introduction of sacred rule.

It was also used to suggest spatial positions of activities and oracles within the kingdom or inside a royal compound. Lukasas were used to order the sacred prerogatives of officials with regard to their contact with earth spirits and the use of natural resources.

Each Lukasa elicits some or all of this information but the narration varies with the oratory skill and knowledge of the reader. The Lukasa encodes not a symbolic representation of the information, merely a mnemonic, or spatial representation map of it.

The kinds of information encoded may include journeys, kings and courtiers, genealogies, and lists of clans. The instrument was used by an association called the "Mbudye," who trained men of memory who could recall genealogies, royal lists and episodes in the founding of the kingdom.

It seems to me that this is not merely a single medium but an entire approach (mnemonic encoding as opposed to symbolic representation) that is disappearing from living

media.

Source: STAFFS OF LIFE (ed. AF Roberts, Iowa City 1994)

PHONEVISION

From A. Padgett Peterson

Zenith had experimented with subscription television since 1931, and had completed a system in 1947.

“Phonevision” was trademarked. In 1951, with FCC approval, a limited test involving 300 Chicago families was conducted. Each day for 90 days, Zenith broadcast a Hollywood motion picture available to any family for $1 (not cheap, a new Buick was $1800 then).

The families watched an average of 1.73 movies per week. More than the average, but not enough to justify a commercial venture. In 1954, a second test of an improved system was made, this time in New York City using WOR facilities to determine the effectiveness in a high broadcast density environment. The over-the-air coding/decoding mechanism worked well and the test was considered a success.

In October of 1954 the first contract was concluded for the use of Phonevision for Australia and New Zealand. I do not know what happened as a result. The mechanism lingered on until the seventies without any real success.

In 1971 a test of a limited number of subscribers was made in Hartford, Connecticut, but again the setup expense was considered to be to high for commercial viability. It took the mass-market penetration of cable to make pay-per-view effective.

The original PhoneVision required a dedicated phone line to each subscriber’s house. Later ones used on-the- air

signals, but all required a special decoder box. Two types of billing saw experimental use.

The first had a coin-operated box on top of the TV. When the proper amount was deposited, it would retrieve the decoding information over the phone line to unscramble the signal.

Later designs required the user to call a number on the telephone and authorize the charge in exchange for a code. Entering the code into the box unscrambled the picture. Today Zenith is one of the top manufacturers of cable TV decoders. Few realize it all started back in the '30s.

By the way, Zenith began regular colour TV broadcasts in Chicago back in 1940 using a "colour wheel" mechanical method and field sequential transmission. When the American standard NTSC (known as "Never The Same Colour") was adopted in 1953 by the FCC (under tremendous lobbying pressure by RCA), the field sequential colour TV system also became "dead media."

Source: The Zenith Story, an inhouse Zenith publication from 1954.

SONOVISION

From Jack Ruttan

This is a book full of information about kinetic and early computer and holographic art. I'll quote something relatively contemporary, from "SONOVISION: A Visual Display of Sound," by S. R. Wagler:

"A new device has been invented by Lloyd G. Cross that makes a visual display in color correlated to sound by projecting a krypton or helium-neon laser light beam on to a translucid screen or opaque surface [below is a diagram, which simply shows a laser beam being reflected off a membrane stretched over the cone of a speaker, and hitting a screen or wall].

"When there is no sound input to the device, the beam gives only a pinpoint of light. When one simple sound or musical note is introduced into the device, the dot moves in an ellipse at the frequency of the sound supplied. The size of the ellipse is related directly to the loudness of the note and can be adjusted by turning a knob on the control panel. When the note is changed to another one, a different ellipse with a new orientation is formed. When two notes are introduced simultaneously, the laser beam produces a combination of the two ellipses, similar to the Lissajous patterns obtained from cathode- ray tubes. Thus a symphony of notes will result in a symphony of ellipse interference patterns on the display screen.

"Repeatability means that a way is now available for the deaf to 'see' music and obtain a new experience and the

device may also be useful in speech therapy.

“A second mode of operation is available in the same set. A spinning prism produces a circle in place of the dot when the beam is at rest. When one or more notes are fed into the device, petal-type deviations from the circle result.

“The invention of Cross has been incorporated in several kinds of commercial units under the trade name Sonovision. Editor’s note; Attempts to contact Sonovision, Inc. and S.R. Wagner in 1972 were unsuccessful.

Source KINETIC ART: THEORY AND PRACTICE, Selections from the Journal Leonardo, Frank J. Malina ed, New York, Dover Publications Inc. 1974.

UNION TELEGRAPH BALLOONS, CONFEDERATE MICROFILM

From Bruce Sterling

War and espionage seem to be great generators of dead media. They produce desperate extremes in which communication is a matter of life and death, and in which normal means of communication are subjected to severe enemy attack. Necessity gives birth to invention, and when necessity ceases those inventions often vanish, into legendry or utter obscurity.

Diplomacy, espionage, courier service, scouting, reportage, and postal service are generally seen as distinct activities, but the lines between them blur under stress. Markle's book on US Civil War espionage and its tradecraft offers interesting period parallels to the 1870-1871 siege of Paris, with its microfilm, mail balloons and pigeon post.

"Late in the war Confederates reportedly used an advanced form of photography to prepare their messages for courier movement to Richmond." [Markle quotes the following letter.]

United States Consulate
Toronto Prv
Jany 3, 1865

Honorable W. H. Seward
Secretary of State
Washington, D.C.

Sir,

The following facts having been given to me: The Rebels in this city have a quick and successful communications with Jeff Davis and the authorities in Richmond, in the following manner.

Having plenty of money at their command, they employ British subjects, who are provided with British passports, and also with passports from Col [blank] which are plainly written; name and date of issue on fine silk and are ingeniously secreted in the lining of the coat.

They carry dispatches, which are made and carried in the same manner. These messengers wear metal buttons, which, upon the inside, dispatches are most minutely photographed, not perceptible to the naked eye, but are easily read by the aid of a powerful lens.

This information is reliable, from a person who has seen the dispatches, and has personal knowledge of the facts..

Your Obedient Servant,

R.J. Kimball

“What Consular Kimball was reporting is in fact known today as microfilm! The technique had been developed by a Frenchman, Rene Prudent Dagron in 1860. The images were on a 2 X 2 mm. diameter glass plate, and could be viewed using a lens developed by Lord Stanhope around 1750.”

[Dagron the microfilmist and war profiteer featured above, describing Dagron’s crucial activities with balloon, pigeon and microfilm during the Prussian siege of Paris. It

is very gratifying to learn for the first time that his full name was Rene Prudent Dagron. Dagron may have invented his microfilm technique in 1860, as Merkle claims, but his “Traite de Photographie Microscopique” was first published in Paris in 1864, according to John Douglas Hayhurst. It is therefore astonishing to see Confederate/British spooks apparently employing Dagron’s microfilm technology as early as January 1865. Was this an independent invention, or an unpaid adaptation of Dagron’s work—or might it have been that Dagron himself sold his technology to the Confederates? If this were so, it would go far to explain why Dagron suddenly appeared in 1871 to boldly offer his microfilm services to the tottering French government.]

[Concerning balloons.]

“Professor Thaddeus Lowe believed strongly in the military value of hot air balloons. On June 18, 1861, he conducted a hot air balloon experiment for President Lincoln. He ascended about Washington, D.C., in a balloon with a telegraphic keying device on board and the telegraphic wire hanging out of the balloon to a ground station. He succeeded that day in transmitting the first air-to-ground telegraphic communication.

“Professor Lowe is also credited with taking the first aerial photograph, again from one of his balloons.

[It was my understanding that this distinction belongs to the French aeronaut and photographer ‘Nadar’]

“These successes so impressed Lincoln as to the potential of the balloons that he made Professor Lowe the head of

the Union Balloon Corps. [It would be gratifying to know if the Balloon Corps had its own uniform and official insignia.] The Union found that while the balloons did give the scouts a real advantage, not only were they regularly shot down (as they ascended or descended) but the balloons tended to spin in the air, making the scout on board very sick.

The Union Balloon Corps was officially disbanded in May of 1863.

“The Confederacy, while envious of the Union efforts in the area of ballooning, made only one balloon attempt in the entire war. That effort is best described in the words of General James Longstreet: ‘While we were longing for the balloons that poverty denied us, a genius arose. and suggested we gather silk dresses and make a balloon. It was done, and we soon had a great patchwork ship.

One day it was on a steamer down on the James River, when the tide went out and left the vessel and balloon high and dry on a bar. The Federals gathered it in, and with it the last silk dresses in the Confederacy.’”

Source: SPIES AND SPYMASTERS OF THE CIVIL WAR by Donald E. Markle, 1994. Barnes & Noble Books, ISBN 1-56619-976-X

CHASE'S ELECTRIC CYCLORAMA

From Paul Di Filippo

"In our illustration, we give a general view of the electric cyclorama, or panorama, as conceived by the inventor, Mr Chase of Chicago. The projection apparatus, suspended in the center of the panorama by a steel tube and guys of steel wire, is 8 feet in diameter.

"The operator stands within the apparatus and is surrounded by an annular table supporting eight double projectors, lanterns and all the arrangements necessary for imparting life to a panorama 300 feet in circumference and over 30 feet in height. It is possible at will to animate such and such a part of the view by combining this apparatus with the Edison kinetoscope or the Lumiere kinematograph."

Source: Scientific American February 1896

THE OPTIGAN

From Candi Strecker

[The Optigan was a musical instrument produced for the home-organ consumer market in the early 1970s, using a radically different optical technology to produce its sounds. The "Dead Medium" in this case would probably be the optically-readable disks from which the Optigan "read" and generated its sounds. The following information is extracted from a much longer (and very delightful) essay by musician/composer Pea Hicks of San Diego, describing his epic quest for Optigans and information about them.]

(Pea Hicks:) About ten years ago I first became aware of the existence of the Optigan. It was in the tenth anniversary edition of Keyboard magazine. In an article on the past and future of keyboards and synthesizers, there was a brief reference to the Optigan, and it stuck in my mind for years as it was the first time I had ever seen the word 'cheesy.'

The Optigan was a kind of home organ made by the Optigan Corporation (a subsidiary of Mattel) in the early 70's. It was set up like most home organs of the period = a small keyboard with buttons on the left for various chords, accompaniments and rhythms. At the time, all organs produced their sounds electrically or electronically with tubes or transistors.

The Optigan was different in that its sounds were read off of LP-sized celluloid discs which contained the graphic

waveforms of real instruments. These recordings were encoded in concentric looping rings using the same technology as film soundtracks. Remember that sequence in Fantasia where the Soundtrack makes a cameo? Those squiggly lines are actually pretty close to what the real thing looks like. As the film runs, a light is projected through the soundtrack and is picked up on the other side by a photoreceptor. The voltage is varied depending on how much light reaches the receptor, and after being amplified this voltage is converted into audible sound by the speakers. The word 'Optigan' stands for 'Optical Organ.' Optigan discs have 57 rings of soundtrack = these provide recordings of real musicians playing riffs, chord patterns and other effects. (37 of the tracks are reserved for the keyboard sound itself = a different recording for each note.) So when you want to play a bossa nova, you don't get those wimpy little pop-pop-chink-chink electronic sounds = you actually hear a live combo backing you up!

This was a pretty unique concept for the early 70's. Technically speaking, the Optigan was a primitive sampler. Sort of. I tend to think of it more like an ultra-poor-man's Mellotron or Chamberlin. These are two famous keyboards from the fifties and sixties which played back recordings of instruments on lengths of magnetic tape. These two became very popular despite some huge drawbacks. For one thing, the tapes only lasted a few seconds and could not loop. If you wanted your flute to keep playing, you would have to re-press the key after eight seconds. This also involved waiting for the

tape to rewind, so fast playing was generally not possible. Also, the racks of tapes themselves were pretty huge and unwieldy = changing from a choir to an oboe was quite an undertaking compared to what today's machines can do. Not surprisingly, these instruments were quite expensive to buy and maintain. But the sounds they made were worth it = at least at the time.

Mattel marketed the Optigan as something of an adult toy = the sound quality was simply not good enough for professional use. They sold mostly through stores like Sears and JC Penney and were relatively inexpensive = about $150 to $300 depending on which model you chose. They came with a "Starter Set" of four discs, and extra discs were marketed like records. Official Optigan music books were also available to help you make the most out of the minimal talent you probably had if you had bought an Optigan in the first place. The first thing you notice about the Optigan (if you have any imagination at all, that is) is how malleable this technology was. You can do all sorts of things with the discs to sabotage the sound = put them in upside down, put several in at once, manually stop and start them with your hands for record scratch effects, press all the buttons at once, and so on. Most of the sounds that were recorded for the keyboard section are different kinds of sustained organs. Since the disc spins constantly, the sounds just keep looping around and around. So the keyboard sounds can't have a beginning and end per se. [.] Some of the discs even have non-musical sound effects (such as applause) on them. You would think that, since the discs are not played by

physical contact, there would be no pops or scratches such as on vinyl records. But this is not the case = tiny scratches on the discs cause irregular diffractions of light which in turn end up sounding exactly like record scratches! Most of the time, though, this actually improves the sound. You get the weird feeling that you're listening to a cheesy old Enoch Light record, but you're actually controlling where the music goes!

Mattel only produced the machines (at a factory in Compton, nonetheless) for a couple of years. They didn't sell very well because of several design flaws which made them amazingly unreliable and prone to breaking down. Eventually Mattel sold the whole works to the Miner Company of New York (an organ manufacturer). They continued production of the Optigan under the company name of Opsonar and also produced several new discs. But the design remained the same, and its inherent problems forced the Miner company to drop the machine as well.

Later, the technology was bought by a company called Vako which made an instrument called the Orchestron. This was designed for professional use, but the sound quality still sucked. They made about 50 of these machines before they folded.

Source: an essay by musician and collector Pea Hicks

THE PANORAMA

From Bruce Sterling

[The justly famed Mesdag Panorama in Den Haag is one of the best-preserved examples of this dead form of nineteenth-century virtuality. THE PANORAMA PHENOMENON is an illustrated English-language historiography associated with the exhibit, with extensive notes on Hendrik Willem Mesdag's own panorama of Old Scheveningen, and on the panorama in general.]

"An anecdote has it that in the year 1785 a young Irish painter in Edinburgh landed in prison because he could give no satisfaction to his creditors. He was the painter and draughtsman Robert Barker who, confined in his prison cell, perhaps through sheer boredom, accidentally invented the panorama.

His extremely uncomfortable quarters were situated in a basement, and the sparse daylight entered through a narrow opening in the ceiling, very near the wall, and so lighted up the vertical wall just underneath.

"Barker will not have had much contact with the world outside, but once he did receive a letter which gave him inspiration. He could only decipher the letter by holding it up against the dimly lit wall. The incidence of light from above on the letter, observed by Barker in the dark gaol, apparently presented such a peculiar effect, that it occurred to the civil debtor to illuminate paintings in a similar way.

"The patent obtained by him in 1787 defined this

conclusively. The fact that he applied for a patent is typical. It may well be the first manifestation of the systematic mixture of art and technology.

“In 1787 he brought an unusual picture to Londin, unusual both for its size and form; a large oblong semi-circular canvas depicting a View of Edinburgh. Compared to his later work, it was only an initial effort to create what he described a little later in his patent application as a ‘View of Nature’ (La Nature a Coup d’Oeil). In the artistic community his first effort had no success whatsoever. Sir Joshua Reynolds, the President of the Royal Society, advised Barker courteously but explicitly to stop his useless experimenting, an advice completely disregared by the modernist. His invention was patented on the 3rd of July 1787.

“He defined his invention: ‘An entire new contrivance or apparatus, which I call La Nature a Coup d’Oeil, for the purpose of displaying views of Nature at large by Oil Painting, Fresco, Water Colours, Crayons, or any other mode of painting or drawing.

The word panorama does not figure in the patent. It is reported that the term would have been introduced by a classical scholar among his friends. At any rate, Barker himself mentions the word panorama in 1792 in an advertisement in The Times. Henceforth it quickly became the definite style for a circular picture.”

“Quite simply, the secret of the panorama lies in the elimination of the possibility to compare the work of art with the reality outside, by taking away all boundaries

which remind the spectator that he is observing a separate object within his total visual field. Not without reason the panorama used to be called the ‘all-view’ or ‘the picture without boundaries.’

Barker’s patent achieved this effect by incapsulating the spectator inside a total view. “The circular canvas envelops him like a cylinder. When he glances upward, the light source and the top edge of the picture remain hidden from view by an umbrella- like roof over the platform (the so-called velum), and at the bottom of the picture his view is blocked by a cloth or another kind of foreground, placed between the balustrade and the lower edge of the painting.

By means of these provisions the spectator is deprived of the possibility of comparison. He can no longer correctly judge size and distance. He only sees the objects on the painting surrounding him in their relative proportions. and all this lead the spectator to experience his fictitious surroundings as a reality. This technique, invented by Barker, was a complete novelty at the time, and its amazing effect was the cause of the enormous success scored by the panorama during more than a hundred years.

“It goes without saying that in the course of time the optical effects have been further doctored. The corridor leading from below to the platform was therefore darkened, so that the visitor, whose eye had been adapted to this darkness, gets caught unprepared by the fully lit panorama picture. A winding staircase was mostly chosen

for entering the higher situated platform with the preconceived intention of making the visitor lose his bearings.

“Numerous experiments were necessary to establish how the spectator should be fitted into the whole,. and the distance to be allowed between the platform and the canvas. The lighting of the canvas via the roof dome = an essential element of panorama technique = was no simple matter.

Experiments were made with smoked glass, with ‘skirts’ of cloth encircling the light dome, with transversely screened sheets, all this with the aim of making the light from above shine from the picture by reflection.

“It was a certain Colonely Langlois who broke new ground by using the horizontal space between the platform and canvas to perfect still further the optical illusion. He ‘filled’ this space with a setting of tri-dimensional objects which constituted integrating parts of the display. Without this ‘faux-terrain,’ the foreground-setting, including the objects, the so-called ‘attrapes’ (hoaxes), a panorama later on was no longer a real panorama. Gradually this technique was further refined to the extent that the tri-dimensional attrapes faded perfectly into the bi-dimensional canvas, thus creating a very realistic effect.”

“In the initial period, panorama painters looked for existing large premises in which their work of art could be hung, but soon afterwards they began to construct special small round wooden buildings, primitive sheds,

constructed = or so it appears = around the circular canvases. These kinds of contraptions could be found in many towns around 1800. The simple sheds in Hamburg, Leipzig and Amsterdam which housed the first panoramas were examples."

"Barker's first rotunda was 11 m. high and had a diameter of 26 m. In the big capitals of the time, London, Paris and Vienna, where one could count on a steady number of visitors, there arose, in due course, more professional wooden or stone structures. The exteriors of these rotundas were simple, undecorated, cylindrical or polygonal in shape, like the twin panorama buildings at Montmartre (Paris) or Barker's ingenious two- storied rotunda on Leicester Square.

"Later again, a specific rotunda architecture developed, narrowly linked to the construction of circuses. By employing new materials (iron combined with glass) the rotundas became even more spectacular towards the middle of the 19th century. With the building on the Champs Elysees designed by Hittorf (the creator of the Place de la Concorde), Paris became the model for numerous later buildings.

"Most rotundas bult later in the 19th century were monumental, pompous buildings, often abundantly decorated, on which the then fashionable neo-styles were appled with great zest..

In the earlier days London had its enormous Colosseum (1829), Berlin, Frankfurt, Leipzig, Salzburg, Vienna, Brussels, Milan and Madrid all had their own baroque

panorama homes. They were also to be found in the Netherlands. At one time Paris boasted at least 13 of this kind of round art temples.

“When later on panorama companies were founded, a certain uniformity in construction developed so as to facilitate the exchange of the paintings. The dimensions were also considerably larger than before. Standard building norms were a diameter of 40 m. and a height of 15 m.”

“Early in the 20th century, the age of the panorama definitely came to an end. It was impossible to fight the competition of the oncoming cinema..

Also the new photoprinting technique, by means of which photographs could appear in illustrated periodicals, was a nail in the coffin of the panorama, which was not any longer susceptible to innovation.

The panorama buildings were mostly pulled down. but sometimes adapted to other uses. They were transformed into theatres, cinemas, riding- schools, artificial ice-rinks, mosques and suchlike. Untold numbers of rotundas burnt down, sometimes well insured, for inexplicable reasons. With the buildings the numerous Societes Anonymes disappeared as well. But the panorama has not been entirely relegated to history.

The Mesdag Panorama and a number of other circular displays have survived in spite of adversity.”

Source: The Panorama Phenomenon: Mesdag Panorama 1881- 1981 Published by the Foundation for the Preservation of the Centenarian Mesdag Panorama (September 1981) Den Haag, Holland editor Evelyn J. Fruitema

written by Paul A. Zoetmulder Mesdag Panorama, Zeestraat 65b, 2518AA The Hague

DAGUERRE'S DIORAMA

"March 8, 1839. Louis Daguerre, a French painter and inventor, for some seventeen years had been the proprietor of one of the most popular spectacles in Paris. It was a theatre of illusions called the Diorama.

"No actors performed in Daguerre's Diorama theatre. It consisted of a revolving floor that presented views of three stages. On each stage was an enormous canvas (72'x 48') with scenes painted on both sides. Through the clever play of light, Daguerre could make one scene dissolve into another. Parisians were treated to the sight of an Alpine village before and after an avalanche, or Midnight Mass from inside and outside the cathedral, accompanied by candles and the smell of incense."

[This strikes me as a very early precursor to Heilig's Sensorama machine, due to the sensory augmentation of candles and incense. As a side note, as Daguerre went to meet with his colleague Samuel Morse to discuss his new device called the telegraph, the Diorama burnt to the ground.]

Source: Picture Perfect: The Art and Artifice of Public Image Making. by Kiku Adatto, Basic Books, 1993,

Beaumont Newhall, The Daguerreotype in America (New York, Dover, 1976 (an excellent source for information on Daguerre).

KNOWN SURVIVING PANORAMAS

From Bruce Sterling

KNOWN SURVIVING PANORAMAS (circa 1981)

AUSTRALIA

“Panorama Guth”, painted 1975 by Guth and Pieters
65 Hartley Street, Alice Springs

AUSTRIA:

“View of Salzburg from the Fortress Hohensalzburg” painted circa 1824 by Sattler,Loos and Schindler
Cafe Winkler, Monchsberg, Salzburg

“The Battle Near Mount Isel in 1809” painted in 1895 by Diemer, Burger, Flaucher, Neidermaier and Pezzey
Rennweg 39, Innsbruck

BELGIUM

“The Battle of Waterloo” painted in 1812 by Dumoulin, Desvareaux, Malespina, Robiquet, Meyer and Vinck
340 Route du Lion, Eigenbrakel, Waterloo

“The Battle of the Yzer” painted 1920 by Bastien
Royal Museum of the Army and of War History
Cinquantenaire Park, Brussels

BULGARIA

“The Third Scaling of the Pleven in 1877” painted 1977 by Owetchkin et al
Pleven

CANADA

“Jerusalem on the Day of the Crucifixion” painted 1882 by Philippoteaux, Mege, Gros, Corwin, Grover and Austen
Ste-Anne de Beaupre, Quebec

CZECH REPUBLIC

“The Battle of Lipau” painted in 1897 by Ludek et al
Prague

GERMANY

“The Crucifixion of Christ” painted circa 1903 by Fugel, Krieger, Ellenberger and Nadler
Kapellplatz 2a, Altotting (near Munchen)

NETHERLANDS

“The Panorama of Scheveningen in 1880” Painted in 1881 by Mesdag, Mesdag-van Houten, de Bock, Breitner, Blommers and Nijberck
Zeestraat 65b, The Hague

POLAND

“The Battle of Raclawice” Painted 1883/1884 by Styka, Kossak et al
Wroclaw, Breslau

RUSSIA

“The Battle of Borodino in 1812” Painted in 1912 by Roubeau
Kutuzov Prospekt D 38, Moscow

“The Siege of Sebastopol in 1855” painted in 1905 by Roubeau
Historical Boulevard, Sebastopol

“The Battle of Stalingrad in 1943” Painted by Grekov (date unknown)
Volgograd

SWITZERLAND

“Bourbaki Panorama” Painted in 1881 by Le Castre, Hodler, Dufaux, Sylvestre, Hebert, de Beaumont and van Muiden
Lowenplatz, Lucerne

“Jerusalem and the Crucifixion of Christ” Painted in 1892 by Frosch, Krieger, and Leigh destroyed by fire in 1960 and completely repainted by Hugler, Wulz and Fastl
Benzigerstrasse, Einsiedeln

“View of the Town of Thun” Painted circa 1814 by Wocher and Beidermann
Schadau Park, Thun

UNITED STATES OF AMERICA

“The Battle of Gettysburg in 1863” Painted circa 1883 by Philippoteaux
Gettysburg National Military Park
Gettysburg, Pennsylvania

“The Battle of Atlanta in 1864” Painted circa 1886 by Lohr, Lorenz and Heine
Grant Park, Atlanta, Georgia

Source: The Panorama Phenomenon: Mesdag Panorama 1881- 1981 Published by the Foundation for the Preservation of the Centenarian Mesdag Panorama (September 1981) Den Haag, Holland editor Evelyn J. Fruitema written by Paul A. Zoetmulder Mesdag Panorama, Zeestraat 65b, 2518AA The Hague

JENKINS RADIOVISOR, BELL PICTURE TELEPHONE, RGA/OXBERRY COMPUQUAD,

[The article is about the American Museum of the Moving Image in Astoria Queens and its exhibition,"Behind the Screen"]

A large part of the third floor is taken up with thehardware of recording images and sound, including curios like the 1931 Jenkins Radiovisor, a mechanical televisionthat used a slotted, spinning wheel to transmit images. One behemoth, an RGA/Oxberry Compuquad Special Effects Step Optical Printer [a name worthy of its size] used four projector heads and five computers controlling 19 separate motions to project image upon image for complex effects.

The machine itself won a special Academy Award in 1986. But today, it's largely obsolete, a victim of digital technology.

Another curious device is a 1927 Bell Laboratories Picture Telephone, a prototype closed-circuit television link over which Herbert Hoover, then Secretary of Commerce, spoke (and appeared) from Washington to the AT&Tpresident in New Jersey.

There are showroom quantities of vintage television consoles, some predating World War II. Early sets had picture tubes so long and unwieldy that the screen had to be mounted face up, toward the ceiling, and needed a mirror to reflect the image sidways to the viewers.

A thing of beauty was the 1959 Philco Predicta with its oval screen. But the streamlined design came at the price of unreliable technology, and the model flopped.

Source: New York Times, April 21, 1996, Page One, Section Two: ANYONE CAN BECOME A STAR IN ASTORIA by Ralph

THE THEATROPHONE AND THE ELECTROPHONE

From Bruce Sterling

“The most popular feature of the Paris Exposition Internationale d’Electricite of 1881 was such an arrangement, variously described as the theatrophone and the electrophone. From August to November crowds queued up three evenings a week before two rooms, each containing ten pairs of headsets, in the Palais d’Industrie. In one, listeners heard live performances of the Opera transmitted through microphones arranged on either side of the prompter’s box. In the other, they heard plays from the Theatre Francais through ten microphones placed at the front of the stage near the footlights. Not only were the voices of the actors, actresses, and singers heard in this hammer, but also the instruments of the orchestra, the applause and laughter of the the audience ‘and, alas! the voice of the prompter too.’

“Efforts to reach extended audiences by telephone required elaborate logistical preparations. Its application to entertainment, therefore, remained experimental and occasional. In Europe entertainment uses of the telephone were often an aristocratic prerogative. The president of the French Republic was so pleased with the theatrophone exhibit at the Paris Exposition that he inaugurated a series of telephonic soirees with theatrophonic connections from the Elysee Palace to the Opera, the Theatre Francais, and the Odeon Theatre.

“The King and Queen of Portugal, in mourning for the Princess of Saxony in 1884 and unable to attend the premiere of a new Lisbon opera, were provided with a special transmission to the palace through six microphones mounted at the front of the opera stage. The same year the manager of a theatre in Munich installed a telephone line to his villa at Tutzingen on the Starnberger Sea in order to monitor every performance and to hear for himself how enthusiastically the audience applauded. The office of the Berlin Philharmonic Society was similarly connected to its own distant opera house. In Brussels, the Minister of Railways, Posts and Telegraphs and other high public officials listened to live opera thirty miles away at Antwerp.

“Beginning in 1890, individual subscribers to the Theatrophone Company of Paris were offered special hookups to five Paris theatres for live performances. The annual subscription fee was a steep 180 francs, and 15 francs more was charged to subscribers on each occasion of use.

“In London in 1891, the Universal Telephone Company placed fifty telephones in the Royal Italian Opera House in Covent Garden, and another fifty in the Theatre Royal, Drury Lane. All transmittted exclusively to the estate of Sir Augustus Harris at St. John’s Wood, with an extension to his stables. By 1896 the affluent could secure private connections to a variety of London entertainments for an inclusive annual rent of ten pounds sterling in addition to an installation fee of five pounds. The Queen was one of these clients. In addition to having special lines from her

sitting room to the Foreign Office, the Home Office, the Board of Green cloth, and Marlborough House, Her Majesty enjoyed direct connections to her favorite entertainments."

Source: WHEN OLD TECHNOLOGIES WERE NEW: Thinking About Electric Communication in the Late Nineteenth Century by Carolyn Marvin, Oxford University Press 1988 ISBN 0-19-504468-1

MORE ON THE THEATROPHONE AND ELECTROPHONE

From Bruce Sterling

“Commercial interest in a larger, less exclusive audience [for the theatrophone] was not far behind. ‘Nickel-in-the-slot’ versions of the hookups provided by the Theatrophone Company of Paris to its individual subscribers were offered as a public novelty at some resorts. A franc bought five minutes of listening time; fifty centimes brought half as much. Between acts and whenever all curtains were down, the company piped out piano solos from its offices.

“In England in 1889 a novel experiment permitted ‘numbers of people’ at Hastings to hear The Yeoman of the Guard nightly. Two years later theatrophones were installed at the elegant Savoy Hotel in London, on the Paris coin-in-the-slot principle. For the International Electrical Exhibition of 1892, musical performances were transmitted from London to the Crystal Palace, and long-distance to Liverpool and Manchester.

In the hotels and public places of London, it was said, anyone might listen to five minutes of theatre or music for the equivalent of five or ten cents. One of these places was the Earl’s Court Exhibition, where for a few pence ‘scraps of play, music-hall ditty, or opera could be heard fairly well by the curious.’

[Meanwhile, in the United States] “Informal entertainments were sometimes spontaneously

organized by telephone operators during the wee hours of the night, when customer calls were few and far between. On a circuit of several stations, operators might sit and exchange amusing stories. One night in 1981 operators at Worcester, Fall River, Boston, Springfield, Providence and New York organized their own concert. The Boston Evening Record reported: 'The operator in Providence plays the banjo, the Worcester operator the harmonica, and gently the others sing. Some tune will be started by the players and the other will sing. To appreciate the effect, one must have a transmitter close to his ear. The music will sound as clear as though it were in the same room.'

"A thousand people were said to have listened to a formal recital presented through the facilities of the Home Telephone Company in Painesville, Ohio, in 1905. And, portent of the future, in 1912 the New York Magnaphone and Music Company installed motor-driven phonographs that sent recorded music to local subscribers over a hundred transmitters."

Source: WHEN OLD TECHNOLOGIES WERE NEW: Thinking About Electric Communication in the Late Nineteenth Century by Carolyn Marvin, Oxford University Press 1988 ISBN 0-19-504468-1

THEATROPHONIC TELEVANGELISM

From Bruce Sterling

“Church services were also an occasion for telephonetransmission. From about 1894, telephone wires connected subscribers with local pulpits in towns as large as Pittsburgh and Philadelphia, and as small as Paris, Texas. Inclement weather prompted the Reverend D. L. Coale to connect a large megaphone to a telephone receiver in the Anson, Texas, church auditorium where he was conducting a revival in 1912, so that those absent from services might receive the benefit of sermons and singing. More than five hundred were said to have listened to revival services, and a number of conversions were made by wire.

“Telephone pulpits seemed to have come earlier to British churches. An account of the inauguration in 1890 of a service in Christ Church in Birmingham with connection to subscribers in London, Manchester, Derby, Coventry, Kidderminster, and Hanley went as follows:

‘When the morning service commenced there was what appeared to be an unseemly clamor to hear the services.The opening prayer was interrupted by cries of ‘Hello, there!’ ‘Are you there?’ ‘Put me onto Christ Church. “No, I don’t want the church,’ etc. But presently quiet obtained and by the time the Psalms were reached we got almost unbroken connection and could follow the course of the services.

We could hear little of the prayers, probably from the fact

that the officiating minister was not within voice-reach of the transmitter. The organ had a faint, far-away sound, but the singing and the sermon were a distinct success.’”Subscribers in Glasgow listened to their first telephonic church service in 1892. By 1895 connections for subscribers and hospital patients had been made to the leading churches of London, including St. Margaret’s, Westminster; St. Anne’s, Soho; and St. Martin’s-in-the-Fields and St. Michael’s, Chester Square, by Electrophone Limited.”

Source: WHEN OLD TECHNOLOGIES WERE NEW: Thinking About Electric Communication in the Late Nineteenth Century by Carolyn Marvin, Oxford University Press 1988 ISBN 0-19-504468-1

HOPI TOWN CRIERS

From Eric Mankin

“In the past when a Hopi wished to inform his fellow villagers of certain things, he would petition someone to make a public announcement on his behalf. At other times, a formal announcement could be made by the tsa’akmongwi, or official ‘village crier.’

“To broadcast his message, the crier always climbed on a rooftop. The opening formula of his announcement usually sounded as follows: ‘Those of you people out there heed my words.’

The conclusion was equally formalized: ‘This is the announcement I was instructed to make known to you.That’s about it.’ Whenever the crier shouted out his announcement, he typically drew out the last word of each sentence.

Source: The Bedbugs’ Night Dance and other Hopi Sexual Tales, Collected, translated and edited by Ekkehard Malotki.

DANCER'S NOVELTY MICROPHOTOGRAPHS AND DAGRON'S BALLOON POST

From Bruce Sterling

John Benjamin Dancer is not a name to be reckoned with in the annals of science. Reading the various biographical notices written since his death in 1887, one is struck with a certain sense of pathos; not even the liberal sprinkling of well-meaning hyperbole endemic to biographical memoirs of scientific societies can disguise the salvage exercise. Here was a man who almost discovered ozone, failed to patent a number of ingenious optical and mechanical devices that might have made him a fortune, improved other people's discoveries rather than made his own, an optician who lost his sight and died courting penury. In short, a man whose career was a catalogue of near misses, bad management and consequential blunders.

"Dancer dabbled in the possibility of combining microscopy with photography from the start. During a lecture at the Mechanics Institute in Liverpool, before an audience of 1,500 people, he made a Daguerreotype image of a flea magnified to six inches in length. It was only with Scott Archer's development of the wet collodion process in 1851 that he [Dancer] was able to produce successful microphotographs, which by virtue of being reproducible became commercially viable.

"Mounted on standard 3 X 1 glass slides,

microphotographs look deceptively like histological preparations, that is, ultra-thin slivers of living tissue, but when magnified 100 times, the inscrutable tiny black dot glued in place is revealed to be an exquisite, fine-grained reproduction of Raphael's Madonna or the ruins of Tintern Abbey, not a delicate tranche of liver ora cluster of blood platelets.

"Their subjects ranged from portraits of the great and good - eminent scientists, European royals, political and military dignitaries, literati and thespians; celebrated paintings; religious texts, like the Lord's Prayer or the Sermon on the Mount; extracts from Tennyson, Dickens, Milton, Byron and Pope; to views from around the world (forerunners of the tourist snapshot). [Yes, you read this correctly, JohnBenjamin Dancer made and sold text "content" to be accessed through a home microscope.]

"Dancer produced his first commercial slide in 1853 a rather austere picture of electrician William Sturgeon's memorial tablet. By 1873 he was advertising nearly 300 microphotographs and by the end of his career the grand total had risen to over 500. Precisely how he manufactured his microscopic marvels remains a trade secret, since he never ventured into print on the subject.

It is known that in experimental trials he used the eyes of recently killed oxen as photographic lenses and that he began the process with 4 X 5 inch collodion glass-plate negatives, but beyond that it can only be assumed that his method of reduction bore some similarity to that publicized by George Shadbolt in 1857. At the time

Shadbolt was President of the Microscopical Society and editor of the Photographic Journal, in whose pages a priority dispute over the invention of microphotography took place, Dancer winning the day.

“Almost as soon as Dancer perfected the mechanics of reproduction, he began selling microphotographs as novelty items. At a shilling a slide, and with decent parlour microscopes to be had for a few pounds,microphotographic entertainment was an economic method of rational recreation. In fact the market for microphotographs was sufficiently sizeable to make it profitable for Dancer to sell his slides to a number of retailers of scientific instruments.

“Sir David Brewster, who in the 1850s was Professor of Physics at St Andrews, saw streams of possibilities emanating from Dancer’s invention. In an article on the micrometer for the eighth edition of theEncyclopaedia Britannica, he waxed futuristic on Dancer’s technique: ‘Microscopic copies of dispatches andvaluable papers and plans might be transmitted by post, and secrets might be placed in spaces not larger than a full stop or a small blot of ink.’

While his latter reverie was to remain confined to the pages of spy novels, the former was genuinely prophetic: Brewster took examples of Dancer’s work on his Continental tour in 1857 where they were seen by French photographer Prudent Dagron, who in 1870 used the method to relay messages by carrier pigeon between besieged Paris and Tours.”

[Microphotography—from experimental 19th century optical science, to parlour toy medium, to mass communication media for France under siege. Dancer the half-baked entrepreneur, to Brewster the teacher and pop science writer, to Dagron the entrepreneur and spy. It's a very satisfying story, but a large gap remains; how did the Confederate spies in Canada learn to create and conceal microformed documents in the clothing of hired British agents?]

Source: Cultural Babbage: Technology, Time and Invention edited by Francis Spufford and Jenny Uglow, Faber and Faber 1996 ISBN 0-571-17242-3 from an essay titled "Sliding Scales: Microphotographyand the Victorian Obsession with the Minuscule," by Marina Benjamin(pages 99-122)

TELEPHONIC JUKEBOXES: THE SHYVERS MULTIPHONE, THE PHONETTE MELODY LANE, THE AMI AUTOMATIC

From Bruce Sterling

“The ‘multiphone’ was created in 1939 by Kenneth C. Shyvers and his wife, Lois. They were operators of ‘juke’ boxes who found that ‘multiphones’ allowed a greater number of songs to be played. Whereas juke boxes played only 20 selections, the ‘multiphone’ could play up to 170 songs.

“’Multiphones’ came to be installed in cafes and taverns in each booth or along the bar. The system required two leased telephone lines, one for the ‘multiphones’ and the other for the loudspeakers on the wall where the music played. The wired music system worked by inserting money, a nickel originally and later a dime. A feminine voice asked for your song number, and you responded. Soon you were listening to the music from the loudspeakers on the wall, which was connected to a central, record playing station.

“Eventually, juke boxes were remodelled to play 180 tunes on 45 rpm records. The ‘multiphone’ system could not compete with them economically, and the system went out of business in 1959.” [Page 103 features two handsome illustrations of multiphone technology. The first is a Shyvers Multiphone, a hefty, towering gadget in stylish Art Deco cast aluminum. It has a speaker-grille in

the bottom, a coin- slot for dimes, and what appears to be a rotating printed menu of “new releases.”

The second device is a “Phonette Melody Lane” from the Personal Music Corporation of Newark, New Jersey. A modest device with a squat rectangular grille, it declares in embossed lettering: “INSERT 1 TO 6 NICKELS. EACH NICKEL PLAYS THE EQUIVALENT OF TWO RECORDS. THIS MACHINE CAN BE HEARD IN YOUR IMMEDIATE AREA ONLY.”]

“Manufacturers continued to experiment with new ways to deliver music to patrons. In 1939, AMI introduced the Automatic Hostess telephone system and in 1941 Rock-Ola invented the Mystic Music System. Both were jukeboxes in every way except that there was no phonograph mechanism. After depositing a coin, the patron spoke into a microphone to an operator who would play the selection; the music returned over the phone lines to the speaker. The systems proved unsuccessful for AMI and Rock-Ola, but the idea worked for the Shyver Multiphone Co., which operated in Seattle, Tacoma, and Olympia Washington, from 1939 to 1959.”

A cousin medium to the telephone jukebox is very much alive today, though it is vastly more expensive, much smaller in variety, is limited to one person, and offers mere samples of songs. “MUSIC ACCESS. If you’d like to hear excerpts from these discs, call 900-454-3277 (95 cents per minute). Touch tone required. US only. Under 18? Get parent’s permission. When prompted: Enter access code (under the name of the artist). Music

controls: 3 = Fast forward, 4 = Louder, 5 = Softer, = Exit music/bypass most prompts. A charge of 95 cents per minute will appear on your phone bill. An average call is about 2.5 minutes."

Source: Telephone Collecting, Seven Decades of Design (With Price Guide) by Kate E. Dooner 1993 Schiffer Publishing Company, 77 Lower Valley Road, Atgen, Pennsylvania 19810 ISBN 0-88740-489-8

NAZI U-BOAT AUTOMATED WEATHER FORECASTING ESPIONAGE NETWORK

"Weather reporting formed a vital part of German military operations. Given that weather systems generally move from west to east across the Atlantic, it was imperative that U-boats at sea enhance the reporting net of surface ships and shore stations by radioing data to BdU as frequently as possible. [BdU - Befehlshaber der Unterseeboote (Commander U-boats); Admiral Karl Doenitz]

"Some missions consisted almost entirely of weather-station patrols, either at the beginning or at the end of tactical missions. In support of these wide-ranging and highly mobile patrols, Germany built 21 land-based automatic weather stations that would provide specific data at predetermined transmission times. Fourteen of these unmanned stations were established in Arctic or subarctic regions (Spitzbergen, Bear Island, Franz-Joseph-Land and Greenland); 5 were located around the Barents Sea above Norway, and 2 were destined for North America. Only the first of those bound for North America,

and planned for delivery by U-537 in the summer of 1943, was ever in operation.

The 2nd mission failed when U-867 was sunk NNW of Bergen on 19 Sep/44.

“BdU charged U-537, on its maiden operation voyage in the summer of 1943, with the installation of automatic station WFL-26 [Wetterfunkgeraet-Land] on northern Labrador. Code-named station “Kurt”, it consisted of a set of meteorological instruments, a 150W short-wave transmitter and antenna mast, and an array of nickel-cadmium and dry-cell batteries.

“The station was packaged in ten cylinders approximately 1 x 1.5 m diameter, each weighing approximately 220 pounds. The cylinder with the instrument unit contained a 10-m-tall antenna mast with anemometer and wind vane. In order to avoid suspicion if discovered, the Germans had marked the cylinders with the rubric “Canadian Weather Service”. As it happened, the fact that no such organization existed by that name did not compromise the plan, for WFL-26 was not discovered and identified as German until July, 1981.

“Once installed as designed, the station would broadcast a coded weathergram at three-hour intervals. To accomplish this, a sophisticated contact drum or Graw’s diaphragm (named after a certain Dr. Graw, then of Berlin) would transcribe the observed values for temperature, humidity, air pressure, wind speed and wind direction into Morse symbols. These were then keyed on 3940 kHz to receiving stations in northern

Europe. Transmission time for the whole weathergram, including one minute for warming up, did not exceed 120 seconds.

“The choice of site for WFL-26 seems to have been left largely to [Kapitan] Schrewe’s discretion in consultation with the technical advisers. In order to avoid all possible contact with people ashore, especially with Eskimoes trekking south at this time of year,’

Schrewe wanted to set up the station as far north in Labrador as possible. At 18:45 on 22 October, 1943, he anchored in Martin Bay, some 300 m from shore in position 60 degrees 4.5 minutes N by 64 degrees 23.6 minutes W.

“Within an hour, a reconnoitering party set ashore by inflatable craft to locate a transmitter site. They would leave empty American cigarette packages and match folders on the site in order to decoy any subsequent Allied intruders.

By 18:00 on 23 October, less than 24 hours after having anchored, the work was done. The first transmission of WFL-26 occurred 3 minutes late, but was otherwise technically perfect.

“Throughout his Canadian patrol, Schrewe continued to monitor WFL-26 and on a number of occasions reported intense jamming by a station that turned out to be German. For reasons we can only surmise, Canadian stations heard nothing from “Kurt” in Labrador.”

Note: Franz Selinger was the first to trace the location of

WFL-26, and ultimately joined Douglas to lead an expedition to the site with the Canadian Coast Guard.

Source: U-Boats Against Canada, German Submarines in Canadian Waters, by Michael L. Hadley; McGill-Queen's University Press, Kingston and Montreal, 1985 References: KTB [Kriegstagebuch ("War Diary")]/ U-537. Douglas, Alec [W.A.B.] "The Nazi Weather Station in Labrador," Canadian Geographic 101, no.6 (December 1981/January 1982): 42-7 Douglas, W.A.B., and Selinger, Franz. "Oktober 1943-Juli 1981: Eine Marine-Wetterstation auf Labrador." Marine- Rundschau, Nr.5 (Mai 1982): 256-62

THE INUIT INUKSUIT

From Ian Campbell

I got this from my favourite science show. I wish I had more info (like an illustrated vocabulary), but this is a start.

[Judy Halliday interviews Norman Hallendy, Founder, Tukilik Foundation.]

Intro: Deciphering the Inuksuit, how stone relics signify everything from good hunting to sacred ground. Some of them are more than 5000 years old, but the Inuit are still building them today. [Bruce Sterling remarks: apparently the Inuksuit, though ancient and pre-literate, is still a living medium, then.] Similar stone structures can be found all over the world.

Norman Hallendy has spent 30 years learning about arctic life including the inuksuit from Inuit elders.

Judy: Every time you see pictures of the arctic you see these magnificant stone structures that [sometimes] look like men. What exactly are these structures?

Norman: They fall into various groups, there are a group of them which are used as hunting instruments. They were put up in lines and occasionally a woman or kid along with them [because there were not that many hunters], and they'd frighten the caribou and they'd be driven into a lane to be picked off by hunters. That was [the most] important function of the inuksuit.

And then there were others that were terribly important

in terms of travel. You could actually learn a series of inuksuit, the shape of them, where they were situated and what time of the year they should be observed, you could learn a whole sequence and travel great distances without ever having been to that place. I knew of an old guy who travelled something like 900 miles without ever having been there based on a song his father had taught him about the Inuksiut and the landmarks along the way.

Judy: So it's like having mileposts or street signs except that the inuksuit are telling you the story.

Norman: Yes, you could look at Inuksuit in general as messages. You see this is the beauty of them, what they are is messages regardless of [their] function, they convey some kind of information to you if you know how to read them.

Judy: Are there ever any kind of religious or spiritual messages?

Norman: I'll generalize here, they could be in two ways, if the Inuksuit was quite a beautiful looking structure, and built a very long time ago, like a thousand years ago, believed to have been built by the Tunik... what the Inuit call the "other people", these were considered objects of veneration, so it's interesting where a functional object over time can become almost a religious object

Judy: Would anyone ever build one to honour somebody?

Norman: Oh yes, that did happen, that happened in individual cases where an inuksuit could be built to commemorate a major event, or a major happening by a

powerful person a camp boss or a shaman for example. I was travelling with one old chap, that... before his uncle died, he asked his son to build an inukshuk to represent the spirit that he had as a spirit helper, as a shaman. And therefore there were these strange little objects that were built on the landscape that were actually spiritual representations. There's another case, this occured early in this century, where there were a group of women out hunting,,, the ice broke, they were carried out to sea, and they were crying out to their husbands who could not help them, and finally they died out at sea. The men were so heartbroken by this tragedy that they built an inuksuit for every woman... so that her soul would have a place to come back to. I asked the question of one of the elders, should these really be called Inuksuit, the answer I got is that you should really refer to them as Sakabluni [sp?] ["stones which have spiritual significance"].

Judy: How did you find out that they carried so many messages?

Norman: Well, I went up to the arctic and kept asking question about everything that came into my mind. Rather than study the people or the culture, I was trying to understand things, from the point of view of how do I respond to the arctic environment. Over time what I really gathered up were the old words, for objects for places or events and happenings. Because I was a very strong believer in semantics, not yours, but theirs. If a person really explained to you in their terms what you were looking at, you might see it from a different perspective.

Source: @Discovery.ca the magazine show of the Discovery Channel Canada), May 28, 1996.

THE GENERAL ELECTRIC SHOW ‘N TELL

From Eleanor J. Barnes

A hybrid medium aimed at children was the GE Show ‘N Tell, a device for simultaneously playing a phonograph record and displaying a synchronized filmstrip. The record was the size of a 45, but played at 33 1/3 rpm. The filmstrip, with about 12 frames on what appeared to be 16mm film, was housed in a rigid cardboard or plastic strip, with a tab at the top for easy removal from the player. The display resembled a television screen, but was actually nothing more than a magnifier for a given frame of the filmstrip. The phonograph was on the top of the “TV” set. It could also be used to play 45-sized records (at either 33 1/3 or 45rpm) without viewing a filmstrip. Each topic consisted of a folder containing a filmstrip and accompanying record.

The “A” side of the record was to be played synchronized with the filmstrip. The “B” side was related audio (such as a song) on the same topic, but was not intended to be played with the filmstrip. A “light-saver” switch allowed the video display (i.e. the lightbulb) to be turned off while playing the “B” side, or any record not designed for filmstrip synchronization. To play a record with filmstrip, one started by turning on the set, setting the turntable speed switch to “N”, and rotating the turntable by hand until an indicator line appeared in a small window next to the turntable. Otherwise synchronization could be off. One then set the record “A” side up on the turntable, and

set the tone arm by hand at the beginning of the record. The slot for the filmstrip was in the top of the set, to the right of the turntable. One had to move the tone arm to gain access to the slot, one reason why you had to set the tone arm on the record before inserting the filmstrip. One slid the filmstrip into the slot as far as it would go, limited by the large tab at the top of the filmstrip; then adjusted so that the first frame of the film was properly centered on the screen. A lever in the side of the set adjusted the focus. Moving the turntable speed switch to "33" started the record. Synchronization of the film to the audio was then automatic.

Well over 100 filmstrip/record sets were available for the GE Show 'N Tell. Categories included Disney characters, Fairy Tales, Children's Classics (Heidi, Robinson Crusoe, Treasure Island, etc.), Christmas, Fun with Facts (Dinosaurs, Indians, Wright Bros., etc.), and Captain Kangaroo. Some titles that surprised me were "Hans Brinker and [sic] the Silver Skates" (properly "Hans Brinker, or, the Silver Skates"), "Huckleberry Finn," and, most surprising of all, "Jane Eyre." Needless to say, longer and more complex stories such as "Jane Eyre" suffered even greater oversimplification than "Children's Classics" such as "Treasure Island."

Source: I own one. GENERAL ELECTRIC SHOW 'N TELL ® Phono-Viewer and Phonograph

THE BLETCHLEY PARK COLOSSUS

From Bruce Sterling

[This article by Tony Sale came my way through the Fringeware list. Mr. Sales' narrative illustrates just a few of the steep technical, financial and social difficulties involved in resurrecting dead Big Iron. Presumably the reborn Colossus is now up and running. I'd be interested in an eyewitness account of the appearance and function of this living media fossil.]

The Colossus Rebuild Project Helping to save Bletchley Park by Tony Sale, FBCS. The switching on of the rebuilt Colossus on Thursday 6th June 1996 by His Royal Highness the Duke of Kent KG. Briefing notes. Colossus was the first large electronic valve computer in the world and it was fully operational in the Spring of 1944, helping to break the German Army High Command messages enciphered using the Lorenz cipher machine.

By the end of WW II, ten Colossi were operating in Bletchley Park, the home of Allied code breaking operations. Each one of them used 2,500 electronic valves and they represented a major technological triumph for British invention. Designed by Dr Tommy Flowers and his team of engineers at the Post Office research labs at Dollis Hill, and manufactured at great speed, they contributed significantly to the war effort by the intelligence that they revealed before and after D Day, 6th June 1944. The Colossi were special purpose, high speed logic calculators of great reliability. They were kept switched on and running 24 hours a day and operated by girls from the

Women's Royal Naval Service, the WRENS.

The very existence of the Colossi was kept a closely guarded secret and unfortunately all but two of them were totally destroyed at the end of 1945. The reasons for this are still not clear. A blanket of silence descended on everything to do with Bletchley Park and this has, until now, prevented Colossus taking its rightful place as one of the greatest achievements of British technology. It has also allowed the Americans, for far too long, to claim that their ENIAC computer, which first ran in 1946, was the first large electronic valve computer in the world.

The first revelations about Colossus appeared in 1970 when Jack Good, one of the wartime code breakers, gave a brief description in a journal article. This was followed in 1972 by further revelations by Donald Michie, another of the code breakers, and then by the researches of Prof Brian Randell.

But even then Colossus was classified as secret and only a few photographs and general details were allowed out.

In 1993 Tony Sale had just finished working at the Science Museum in London restoring some early computers back to working order. Having studied all the available meagre details about Colossus, he decided that given his early career in valve electronics, his involvement with Ml5 and subsequent long career in computing, it would be possible to rebuild a working Colossus.

An approach to GCHQ resulted in all the hardware details about Colossus being declassified, and a further set of

wartime photographs emerged from GCHQ archives. Some of the original engineers were still alive, including Dr Tommy Flowers, and they were all enthusiastic about such a project.

Work began in November 1993 to reproduce machine drawings from the photographs. (All the original drawings had been destroyed in 1960).

All attempts at getting sponsorship for the project failed, and Tony Sale and his wife Margaret decided to put their own money into it in order to make a start since, in view of the age of the original engineers, time was of the essence.

By July 1994 all the gathering of information had been done and the construction phase of the project was inaugurated by His Royal Highness the Duke of Kent KG in Bletchley Park on the 18th July.

The Bletchley Park Trust, of which Tony Sale is Museums Director, has kindly made space available and the construction has taken place in the actual room in H Block where Colossus number 9 stood in WW II.

Two years of hard work helped by an ever growing band of volunteers, including some members of the Computer Conservation Society, and some gratefully received financial donations has resulted in 90% authentic rebuild of Colossus which will now be able to demonstrate its code breaking feats of WW II. His Royal Highness has kindly agreed to switch on Colossus at 10.00 am on Thursday 6th June 1996, an auspicious occasion since it is the anniversary of D Day for which Colossus helped to

provide vital intelligence information.

Source: Tony Sale, FBCS.

THE BLETCHLEY PARK COLOSSUS

From Bruce Sterling

[Through happy accident I have found an eyewitness account of the newly resurrected Bletchley Park Colossus, as mentioned above. This report is by Brian Randell and was distributed on Dave Farber's "Interesting People" list]

The Colossus Rebuild Project by Brian Randell

Yesterday I attended the ceremony at Bletchley Park for the formal switching on of the recreated Colossus computer. It was a glorious day, attended by about two hundred people, many of whom had worked on code-breaking at Bletchley Park during the war.

The project is essentially due to one person, Tony Sale, who is I'm sure uniquely qualified for such a project. He was for many years with M.I.5 (including a period as technical assistant to Peter Wright, of "Spycatcher" fame/notoriety) and so has a very high security clearance. He is expert on ancient electronics, he was for several years a Senior Curator at the Science Museum, London, (where he led the project which got a Ferranti Pegasus and an early Elliott computer operational again) and he has an unbelievable ability to get things done.

The recreated Colossus is remarkably authentic, though not yet finished. (It was in fact complete enough to read encrypted messages from the 5000 character per second paper tape, do some basic processing using an electronic version of the Lorenz (Tunny) rotors, and output counts

onto an electromechanical typewriter, all very impressive.

There are also a whole series of rooms in which the various aspects of the wartime work, from radio interception, through to processing and indexing the results of the codebreaking, are portrayed and explained.

When I succeeded in getting the Colossus partly declassified, and some photographs of it released, I never dreamt that, over twenty years later, I would actually see a real, albeit recreated, one!

Source: Brian Randell

THE ALUMINUM TRANSCRIPTION DISK

From Paul Tough

Hey there, Bruce. I received this press release (with a cassette tape) in the mail yesterday, and thought immediately of the list. The dead medium is the 16" aluminum Transcription Disk, but as you'll see, the story is a much about a dead cultural medium as a dead technological one.

ON THE AIR: YIDDISH RADIO 1925-1955

A decade ago, ethnomusicologist Henry Sapoznik (credited with sparking the Klezmer music revival in the United states) tripped over a pile of 16" aluminum disks in a musty storage room in New York City. On the worn-away labels he could make out some writing: WEVD. WBNX. "Yiddish Melodies in Swing".. "Stuhmer's Pumpernickel Program". "Bei Tate Memes Tish" ("Round the Family Table")."Life is Funny with Harry Hirschfield, Sponsored by Edelstein's Tuxedo Brand Cheese".

In all, more than 100 discs. He paid $30 for the collection. The seller was thrilled. Sapoznik tracked down an old Transcription Disc turntable and sat down to listen to his find.

He put on the first disc. A clear, strong voice announced: "From atop the Loews State Theater Building, the B. Manischewitz Company, worlds largest matzo bakers, happily present Yiddish Melodies in Swing." Fanfare. Drum rolls. Clarinets begin to swing. Two announcers

continued: “They do it to Eli Melekh!” “They do it to Reb Dovidl!” “They even do it to Yidl Mitn Fidl!” “Who does what to which?” “Yiddish Swing takes old Yiddish folk songs and finds the groove for them in merry modern rhythms.. The B. Manischewitz Company proudly presents Sam Medoff with the Yiddish Swing Orchestra. Hit it, maestro.”

And the band launched into a raucous, swinging rendition of Dayenu. “It was simply unbelievable. Unlike anything I’d ever heard,” remembers Sapoznik.

“I felt like I was being transported back in time to this real living moment in history, it was unreal. I was transfixed.” He was also hooked. Sapoznik has spent the past eight years searching for transcription discs of Yiddish radio shows [a transcription disc is the single ‘air check’ of a program used for archival purposes before the era of tape]. He’s combed attics, flea markets, even dumpsters, in an attempt to rescue and preserve these remnants of Yiddish radio.

“You have to remember, these are one-of-a-kind recordings,” explains Sapoznik. “So much was so close to being lost forever. What choice did I have?”

Over the years, Sapoznik has amassed the largest (and only) collection of Yiddish radio in the world, more than 500 hours of material. Rich, wonderful and irreplaceable material from this critical and tumultuous era in American Jewish history. In its heyday in the 1930s, Yiddish radio flourished across America. Thirty stations in New York alone aired Jewish programming: advice

shows, variety shows, man-on- the-street-interviews, news programs, music and game shows in both Yiddish and English. The programs in this collection afford us a snap-shot of American Jewish life in the 1930s and 40s, the collision of Yiddish and American cultures, the dawning reality of the genocide occurring across the ocean, the day-to-day lives of immigrants struggling to make it in a new land. The radio rescued in the Sapoznik collection exists by pure chance; aluminum disks that survived WWII scrap metal drives and the grinding gauntlet of time.

What's been rescued is random. There are more than five hours of DER YIDISHER FILOSOF ("THE JEWISH PHILOSOPHER") from the tiny Brooklyn station WFAB, and only 2 minutes of WEVD's THE FORWARD HOUR, the most important and popular Yiddish radio program ever. But what serendipity has preserved is magical, one-of-a-kind documentary evidence of the explosive and fertile collision of Yiddish and American culture in the 1930s - the sparks of which, in books movies and music, continue to rain down upon us to this day.

Source: David Isay, Sound Portraits Productions, Inc.

INDECKS INFORMATION RETRIEVAL SYSTEM

From Candi Strecker

Database programs on personal computers have proven extremely efficient at organizing and manipulating certain kinds of everyday information. How did people store and sort this kind of data back in the dark ages before desktop computers, say, 25 years ago?

One method was to use the special sortable paper cards marketed as the “Indecks Information Retrieval System.”

Each Indecks card was approximately the size and shape of the old computer “punch card.” Like punch cards, Indecks cards had a diagonally-cut corner, so they could quickly be aligned before sorting. Each card face had two parts: a rectangular central area (where one would note down information), surrounded by an outer margin with about 80 numbered, punched holes. Each number could be assigned a subject appropriate to one’s project. A “notcher” tool was used to chop a notch in a card from any subject hole to the card’s edge. When a stack of cards was aligned and the Sorting Rod (sort of a knitting needle) was run through a particular subject hole, the appropriate cards, those notched at that subject’s hole, would drop down out of the deck into one’s lap. At least one competing product existed in this category, referred to below as “McBee cards.”

From the Last Whole Earth Catalog’s review of Indecks, by Stewart Brand:

“What do you have a lot of? Students, subscribers, notes, books, records, clients, projects? Once you’re past 50 or 100 of whatever, it’s tough to keep track, time to externalize your store and retrieve system. One handy method this side of a high-rent computer is Indecks. It’s funky and functional: cards with a lot of holes in the edges, a long blunt needle, and a notcher. Run the needle through a hole in a bunch of cards, lift, and the cards notched in that hole don’t rise; they fall out. So you don’t have to keep the cards in order. You can sort them by feature, number, alphabetically or whatever; just poke, fan, lift and catch. [.]

“We’ve used the McBee cards to manipulate (edit) and keep track of the 3000 or so items in this CATALOG. They’ve meant the difference between partial and complete insanity.” The subsequent (1980) issue of the Whole Earth Catalog is full-to-bursting with information about personal computers, but contains no mention of the Indecks system. Sometime between 1971 and 1980, this medium seems to have died...

Source: The Last Whole Earth Catalog

PNEUMATIC TYPEWRITERS

From Charles Stross

While bumming around my local remainders shop I came across a fascinating book: "Century of the Typewriter", by Wilfred A. Beeching (Director, British Typewriter Museum). It's an edited re-release of an earlier edition (1972) which was considered one of the definitive texts on typewriters. Is the typewriter a dead medium? Arguably, yes. They're still around, but they no longer occupy a central role in the office, or even in society at large, and the humble manual portable has all but been killed by cheap dot-matrix print heads. And some varieties of typewriter are definitely dead:

PNEUMATIC TYPEWRITERS

"Various attempts were made from 1891 onwards when Marshall A. Wier in London, produced a typewriter with a pneumatic action. The object of such a machine was to eliminate the hard work involved in typing and to reduce the noise and increase the speed. It was also thought to be a substitute for such power as electricity.

"One of the disadvantages of pneumatic machines has always been typebars that did not return fast enough, and although this problem could most likely have been overcome the fact is, it just seemed to present insurmountable difficulties.

"It would appear that the last real attempt to manufacture a pneumatic machine was made in 1914, by a man called Juan Gualberto Holguin in Mexico. This machine was

known as the ‘Burbra’, and used compressed air cylinders as a source of power. In spite of much time and money spent on the production of compressed air typewriters, very little result of any importance has ever been achieved.

“There are reports of various designs of pneumatic typewriters having been produced by large organizations, both in American and in Germany in recent years. Most of these consisted of an electrically propelled plunger which compressed oil in a tube, fired the typebar forward in a sharp thrust, had the advantage of being very quiet and also eliminating most of the moving parts of the conventional machine. The idea seems to have been abandoned due to the high cost and probably to lack of interest.

While Wilf Beeching is an admirable old gent, his book is not considered “definitive” by typewriter collectors. It has a lot of good stuff such as serial number lists, and a multitude of photos (many from the massive collection at the Milwaukee Public Museum), but it is frought with inaccuracies. Much more “definitive” is “The Writing Machine,” by Michael Adler, written in 1973. Adler is about to release a revised edition. My own book on typewriters (“Antique Typewriters and Office Collectibles”) should be on the street next spring. It will feature 100% color photos (many from the Milwaukee Public Museum collection). Is the typewriter dead? Hmmm, I suppose so. But as you compose your next computer message, be aware that the QWERTY keyboard under your fingertips was there at the birth of the

typewriter industry. QWERTY has been with us since 1872

Source: Century of the Typewriter by Wilfred A Beeching, ISBN 0 9516790 0 7

DEAD PERSONAL COMPUTERS

From Stefan Jones

For many years, Stan Veit edited the original incarnation of The Computer Shopper, a newsprint computer hobbyist want-ad monthly that was the last place die-hard Atari, Commodore, Osborne and Apple II users could find sources of hardware and software. The classified ad section of this tome was worth the cover price alone, but it also had articles for the major dying computer standards, and Veit's own history column.

While The Computer Shopper is now a professionally managed, hernia-inducing monthly dedicated to the PC market, Veit's columns are now available in book form. The chapters of Stan Veit's History of the Personal Computer show their origin as magazine columns. The same incidents (e.g., the first months of Stan's Computer Mart store in midtown Manhattan) are described again and again, albeit from slightly different perspectives. This isn't a problem if you read the chapters one at a time and don't expect a consistent narrative.

Each chapter covers Veit's dealings with a particular company: Altair (the folks who arguably started it all), Sphere, IMSAI, and so on. Most of the systems and companies that Veit surveys are long dead; victims of the Apple II with its reliable disk drives and built-in video, or of IBM and its CP/M-squishing Personal Computer. Some of the firms passed on gracefully; others were frauds and cheats. The most entertaining chapter is the tale of the early days of Apple.

Veit rubbed elbows with the two Steves when they were still ragged, long haired hackers; he relates how his mother-in-law made Steve Jobs take off his jeans at a crucial early trade show so she could sew up the rents and tears. Veit also mentions the time that Jobs offered him a chance to buy a significant chunk of the nascent computer giant for $10,000. Had he not had the money tied up in his store, Veit probably would have taken him up on the deal and today would be worth billions...

Another highlight: The time that a computer graphics display - the Cromemco "Dazzler" - placed in the store window caused a late-night traffic jam on 5th Avenue. Drivers were so amazed that they stopped and stared . . . and stared. until police rousted Veit's landlord from bed to turn off the monitor.

Veit doesn't neglect the experiences of his customers. The feats of soldering and switch-flipping the early computer hobbyists had to perform to get a working computer are explained in exquisite detail, making one damn appreciative for BIOS chips and floppy drives.

The tales of vaporware BASIC, dirty tricks, memory boards that periodically blanked and some systems that just plain didn't work are almost enough to make one grateful for IBM and Microsoft.

The computerists of the mid seventies were a different breed, and true pioneers.

Source: Stan Veit's History of the Personal Computer: From Altair to IBM, A History of the PC Revolution by Stan Veit Published by WorldComm, 65 Macedonia Road, Alexander, NC 28701 ISBN 1-56664-023-7 $19.95

EARLY MECHANICAL TELEVISION SYSTEMS

According to Business Week in 1931, television broadcasters admitted “that interest in their efforts is confined almost entirely to the experimenter, the young man of mechanical bent whose principal (sic) interest is in how television works rather than in the quality of images received.” William Boddy, 1991

Fred Hammond, VE3HC, is a veteran Radio Ham who has been on the air since 1929. During the early 1930’s, he was one of a handful of radio experimenters in Canada to become interested in mechanical television, building his own mechanical kit vision receiver. As an active Radio Ham, he was able to audibly monitor the various mechanical television signals.

Always a sensation, television was hardly an overnight success. In 1926, New York Times radio editor Orrin Dunlap called the new medium “an inventor’s will-o’- the-wisp.”

A year earlier, a Scot, John Logie Baird, and an American, Charles Francis Jenkins, generated the first live pictures by pairing (or synchronizing) primitive mechanical scanning discs at transmitter and receiver ends. These demonstrations, soon conducted at department stores, trade fairs, and before invited audiences of scientists and government officials, attracted the curiosity of press and public. Especially interested were some of the quarter-million amateur “wireless” operators, whose numbers

grew during the early 1920s, when “radio mania” swept North America. These hobbyists were among the original producers and consumers of both radio and television.

In 1928, Jenkins began irregular broadcasts of the crude silhouettes he called radiomovies. He described the thrill for his amateur audience as they “fished” for his signals on homebuilt contraptions: “thousands of amateurs fascinatingly watch the pantomime picture in their receiver sets as dainty little Jans Marie performs tricks with her bouncing ball, Miss Constance hangs up her doll wash in a drying wind, and diminutive Jacqueline does athletic dances with her clever partner, Master Fremont.”

At its inception, radio “listening-in” was an active, mainly male pastime, requiring technical know-how, and constant adjustments to the set.

“Lookers-in” to early mechanical television patiently fished for signals. Sometimes they caught tiny, indistinct images. A separate radio set could be used to tune in sound with the picture. Radio entered most households only after it was domesticated. This meant that it came to resemble furniture instead of a gadget, became easier to operate, and could be enjoyed by more than one person at a time. Television followed a similar route into the home, but its complex and expensive assemblage dictated a lengthier experimental period before costs came down, and before the invention of larger screens and clearer pictures could domesticate “seeing at a distance.”

Despite these early limitations, the pioneers of crude mechanical television demonstrated basic principles of

picture scanning and synchronization of transmission and reception. They also glimpsed the medium's potential for storytelling. In 1928, the first live drama broadcast, a three-camera production called "The Queen's Messenger," was received on a General Electric Octagon set in Schenectady, New York. In 1931, the Radio Corporation of America (RCA) broadcast experimental signals from the Empire State Building, featuring a familiar cartoon character, Felix the Cat. The first TV star was born. By 1935, mechanical television had reached a dead end in North America. Image resolution remained low, at best reaching 120 lines of picture definition. Transmission and reception standards were nonexistent. Available programming was unpredictably scheduled. Lacking an audience, advertisers were reluctant to purchase commercial time.

One of the earliest proposals for a mechanical television system was put forward by German researcher Paul Nipkow in 1883. When he developed patent No. 30,105, he was an unknown twenty-three-year-old student living in Berlin.

It proved to be the basis for most early television schemes in the world, although he never built the apparatus. In Nipkow's patent, which he called an 'electric telescope,' a disc was punched with holes in a spiral near the outer edge. When the disc revolved, each hole vertically scanned a line of the image, allowing variations in light to reach a selenium cell. As one hole swept over a segment of the picture, the next in sequence tackled the portion next to it, until the complete subject had been scanned.

The selenium cell transferred the light variations to an electronic signal. Pictures were reconstituted at the receiver by a similar disc which was synchronized with the transmitter. Jenkins One of the better known experimenters with mechanical television was Charles Francis Jenkins, a prolific American inventor.

In May 1920, at the Toronto meeting of the Society of Motion Picture Engineers, Jenkins introduced his "prismatic rings" as a device to replace the shutter on a film projector. This invention laid the foundation for his first radiovision broadcast. He claimed to have transmitted the earliest moving silhouette images on June 14, 1923, but his first public demonstration of these did not take place until June of 1925.

Jenkins Laboratories constructed a radiovision transmitter, W3XK, in Washington D.C. The short-wave station began transmitting radiomovies across the Eastern U.S. on a regular basis by July 2, 1928.

Jenkins wrote in 1929: "This gave the amateur action-pictures to 'fish' for; and during August following a hundred or more had finished their receivers and were dependably getting our broadcast pictures, and reporting thereon, to our great help." It was in this way that Jenkins actively promoted enthusiasm and experimentation in the short-wave radio community, and the U.S. experienced its first television boom, with an estimated 20,000 lookers-in.

Baird John Logie Baird, a Scottish engineer and entrepreneur, achieved his first transmissions of simple

face shapes in 1924 using mechanical television. On March 25, 1925, Baird held his first public demonstration of “television” at the London department store Selfridges on Oxford Street in London. In this demonstration, he had not yet obtained adequate half-tones in the moving pictures, and only silhouettes were visible. In the first week of October, 1925, Baird obtained the first actual television picture in his laboratory. At this time, his test subject was a ventriloquist’s dummy, “Stooky Bill,” which was placed in front of the camera apparatus.

Baird later recollected, “The image of the dummy’s head formed itself on the screen with what appeared to me an almost unbelievable clarity. I had got it! I could scarcely believe my eyes and felt myself shaking with excitement.” After much discussion with his business associates, and further improvements, Baird decided to publicly demonstrate television on Tuesday 26 January, 1926, again at Selfridge’s department store. This was the first opportunity for the general public to see television.

The Baird company continued to publicize this historic demonstration, and J. L. Baird’s other scientific breakthroughs as they feverishly worked to obtain financial backing and construct a line of home receivers. With Baird’s transmitting equipment, the British Broadcasting Corporation began regular experimental television broadcasts on September 30, 1929. By the following year, most of Britain’s major radio dealers were selling Baird kits and ready-made receivers through retail and by mail order.

The Baird company was licensed to provide intermittent broadcasts from the BBC transmitters, and at least 3,000 enthusiasts “looked in” to see as well as hear some of Britain’s most popular singers and comedians.

Mechanical TV: How it works

The scanning and reproducing discs are similar. Both are mounted on driving motors, and each is punched with a spiral of small holes along the outer edge. The number of holes matches the number of lines of picture definition. At the transmitter in this mechanical system, the studio is in total darkness. A light emanates from a lamp behind the disc and, projected through the holes set in the spiral on the outer edge, scans the features of the subject’s face. The photocell converts these variations in the reflected light into the electric impulses, which, once amplified, can be transmitted by radio waves. At the receiver, the signal is converted into a sequence of bright flashes by the neon tube. The reproducing disc rotates rapidly in front of this tube, and converts each flash of the lamp into a small element of the image. The rapid speed of the disc makes “persistence of vision” possible for the looker-in.

“Persistence of vision” means that the brain retains an image for one tenth of a second after it is perceived by the eye. The rapid repetition of moving images (in film or television) tricks the brain into perceiving continuous images.

The General Electric Octagon, 1928 (U.S.A.) with RCA radio 1928 (U.S.A.) This mechanical television receiver was built for a 48- line television system developed

during 1927 by Ernst W. Alexanderson, who was the Chief Consulting Engineer at the GE laboratories in Schenectady, New York. An elaborate experimental transmission on this type of receiver was internationally recognized as the first television drama. Entitled “The Queen’s Messenger”, the play had two characters, with only the heads or the hands of the four actors visible at any one time. Two actors spoke the lines, while the other two acted as “hand models”. The transmitted signal was received on a console radio and monitored through the 3” lens on the Octagon by the director, and the actors were only a few feet away. GE considered mass-production of the Octagons, but this never materialized.

Daven Tri-Standard Scanning Disc, 1928 (U.S.A.) The lack of a common standard of picture definition contributed to the demise of the mechanical television boom of the late 1920’s and early 1930’s. One solution was to make a television set that could receive a number of different standards. This Daven unit was based on a large 24” disc capable of scanning three different standards of picture definition, 24-line, 36-line and 48-line, enabling the viewer to receive more stations. The television signal was received by a short-wave radio. The operator then had to adjust the height of the neon lamp to match the correct spiral of holes, and synchronize the rotation of the scanning disc to the corresponding rotations per minute. The tiny picture would be visible in one of the three frames (marked within the black outline).

Homebrew W1IM Scanning Disc, 1928 (U.S.A.) This home-made scanning disc television unit was built by the

Connecticut radio experimenter, Clifford Fraser, using hand-written instructions sent to him by the mechanical television pioneer and broadcaster, Charles Jenkins. Jenkins was aware that “Radiovision” was in its infancy and actively encouraged involvement, experimentation and the exchange of information within the amateur radio community. In the late 1920’s, he even went so far as to offer Radiovisor Kits similar to this one at $7.50 U.S. postage paid - a price so low that it meant a loss for his company.

Jenkins Model 202 Radiovisor, 1929 (U.S.A.) This mechanical scanning-drum unit was engineered, designed and manufactured by the Jenkins Television Corporation, a company founded in 1928 by the American television pioneer, Charles Francis Jenkins. As early as 1894, he presented an article in the periodical, Electrical Engineer, on a method of electrically transmitting pictures. He was one of the earliest to succeed at television transmission, and claimed to have executed the first reported transmission of television by radio in 1923. Hugo Gernsback of Radio News and Watson Davis of Popular Radio witnessed a demonstration in the same year. In 1928 Jenkins announced the birth of a new entertainment industry, “Radio Movies”. Shortly thereafter, Jenkins Laboratories Incorporated initiated 48-line silhouette broadcasting through regularly scheduled telecasts over station W3XK and a few other stations that showed “Radio Movies”. Jenkins preferred the term “Radiovision” to “Television”, which explains this unit’s name.

Baird Televisor, 1930 (U.S.A.) The Plessey model was the

most popular version of the mechanical “Televisor” to be available to the British and West European retail buying public. It was engineered and designed by John Logie Baird and manufactured by the Plessey company in England. It was purchased by television enthusiasts to watch the periodic Baird Studios/BBC broadcasts available from 1929 to 1932. The 30 line images did not take up the entire “screen,” but were in fact 6cm high and 2cm wide. Instead of black and white, they were black and red due to the colour of the neon gas in the lamp. About 1,000 of these sets were originally produced and priced at just over 18 British pounds each. There were kit receivers without the tin cabinet, available from Baird’s for only 7 pounds. Baird was one of the true pioneers of television. He successfully demonstrated the possibilities of the Nipkow system of mechanical television by achieving the first television picture in October, 1925.

Western Television Corporation Visionette, 1932 (U.S.A.)
Western Television Corporation played a significant role in the evolution of television in North America. Canada’s first experimental television station, which was operated by the Montreal newspaper La Presse and radio station CKAC, was supplied with Western Television equipment. The Canadian public witnessed Western Television’s technology through a special mechanical projection apparatus, which was demonstrated at Eaton’s and department stores in Toronto, Montreal and Winnipeg during 1933. In the U.S., Western’s travelling demonstrations included a 9-day run at Macy’s in New York that was witnessed by over 200,000 people. The

Western Television Corporation drew on the talents of television pioneer Ulysses A. Sanabria, who is known for his use of interlaced scanning. Interlacing improved picture quality by reducing flicker. This television utilizes an interlaced aluminum scanning wheel and 3” magnifying lens. It was among the last and most advanced mechanical home televisions to be in use before the electronic sets began to show greater promise.

Source: These are excerpts from the catalog from the exhibition at the Royal Ontario Museum, Watching TV. The exhibition runs through September 15, 1996.

BAIRD MECHANICAL TELEVISION, PART ONE: TECHNICAL INTRODUCTION

From Trevor Blake

The discovery leading to the possibility of mechanical television was an accident. While laying the first trans-Atlantic cable, a worker noticed that some of his tools were glowing. An analysis of the metal revealed a concentration of selenium, the metal used soon after in the earliest photoelectric cells. Selford Bidwell used a photoelectric cell to transmit an image electronically in 1881: over the course of several minutes, a two-inch square image could be sent via telegraph lines.

Three years later, Paul Nipkow was granted a German patent for the Nipkow disk a complete and functional television system in 1884.

The development of the neon tube in 1910 furthered mechanical television. Film achieves the illusion of motion by taking advantage of the persistence of vision: still images in a fixed location which are refreshed at a rate of sixteen times per second (or more) are interpreted by the human mind as moving images. Television achieves the illusion of motion in a similar but unique fashion. Rather than refresh the entire image at once, as film does with each cell that passes in front of the projector's light, television refreshes an image one line at a time in a scanning process.

Within the cathode ray tube, an electron gun scans a

single line of an image from one side to the other, then scans the line underneath it, until it has scanned an entire image.

The Nipkow disk is an earlier, mechanical means of achieving the same side-to-side, top-to-bottom scan process. It consists of a disk that rotates on its axis. A series of evenly spaced, uniformly sized holes are cut into the disk, spiraling in toward the center. The disk is housed in a box with a small viewing window: the outermost hole of the disk will form the outermost scan line visible in the viewing window, and each additional hole will form additional scan lines. The rotation of the disk as seen through the viewing window provides scanning from side to side, and the spiral placement of the holes provides scanning from outermost to innermost scan line. A light source which can be varied in intensity is placed on the opposite side of the disk behind the viewing window. As the light flickers and the disk rotates, television is achieved.

Mechanical television cameras and receivers alike use the Nipkow disk, but where the receiver uses a flickering light to produce an image, the camera uses a photosensitive cell to generate an image. The rotation of the disks is synchronized by part of the transmission signal (which has included radio, short wave and telephone) or direct wiring.

The disks rotate at around 900 rpm and initially produced television two inches square. The earliest mechanical televisions offered between 16 and 24 lines of

resolution. By the late 1920s, they offered between 48 and 60 lines. Double and triple spirals of scanning holes were used, as well as scanning drums and belts. Lenses were fixed in the scan holes to project the image onto a larger screen (up to 8 inches in some cases).

Mechanical television cameras were synchronized with film projectors, allowing the transmission of film. Studio B of the BBC used a hybrid of this system: the subject was filmed, the film was instantly processed and then scanned for transmission. There was a delay of around one minute between event and transmission as the film developed.

The light required for mechanical television is intense, so much so it was nearly impossible to perform while being televised. The flying spot camera was one solution to this problem: an additional scanning disk, synchronized to the camera, cast a brilliant light on the subject in the same spot they were being scanned.

The rest of the studio, including the control room, was kept in complete darkness. Another solution to this problem was the use of multiple arrays of concave lenses to focus light into the camera more efficiently.

Source: BOOKSManly, Harold: DRAKE'S RADIO ENCYCLOPEDIA (Drank & Co. 1927) Ghirardi, Alfred: RADIO PHYSICS COURSE (Radio & Technical Pub. 1933) Zworkin, Y. K. and Morton, G. A.: TELEVISION (John Wiley 1940) Goldstein, Norm: THE HISTORY OF TELEVISON (Portland House 1991) Kisseloff, Jeff: THE BOX (Viking 1995) Ritchie, Michael: PLEASE STAND BY (Overlook Press 1994) Winship, Michael: TELEVISION (Random House 1988) Yanczer, Peter: THE MECHANICS OF TELEVISON (Peter Yanczer 1987) (Peter Yanczer, 835 Bricken Pl., St. Louis MO 63122 USA) MAGAZINES Popular Science, March 1932 Mechanics and Handicraft, Vol. 1 #1, Winter 1933 Television: Journal of the Royal Television Society, April 1995 VIDEO The Race for Television, BBC

BAIRD MECHANICAL TELEVISION, PART TWO: TECHNICAL INTRODUCTION

From Trevor Blake

JOHN LOGIE BAIRD

Scotsman John Logie Baird had long been an entrepreneur and inventor. When he was twelve he built his own telephone. He had invested in chutney in the West Indies, artificial diamonds in Glasgow and soap in London. In 1918 he held the patent for the Baird Undersock, a sock worn beneath regular socks.

In 1920, at the age of 31, he began his life's work, the undercredited discovery and development of television. Beginning with a personal ad in the London Times ("SEEING BY WIRELESS: Inventor of apparatus wishes to hear from someone who will assist [not financially] in making working model"), Baird set out to build a working television system using borrowed money and the material he had at hand, which included darning needles, hat boxes, a Rich Mix biscuit tin, sealing wax and a bicycle lantern. His Nipkow disk was cut from an old tea chest. In February 1923 he entered the shop of Hasting radio dealer Victor Mill and asked for assistance, saying "I've fitted up an apparatus for transmitting pictures and I can't get it to go."

Mills accompanied Baird back to his laboratory / apartment and waved his hand in front of the neon: when Baird shouted "it's here, it's here!", the first real-time

electronic moving picture in world history occurred. Not long after Baird demonstrated his system to the local press, but was evicted from his apartment. Baird relocated to London and set up a second and lab in Soho. Using ventriloquist dummies (better able to withstand the intense heat and light of his equipment), he succeeded in transmitting a televised image one yard across his room.

In March 1925 he gave the first public demonstration of television, sponsored by Selfridge's Department store. A demonstration of television in January 1926 in Baird's small, drafty attic apartment failed to impress the Royal Institute, particularly when the long white beard of one of the men became entangled in the mechanism.

In Autumn of the next year he transmitted eight miles, and formed a company: Television Ltd. The first recorded television images were made on 10" wax disks called Phonovisors, no later than September 1927 in Baird's labs: he had been awarded a patent for this technology the year before. Phonovisor disks captured 12.5 frames of 30-line resolution television per second. Baird also patented Noctovision, the use of infrared light in television, and demonstrated color television (using a rotating filter system) in 1927.

By 1928, Baird Televisors sold for between 20 and 150 pounds (kits sold for 16 guineas). Baird's assistant Benjamin Clapp travelled to New York City to receive the first transoceanic television signal. The box of equipment he used was labeled 'experimental radio equipment' to

prevent customs from seizing it as a dangerous or profitable new technology. It took two months before a break in the weather allowed Clapp to see the image of Stukey Bill [a.k.a."Stooky Bill"], the ventriloquist dummy head used in the Baird studio, but once the press was called in the event received one inch headlines across the nation. On the way home aboard the Berengeria, Clapp allowed the ship's wireless operator to see his fiance in England via television while 1,000 miles out at sea.

Eighteen licensed transmitters were in operation in the United States by the late 1920s, transmitting faces and silhouettes. General Electric's House of Magic recorded synchronized sound and pictures in New York. In 1928 Bell Telephone transmitted a television image from New York to Washington D. C. The threat of losing television to the USA gave Baird leverage in convincing the BBC to begin television transmission.

In 1928 Baird convinced a London surgeon to lend him an eyeball removed from a young man's head. In his own words. "As soon as I was given the eye, I hurried in a taxicab to the laboratory.

Within a few minutes I had the eye in the machine. Then I turned on the current and the waves carrying television were broadcast from the aerial. The essential image for television passed through the eye within half and hour after the operation. On the following day the sensitiveness of the eye's visual nerve was gone. The optic was dead. I had been dissatisfied with the old-fashioned selenium cell and lens. I felt that television demanded

something more refined. The most sensitive optical substance known is the nerve of the human eye. I had to wait a long time to get the eye because unimpaired ones are not often removed by surgeons. Nothing was gained from the experiment. It was gruesome and a waste of time."

The BBC began mechanical television transmission in 1929. In July 1930, the BBC transmitted Pirandello's play "The Man with a Flower in His Mouth" in 240 lines of resolution. The heads and shoulders of the actors were shown as they spoke their lines and sat on a stool: when another actor was to be shown, a screen was held before the camera as the actors exchanged seats. The Derby was televised in June 1931: a camera waited at the finish line until the moment when the horses and jockeys passed by. The BBC was transmitting four days a week by August 1932.

By this time, Baird's financial backers began to insist he look into the electronic television of Philo Farnsworth. When Farnsworth travelled to England while raising money in his legal battles with RCA/EMI, he met with Baird and demonstrated his system. Baird explained the superiority of his system to Farnsworth, but after watching several minutes of cathode ray tube television he left the room without a word. Baird's sponsors gave Farnsworth $50,000 to supply Baird with electronic television equipment. A fire that nearly destroyed the Alexander Palace studios soon after closed down the BBC, and when they reopened they were fully committed to the electronic television of EMI.

After 1,500 successful mechanical transmissions, the BBC was ready to switch to the EMI system. Beginning September 1935, they held a final six-month trial, during which the two systems were transmitted on alternate weeks from Alexander Palace, 12 miles north of London. Studio A used the EMI system, while Studio B used the Baird film pickup system. Baird's system lost, and on 2 November 1936 the BBC transmitted the first high-definition television signal using the EMI system. Many executives and technicians were invited to the studio on opening day, but when Baird showed up he was left wandering the halls, shut out from celebrating the technology he had developed. The final mechanical television transmission in England occurred in February 1937. Baird continued to develop television technology. In 1940, he introduced the Telechrome, an electronic color television system in which two electron guns scanned 600 - 650 lines on a white mica sheet coated with orange phosphor on one side and blue-green phosphor on the other. War time restrictions prevented full scale production of the Telechrome. At the time of his death in 1946, John Logie Baird was working on stereoscopic television.

Source: BOOKSManly, Harold: DRAKE'S RADIO ENCYCLOPEDIA (Drank & Co. 1927) Ghirardi, Alfred: RADIO PHYSICS COURSE (Radio & Technical Pub. 1933) Zworkin, Y. K. and Morton, G. A.: TELEVISION (John Wiley 1940) Goldstein, Norm: THE HISTORY OF TELEVISON (Portland House 1991) Kisseloff, Jeff: THE BOX (Viking 1995) Ritchie, Michael: PLEASE STAND BY (Overlook Press 1994) Winship, Michael: TELEVISION (Random House 1988) Yanczer, Peter: THE MECHANICS OF TELEVISON (Peter Yanczer 1987) (Peter Yanczer, 835 Bricken Pl., St. Louis MO 63122 USA) MAGAZINES Popular Science, March 1932 Mechanics and Handicraft, Vol. 1 #1, Winter 1933 Television: Journal of the Royal Television Society, April 1995 VIDEO The

Race for Television, BBC

BAIRD MECHANICAL TELEVISION, PART THREE: BAIRD MECHANICAL TELEVISION PART 3: OTHER COUNTRIES, OTHER SYSTEMS

From Trevor Blake

PART THREE: OTHER COUNTRIES, OTHER SYSTEMS

England and the United States were not the only countries that utilized mechanical television. The race to be the first country to develop television was truly international and included Canada, France, Germany, the Soviet Union and Japan.

The base for mechanical television research in the Soviet Union was Leningrad. The first Russian television image was transmitted in 1928, and the first public broadcast occurred in 1934. The first broadcast began "Attention, attention, attention radio viewers: watch, listen to the first television concert." The station was soon flooded with letters from radio listeners asking where they were supposed to look to see the concert.

In March 1935, Germany offered the world's first low-definition (electronic) television service. It used 180 lines of resolution (compared to the 405 offered by the BBC over a year later) and was seen mainly in public viewing rooms. The Berlin Olympics were transmitted by television, and in March 1936 a video telephone system was established. No public official was recorded as using television: the medium was used entirely for

entertainment during this period. While England, the USSR and the USA ceased transmissions during World War Two, Germany paused only during the invasion of Poland.

If the BBC had not adopted the EMI system, it is unlikely England would have had the facilities to manufacture cathode ray tubes on an industrial level. And had this not been possible, the manufacturing of radar screens, and therefore the outcome of the war, might also have been in question. Mechanical imaging systems remain a vital technology.

Computer mice use two slotted disks that are rotated by the track ball. These disks are positioned next to tiny lights: as the disks spin the lights are registered as on or off by photosensors, and software translates the blinking lights as x-y cursor position. Software or sound activated moving mirrors are the key component to laser light shows as well as some virtual reality headgear.

While not commercially successful, video disks (as opposed to laser disks) were an entirely functional medium: a magnetic-tipped needle read encoded pulses in a large plastic disk. All of these technologies, as well as television, are directly indebted to John Logie Baird.

Source: BOOKSManly, Harold: DRAKE'S RADIO ENCYCLOPEDIA (Drank & Co. 1927) Ghirardi, Alfred: RADIO PHYSICS COURSE (Radio & Technical Pub. 1933) Zworkin, Y. K. and Morton, G. A.: TELEVISION (John Wiley 1940) Goldstein, Norm: THE HISTORY OF TELEVISON (Portland House 1991) Kisseloff, Jeff: THE BOX (Viking 1995) Ritchie, Michael: PLEASE STAND BY (Overlook Press 1994) Winship, Michael: TELEVISION (Random House 1988) Yanczer, Peter: THE MECHANICS OF TELEVISON (Peter Yanczer 1987) (Peter Yanczer, 835 Bricken Pl., St. Louis MO 63122 USA) MAGAZINES Popular

Science, March 1932 Mechanics and Handicraft, Vol. 1 #1, Winter 1933 Television: Journal of the Royal Television Society, April 1995 VIDEO The Race for Television, BBC

FIRE SIGNALS AND HORSE POST ON THE GREAT WALL OF CHINA

From Bruce Sterling

“System of Fire Signalling”

“There can be no doubt that the main duty of the detachments echeloned along the Limes was to provide guards for the watch-towers who would give timely alarm by signals to the rest of the line in case of the approach of raiders.

The numerous wooden slips which accurately register the time and other details of fire signals received, or else refer to arrangements made for lighting them, would alone suffice to prove that this means of optical telegraphy was in regular use along the border.

“But the abundant information from early Chinese texts collected by M. Chavannes shows that the system of fire signalling was known and practiced along the frontiers of the Empire long before the time of the Hans. The distinction which those texts indicate between signal fires visible at night and smoke signals intended for use by day is distinctly mentioned in one of the records on wood. In another, neglect to transmit such a signal received from one side of the line by immediately lighting a fire in turn is acknowledged as a grievous delinquency.

“We are not informed by our records as to any devices by which such fire signals could be varied to convey more definite news along the guarded line. But since later texts quoted by M. Chavannes refer to a method marking the

relative strength of the attacking force by corresponding repetition of the fire signals, it is likely that similar devices were practiced in Han times.

“We read elsewhere that General Ma Cheng, when reorganizing the defences of the northern border in 38-43 A.D., placed the fire-signal stations ten Li or about two and a half miles apart; and this accords remarkably with the average distances observed from tower to tower on the earlier Tun-huang Limes, due allowance being made for the varying configuration of the ground.

“No doubt such a system of optic telegraphy was insufficient to assure the rapid communication of warnings at all times or for the communication of important particulars. Hence the need for mounted messengers repeatedly mentioned in the records, who by relays of horses kept ready at the stations could cover distances at great speed. The presence of such mounts was in fact attested by the plentiful horse-dung we found at each tower, however confined the accommodation near it.

“A piece of ancient Chinese poetry which M. Chavannes translates, though referring to a part of the border much farther east, gives so graphic a picture of such a scene that I cannot refrain from quoting it:

‘Every ten Li a horse starts; every five Li a whip is raised high; a military order of the Protector-General of the Trans-Frontier regions has arrived with news that the Huns were besieging Chiu-ch’uan; but just then the snow-flakes were falling on the halls along which the barrier

stretches, and the signal fires could raise no smoke.”

Source: Ruins of Desert Cathay: Personal Narrative of Explorations in Central Asia and Westernmost China by M.Aurel Stein Macmillan and Company, Limited St. Martin’s Street, London 1912 915.84 St34r v.2 Main Library University of Texas at Austin Volume II, Chapter LXIII, page 152,

THE MINICINE TOY PROJECTOR

From Stephen Herbert

The MiniCine Toy Projector.

Arguably ‘The Best Toy Projector Ever Made’ (my description!). The MiniCine was sold in Britain by Martin Lucas Ltd., from addresses in Balham, South London, and Hollingwood, Lancashire. It was introduced around 1949/50, and seems to have disappeared about 1958. It was advertised in various publications, from the Film User handbook to Eagle comic.

There were two basic models in metal, one for use with a transformer, and one that was larger and took batteries in the base. The magic of the MiniCine was that it could give a five minute movie show with just one foot of 35mm film. It achieved this with an ingenious mechanism that moved the filmstrip up and down intermittently, stopping it in four positions. There were four rows of pictures on the strip (animated cartoon drawings), and the sequence was designed to give a repeat cyclic motion.

At the same time that the strip was moving up and down, it was also moved gradually along, so new parts of the strip came into view (a sort of motion picture panorama). All strip drawings, even those based on Disney licensed characters, were specially drawn for the system. The result was (and is, I’ve got four of them, and sixty strips) rather wonderful.

A particularly effective sequence is Bambi’s escape from the forest fire. Not all strips were ‘movie,’ some were

sequences of still pictures (including educational subjects). There was also a MiniCine (Disney model) projector sold in the USA. I have a photograph of one but no further details. It had a plastic body. Not really an entirely dead medium, as I used one to give a show at a friend's wedding party last month. I do not know of any published information on the MiniCine, apart from a technical paper that I wrote and distributed about 10 years ago.

THE THEATROPHONE, THE ELECTROPHONE

From Bruce Sterling

“At about the same time as the telephone and gramophone were beginning to be domesticated, a near precursor of the radio was going through a similar process. It was a home- entertainment invention of about 1893 known as the ‘Theatrophone,’ a device which grew out of the invention of the telephone and was demonstrated at the World Exhibition of Electricity in 1881.

“For just a few years at the start of the century, Parisians could have Theatrophone instruments installed which actually provided home entertainment, rather than mere telephone communication, by relaying live performances from theatres. However, unlike the wireless, the Theatrophone needed wires between the transmission apparatus and the receivers, rather than broadcasting via air waves. Microphones installed on the stages of such theatres as the Paris Opera picked up the sounds of live performances and relayed them by wire to the telephone exchange, where an operator was on hand to offer a selection of programmes to subscribers renting Theatrophone receivers.

“Several different programs, related from various theatres, were available to subscribers who could make their own selection by revolving a switch and inserting coins into their machines to buy a fixed amount of

listening time. The Theatrophone receivers, ornamental boxes with telephone earpieces attached on trailing wires, even offered stereophonic listening by the use of a pair of microphones left and right on the stage, connected by twin lines to the home receivers. These were also installed in hotel lounges and in restaurants; furthermore, programmes could be relayed to London and Brussels via normal international telephone distribution exchanges.

“By 1895, Britain had its own equivalent of the French Theatrophone. It was called the ‘Electrophone’ and it offered subscribers a similar service via their telephone lines and as well as receiving ‘local’ relays from theatres, churches and London’s Royal Opera House, they could also switch to exchange programmes from Europe via a link-up with the French company. The Theatrophone idea might have proved a great success as an entertainment and news broadcasting medium if it had not been for the appearance of the wireless which nipped it in the bud.”

Source: RADIO ART by Robert Hawes, photography by Paul Straker-Welds
Green Wood Publishing Company Ltd, London 1991 ISBN 1-872532-29-2
page 24

PEEPSHOWS

From Stephen Herbert

Not too much in print about peepshows, but the following are worth having: ‘Peep Shows’, written, printed and published by Paul Braithwaite. The author uses his own pen-and-ink sketches of peepshow engravings, photos,and paintings to guide us through the enormous range of peepshow types, from 17th to 20th centuries; ‘back’ peep shows, ‘caravan’ types, etc. Includes notes on panoramas, dioramas, and mutoscopes.

Five German specialists in pre-cinema contributed to this well- researched and beautifully colour-illustrated hardback (in German). Megalethoscopes, Polyorama lorgnette, Engelbrecht cut-out views, etc. Excellent.publisher: Fusslin Verlag, Stuttgart, 1995 ISBN 3-9803451-2-2 Fax 0711 339903. ‘Die Welt im Kasten’ by Thomas Ganz.

Ganz is third generation from a Swiss family that started in the audio- visual field making magic lanterns, well over a century ago. This book is based on his premise that for centuries we have been looking at the world through (and by means of) a series of boxes = the camera obscura, the magic lantern, the perspective box, the Peepshow, the photographic camera, the Cinematographe, etc. Conceptually important and jam-packed with illustrations of dozens of types of dead media;Physionotrace portraits, panoramic cameras, Zograscopes. Includes early magic lantern chronology.

THE NINTENDO VIRTUAL BOY, THE LOGITECH CYBERMAN 3D MOUSE, THE NINTENDO POWER GLOVE

From Pat Lichty

Nintendo Virtual Boy

In the halcyon rush to capitalize on the pop cultural fad of virtual reality, Nintendo produced what amounts to a cross between a Super NES and a head-mounted display.

The gaming device is two to three times the size of other commercial head mounted display devices. Furthermore, due to its bulkiness and weight, the Virtual Boy sits perched atop a table stand. This causes the player to sit hunched over the device, reminding me of the old Edison Kinetoscopes.

The Virtual Boy rests comfortably atop the face if it's used in a reclining position, with the stand resting on the viewer's chest. The display itself is a monochrome red of fairly high resolution (well above 320x200), and offers personal adjustments for optical parallax and focus. The control has six buttons and two "joypads", much like those offered on the Sony PlayStation.

In July 1996, there were only about 20 games extant for this platform. According to discussions with various local and regional retailers, the Virtual Boy sales were lackluster, and were not up to Nintendo's expectations. I would speculate that the Virtual Boy's market failure was due to its monochrome display, its cumbersome

ergonomics, and the fact that no one else can watch the user play.

The competitive spirit is a big part of the enjoyment of gaming. Currently, the Virtual Boy is still on the shelves, retailing for around $95. The used apparatus are commonly available for around $40, with games selling for about $25.

One ironic point of note: as I sifted through the Virtual Boy titles on the shelves, the title displayed most prominently was “Water World.”

Logitech CyberMan (3D Mouse)

Another entry in the race to capitalize in the VR craze of the mid-nineties was the Logitech CyberMan mouse. A three-buttoned horn-like appendage connected to an ovoid base, the Cyberman was a masterpiece of design aesthetics. The user could push, pull, turn, and twist the mouse- like control horn to control movement and rotation in three axes, with six degrees of freedom. Furthermore, the Cyberman featured tactile feedback in the form of vibration through the “mouse.” To sense its location, the device read its position through pressure-sensitive resistive films. These materials also allowed the CyberMan to sense the degree of twist in the control horn, enabling it to control the rate of spin during game play. The tactile feedback was created by a motor with an offset weight, which vibrated with an often startling thrumming noise. In operation, the CyberMan was extremely inaccurate. Its location method was imprecise, and its plastic construction was flimsy. It was difficult to

operate in graphical user environments, such as Microsoft Windows. However, the CyberMan was supported by game manufacturers, such as ID and Apogee. In games such as Descent, the Cyberman performed wonderfully. It's still my personal favorite I/O device for 3D games, along with the Virtual I/O glasses' head tracker. The CyberMan was discontinued by most national retailers in mid-1995, and hasn't been heard of since.

Source: Ownership, retail market observations.

AN AMISH CYCLORAMA

From Candi Strecker

A cyclorama too new to be on your posted list of "Known Surviving Panoramas!" This is from a brochure I picked up on a recent visit to my ancestral state of Ohio.

"Behold Behalt in Berlin" (Behalt is German for 'remembering') is one of only three 'cycloramas' in the country, and it is located near Berlin [Ohio, USA], at the Mennonite Information Center.

"It shows the history of the Anabaptist movement, which includes the Mennonites, Amish and Hutterites. Beginning with Christ, the paintings go through the early history of the church, through the Middle Ages and the rise of the Protestant movement, then the history of the Anabaptists.

"The circular mural is 10 feet high and 256 feet long, and it took artist Heinz Gaugel four years to paint it. The room is dimly lit, with lights only on the paintings. This adds to the drama, and some people like to sit on the chairs provided and absorb the story at length. Others walk around slowly and stop periodically to study a section.

You could visit Behalt many times and there would still be more to see.

"Gaugel is a self-taught artist. He was born near Stuttgart, Germany, in the Swabish Alps. He began sketching at 6 and did his first oil painting at 12.

After World War II, Gaugel started a career as an accountant in Germany, but was transferred to the art

department of a factory where he designed metalware.

“Gaugel emigrated to Canada in 1951 and became known for his huge mosaics and large paintings outside churches and commercial buildings.

“He came to Ohio in 1971 to create a statue in Cambridge. That didn’t work out, but he connected with area Mennonite and Amish communities and stayed for 10 years. During that period, some Mennonite businessmen contacted him about developing their history through art.

“Gaugel moved back and forth between his Canadian studio and Holmes County, where the cyclorama was completed in 1992. [Bruce Sterling remarks: Among candidates who might revive the panorama/cyclorama form in the 1990s, one could scarcely pick a better group than the Amish and Mennonites. The cyclorama is a spectacular, immersive virtuality without moving parts]

Source: Amish Heartland, a tourist brochure dated June 1996 published by Spectrum Publications, P O Box 8, 409 Main Street, Orville Ohio 44667 Fax 330-683-2041

THE TRU-VUE STEREOGRAPHIC VIEWER

From Paul Di Filippo

The Tru-Vue was kid's dead media, a View-Master rival for stereography. The ad's black and white illustration shows a face-mounted (plastic?) viewer. Large square cards holding dual vertical rows of pictures apparently slotted down through the viewer from top to bottom, through the action of a fingertip lever.

Ad's copy follows. "O-O-O-O! It's SNOW WHITE and the SEVEN DWARFS "in Tru-Vue. ® "3-Dimension and Color "Yes, you'll want your children to see Snow White. You'll want to thrill them with the new Walt Disney album with Snow White, Peter Pan and Pinocchio. They'll plead to ride with Wild Bill Hickok and Jingles; to laugh at Howdy Doody; thrill to scores of 3-Dimension adventures.

"Each Tru-Vue film card contains a complete 3-Dimension story in seven big color pictures. Story titles are printed right on the film itself. "For rainy days, shut-in days, any days, get Tru-Vue at toy counters everywhere.

VIEWER....$1.49 FILM CARDS...29c 3 cards or 3-card Album 85c Tru-Vue Company Beaverton, Oregon"

Source: The Saturday Evening Post, November 20, 1954,

THE ICL ONE PER DESK

From Charlie Stross

Is it a computer? Is it a telephone? Is it a tape recorder? No, it's the ICL One Per Desk (aka the ComputerPhone).

The IBM personal computer was slow to take off in the UK, where the personal computing scene lagged about 24 months behind the US for most of the eighties. Moreover, the Apple II never gained a dominant share of the market. Thus, many weird and eldritch designs for personal and business computers thrived before the dead hand of standardization clamped down in 1985-1986.

The British computing scene was dominated at the time by Clive Sinclair,whose ZX series of 8-bit home micros had out-sold everything else on the market.

In 1981, Sinclair began work on a new system, the QL or "Quantum Leap." Equipped with a cut-down Motorola 68000 (actually a 68008) and microdrives (Sinclair's miniature tape storage units, similar in design to a scaled-down 8-track audio tape), the Sinclair Quantum Leap was intended to be both a home and a business computer, and to take Sinclair into the world of 16-bit computing.

ICL, a large British mainframe company, wanted to gain a toehold in the business computing market. However, they had no experience of designing, building, or marketing personal computers. While the other business computer makers (such as Apricot) were working on (non- IBM-compatible) MS-DOS machines, ICL decided to build an incompatible version of the Sinclair Quantum Leap.

The ICL One Per Desk surfaced in 1984, and sank again around 1987, having sold a few thousand units. It was marketed in Australia by the telephone company as the 'ComputerPhone' and met with a resounding lack of interest. Indeed, the ICL One Per Desk probably ranks as the vermiform appendix of business computing; less useful by far than an IBM PC-jr or an Apple 3.

A One Per Desk is essentially a Sinclair Quantum Leap at heart, it boasts the same 68008 processor and operating system. However, its microdrives have been ruggedized and tuned for improved reliability by ICL's engineers (who, in the process, adopted a new format which renders them wholly incompatible with the Sinclair version). It has an incompatible expansion bus and can load software in the form of plug-in ROM cartridges and microdrive (tape-loop) cartridges.

It has a single serial port unidirectional, for sending data to a line printer. Thus, it is totally impossible to get data onto or off of a One Per Desk (other than via the modem).

The main application suite bundled with the OPD was a version of the Psion Xchange integrated package supplied with the Sinclair Quantum Leap.

However, the One Per Desk couldn't run ordinary Sinclair QL software; ICL had made just enough changes to the system to render it incompatible with its parent architecture, and supplied an inadequate cut-down BASIC interpreter. However, the most interesting aspect of the One Per Desk is its telephony integration.

Marketed in 1984, shortly after the privatization of

British Telecom, the OPD was one of the first machines designed to plug into the newly demonopolized UK phone network, and the first computer sold in the UK with an integral modem. At that time, the transition to a free market was incomplete; for example, it was not legal to sell telephone answering machines in competition with BT (who leased them for a hefty profit). Thus, the One Per Desk's telephony capabilities were curiously limited. The OPD came with an internal modem (300 baud and 1200/75 baud) and telephone handset, and could plug into two lines, acting as a sophisticated featurephone. Up to twenty pre-recorded announcements could be stored, and it could collect call logging and duration information but although it could play a message in response to incoming calls, it couldn't record or store voice mail. The One Per Desk was also capable of connecting to Prestel (British Telecom's videotex service) and of acting as a terminal for ICL's mainframes, thus making it a handy peripheral for those centralized computing services. One Per Desks were also capable of calling each other and exchanging documents as 'electronic faxes' via direct modem connections, but had no built-in LAN connectivity options.

Towards the end, One Per Desks were marketed with more memory and 'real' floppy disk drives, but as the Sinclair Quantum Leap failed to gain a following as anything other than a games machine, and the ICL One Per Desk was crippled by total incompatibility with anything else on the planet, it never really went anywhere. The point of the One Per Desk as a study in

dead media is that it showed a tantalizing glimpse of the way personal computing might have evolved. For a machine released in 1984 to have integral messaging and modem capabilities was pretty radical.

The idea of the One Per Desk; to be a centralized desktop information resource, with total access to online services, mainframes, and other One Per Desks—is one that is slowly being realized today by PC's with built-in modems and internet connectivity.

Source: Sources: I own one, plus its manuals.

THE PHILIPS PROGRAMMED INDIVIDUAL PRESENTATION SYSTEM (PIP)

From Lars-Erik Astrom

Mr Sterling, In the late 1960's or early 1970's I came upon the PIP, constructed by Philips, Holland.

The PIP was a desktop-machine, not unlike an early Macintosh one-piece desktop computer, but with no keyboard, and a back projection screen replacing the monitor. The PIP contained a Super-8-cassette still-frame projector. It advanced to the next frame after one pulse from a pulse generator. The generator was triggered by inaudible pulses recorded on an audio compact cassette player, also integrated into the machine.

The audio cassette, running at normal compact cassette speed, also contained the audio part of the show, delivering mono sound to the PIP's built-in speaker. When a motion picture sequence was needed, the audio compact cassette player delivered a corresponding sequence of pulses, at up to, say, 18 frames per second. When no motion picture was needed there were no pulses, and the PIP behaved like a slide-projector, displaying individual frames. It could also show short animated sequences at any necessary frame rate.

With the PIP, one compact audio cassette and a Super- 8-film cassette could create a slide-and-film-and-audio show of, say, half an hour.

Source: Personal experience

THE TRAVELLING PANORAMA

From Bruce Sterling

[This excerpt is from a Mark Twain sketch dated November 18, 1865, and entitled "'Mark Twain' on the Launch of the Steamer 'Capital': I Get Mr Muff Nickerson to Go with Me and Assist in Reporting the Great Steamboat Launch. He Relates the Interesting History of the Travelling Panoramist." The travelling panorama was quite different from its contemporary the cyclorama. The portable panorama did not make use of visual tricks of perspective and did not surround the viewer. The travelling panorama was a very long canvas painting on rollers, which was sequentially scrolled past the eyes of the audience inside a darkened tent, accompanied by a narrative and sometimes music. Twain's anecdote conveys certain points of direct interest to dead media students. Note the inherent hazards of primitive multimedia when its various elements are poorly rehearsed. The rhetorical flavor of the narration is remarkable. It's interesting to learn that a travelling panorama crew involved the showman himself, a ticket-taker doorguard bouncer/treasurer, and "supes" behind the stage, as well as the (in this case, deeply disoriented) musician. I note also the fascinating discovery that a large demographic segment of the audience went to panoramas just to neck in the dark. Bruce Sterling]

THE ENTERTAINING HISTORY OF THE SCRIPTURAL PANORAMIST

[I give the story on Mr Nickerson's own language.] There

was a fellow travelling around, in that country, (said Mr Nickerson,) with a moral religious show - a sort of a scriptural panorama - and he hired a wooden-headed old slab to play the piano for him.

After the first night's performance, the showman says: "My friend, you seem to know pretty much all the tunes there are, and you worry along first-rate. But then didn't you notice that sometimes last night the piece you happened to be playing was a little rough on the proprieties so to speak - didn't seem to jibe with the general gait of the picture that was passing at the time, as it were - was a little foreign to the subject, you know - as if you didn't either trump or follow suit, you understand?"

"Well, no," the fellow said; he hadn't noticed, but it might be; he had played along just as it came handy. So they put it up that the simple old dummy was to keep his eye on the panorama after that, and as soon as a stunning picture was reeled out, he was to fit it to a dot with a piece of music that would help the audience get the idea of the subject, and warm them up like a camp-meeting revival. That sort of thing would corral their sympathies, the showman said.

There was a big audience that night, mostly middle-aged and old people who belonged to the church and took a strong interest in Bible matters, and the balance were pretty much young bucks and heifers. They always come out strong on panoramas, you know, because it gives them a chance to taste each other's mugs in the dark.

Well, the showman began to swell himself up for this

lecture, and the old mud-dobber tackled the piano and run his fingers up and down once or twice to see that she was all right, and the fellows behind the curtain commenced to grind out the panorama.

The showman balanced his weight on his right foot, and propped his hands on his hips, and flung his eye over his shoulder at the scenery, and says: “Ladies and gentlemen, the painting now before you illustrates the beautiful and touching parable of the Prodigal Son. Observe the happy expression just breaking over the features of the poor suffering youth, so worn and weary with his long march: note also the ecstasy beaming from the uplifted countenance of the aged father, and the joy that sparkles in the eyes of the excited group of youths and maidens and seems ready to burst in a welcoming chorus from their lips. The lesson, my friends, is as solemn and instructive as the story is tender and beautiful.”

The mud-dobber was all ready, and the second the speech was finished he struck up: “Oh, we’ll all get blind drunk When Johnny comes marching home!”

Some of the people giggled, and some groaned a little. The showman couldn’t say a word. He looked at the piano sharp, but he was all lovely and serene, he didn’t know there was anything out of gear.

The panorama moved on, and the showman drummed up his grit and started in fresh: “Ladies and gentlemen, the fine picture now unfolding itself to your gaze exhibits one of the most notable events in Bible History, our Savior and his disciples upon the Sea of Galilee. How grand, how

awe inspiring are the reflections which the subject invokes! What sublimity of faith is revealed to us in this lesson from the sacred writings! The Savior rebukes the angry waves, and walks securely upon the bosom of the deep!"

All around the house, they were whispering: "Oh, how lovely! How beautiful!" and the orchestra let himself out again: "Oh, a life on the ocean wave, And a home on the rolling deep!"

There was a good deal of honest snickering turned on this time, and considerable groaning, and one or two old deacons got up and went out. The showman gritted his teeth and cursed the piano man to himself, but the fellow sat there like a knot on a log, and seemed to think he was doing first-rate. After things got quiet, the showman thought he would make one more stagger at it, anyhow, though his confidence was beginning to get mighty shaky. The supes started the panorama to grinding along again, and he says: "Ladies and gentlemen, this exquisite painting illustrates the raising of Lazarus from the dead by our Savior. The subject has been handled with rare ability by the artist, and such touching sweetness and tenderness of expression has he thrown into it, that I have known peculiarly sensitive persons to be even affected to tears by looking at it.

Observe the half-confused, half- inquiring look, upon the countenance of the awakening Lazarus. Observe, also, the attitude and expression of the Savior, who takes him gently by the sleeve of his shroud with one hand, while he

points with the other toward the distant city." Before anybody could get off an opinion in the case, the innocent old ass at the piano struck up: "Come rise up, William Ri-i-ley, And go along with me!" It was rough on the audience, you bet you.

All the solemn old flats got up in a huff to go, and everybody else laughed till the windows rattled. The showman went down and grabbed the orchestra, and shook him up, and says: "That lets you out, you know, you chowder-headed old clam! Go to the doorkeeper and get your money, and cut your stick - vamose the ranch!"

Source: Mark Twain, Collected Tales, Sketches, Speeches, & Essays 1852-1890, The Library of America, 1992 ISBN 0-940450-36-4

THE EDISON ELECTRIC PEN, PNEUMATIC PEN, MAGNETIC PEN, AND FOOT-POWERED PEN

From Bruce Sterling

“Edison’s electric pen was used almost universally in business and professional offices during the late ‘70’s [1870s] and early ‘80’s. He invented it while still in Newark before moving to Menlo Park, and perfected it at the latter place.

“In operating the electric pen, I got my current from a Bunsen battery consisting of two glass jars, capped at the top and controlled by a plunger with which I lowered the plates into the acid solution or drew them up when the pen was not in use. Thus the life of the battery was prolonged.

“The pen had a needlelike point which darted in and out of the writing end so rapidly that the eye could hardly detect it. This was operated by a miniature electric motor small enough to be attached to the upper end of the pen. The shaft containing the needle was given its motion by cams on the rotating engine shaft so that when the current was turned on, and I wrote with the pen, holding it in a vertical position, it made innumerable tiny punctures on the sheet of paper, tracing the words that comprised the letter.

“After the master copy of the stencil had thus been made, I took it to the ‘press,’ where it had to be spanned in a frame before the copies could be made. A plain sheet of

paper was placed on the press, the stencil was laid on top and an ink roller passed over it. The impression of the handwriting was marked on the under sheet by the ink through the holes made by the needle. It was said that 5,000 copies could be made from a single stencil.

“Its widespread use is indicated by the fact that, within three years after Edison brought it out, it could be found in the government offices in Washington, D.C., in city and state offices, and in such far-away lands as Australia, New Zealand, China, Brazil, Russia, and elsewhere.”

“Edison worked out the principles of the pen while at Newark and took its manufacture with him to Menlo Park. Shortly after I went to to work for him I noticed one day a large frame building not far from the Edison homestead. It stood across the railroad tracks on the way to Newark, and looked considerably dilapidated. Some one told me that this was the building in which the electric pen had been manufactured. It became a roosting place for tramps along the railroad, but, eventually, I was to see the same building rebuilt and restored to use as the first commercial factory for making the Edison incandescent light.

“To operate his electric pen, Edison used a small electric motor of the impulse type which drew its current from a wet battery of two cells. This was the first electric motor in history to be manufactured commercially and sold in large quantities, and for that reason the device has a peculiar interest to us today.” [Could this assertion be true? Amazing, if so—bruces]

“The first patent covering it was applied for on March 7, 1876, and was granted August 8 of the same year, after he had settled in Menlo Park. It was Patent No. 180,857. Before that time, however, he had brought out an ‘autographic press,’ and what at first was called a ‘magnetic pen.’. “Edison improved this during 1877, bringing out a ‘stencil pen,’ a pneumatic stencil pen, and a perforating pen. The latter (Patent No. 203,329) was operated by the foot or other convenient power instead of by electric current; the power was conveyed to the pen by a shaft with universal joints. The pneumatic pen (Patent No. 205,370) could be worked by air, gas, or water.”

Source MENLO PARK REMINISCENCES. Volume One by Francis Jehl, Dover Publications Inc 1990, originally published by the Edison Institute, 1937 ISBN 0-486-26357-6 page 9

THE EDISON ELECTRIC PEN, REED PEN, AND MUSIC RULING PEN

From Bruce Sterling

“Many advertisements dealing with the pen or some form of it were published in magazines and journals of the time. One told of the ‘Woodbury Holder,’ designed to keep the electric pen automatically in a vertical position, thus relieving the operator of that necessity. It was, as I well knew, hard on the fingers to keep the pen upright while writing with it.

“The Woodbury holder could be attached to any pen and was much liked ‘by those who are not expert with it, as it enables anyone to write in their natural handwriting without practice.’ Its price was five dollars. [Illustration: “In this picture the electric pen rests in its holder, which formed part of the outfit and held the pen when it was not in use. The holder was of metal painted black and made an attractive desk ornament.”]

“Another device was the so-called ‘Reed Pen,’ an extremely rapid form of the electric pen devised by Mr. Edison for fast, skillful penmen. Its speed was so great that it sometimes cut the center out of round letters. Then there was the ‘Music Ruling Pen,’ an electric pen having five needles for the purpose of ruling music. The stencil paper had to be placed on thick, firm cloth or the edges of paper when this particular form of pen was used. Two batteries instead of one were required to supply the current.

“After the Western Electric Company acquired the selling rights to the pen, it made quite a business of it. In one of its catalogs there was a full page showing parts prices for the pen from a bottle of ink to the complete unit, which cost twenty-five dollars.

“Bought separately, a pen cost eight dollars, a wet battery was five dollars and twenty-five cents, a press ranged from eight to seventeen dollars, and a roller from two dollars and twenty-five cents to three dollars and twenty-five cents.

“Perhaps you would be interested in the directions given for preparing a wet battery. [Why yes! We would! Consider that at this point Thomas Edison has not yet invented the electric light. Without this killer application for electric power, there is no electrical power grid anywhere in the world. Every Edison Electric Pen requires its own, individual power source, a desktop chemical power generator, the “wet battery.” It’s a fiendish and troublesome device containing zinc, carbon, sulfuric acid and mercury.]

“’Place the porous clay cups or cells in the glass jars, one with the flat side turned from you and the other toward you. Then attach the zincs and carbons to the rubber discs so that one zinc and one carbon will be secured to the brass posts, and one of each to the iron screws. The brass posts always rest on the rubber discs, the iron screw on the little brass strap.

“’Fill the porous cups to within three-quarters of an inch from the top with red fluid. “’Fill the glass jars to within

three-quarters of an inch of the top of the porous cups with water, into which a tablespoonful of common sulphuric acid is then poured. Move the porous cups backward and forward in the glass jar a few times to thoroughly mix the acid and water together. If this is not done the acid, which is much heavier than the water, settles to the bottom and does not mix.

“Slip the battery plates secured to the rubber discs on the upright rod in such a manner that the black plates of carbon shall go into the porous cells, and the zincs into the water.

“’It will be noticed that the zinc and carbon plates on one disc are reversed on the other, hence the necessity of placing the porous cells on opposite sides of the glass jars.

“’The collar to which the two discs are secured is provided with a screw sliding up and down in the long groove in the rod, which prevents the collar from turning around, and with a catch which drops into a notch on the opposite side when the discs are lifted high enough, and holds the plates out of the liquids. If they are allowed to remain down when the pen is not in use, the sulphuric acid and water would soon eat the zincs away. To prevent this, they should always be lifted out after using.

“After considerable use the mercury with which the zincs are amalgamated becomes eaten off, and the action of the acid upon the pure zinc is more intense, causing what is termed ‘boiling.’ This can be obviated by removing the zincs from the discs, washing off all superfluous matter, and allowing them to remain in the acid and water a few

moments; then remove and add a few drops of quicksilver to them, making them good as new. By this precaution, zincs will last a long time. [Unlike the operator, who will soon the suffering the tremors of “hatter’s madness” if he inhales enough of those mercury fumes.] “’The battery fluid should last from one to two weeks, according to the amount of work it has to perform. When it is in daily use, for an hour or so at a time, it is recommended that it be changed once a week. Operators will have to be guided by experience.’”

Source: MENLO PARK REMINISCENCES. Volume One by Francis Jehl, Dover Publications Inc 1990, originally published by the Edison Institute, 1937 ISBN 0-486-26357-6 page 9

THE EDISON ELECTRIC PEN

From Bruce Sterling

“With the coming of the typewriter and the subsequent use of that machine in preparing stencils, the electric pen passed from use. At one time, however, more than 60,000 were in offices, and its use had spread outside the United States. It could be found in many government offices in Washington, D.C., as well as the majority of large industries such as railroads.

“The electric pen was not confined to circular letters and the like, but could be found in restaurants where it was used for making up the bill of fare. I well remember buying a book on ‘How to Learn to Telegraph,’ containing many different diagrams of sounders, relays, and switches, which were all printed by the Edison Electric Pen process.

“Then there was a comic sheet, which was circulated by some sort of telegraphic fraternity. [Note: this “comic sheet” may be the earliest known “net fanzine,” telegraphic net-gossip reproduced in hard copy with an Edison Electric Pen.] It was also prepared with the Edison pen, and you would be surprised at the artistic designs which could be produced by this little device.

“Among the treasures in the Edison collection at Dearborn [Michigan, USA] is a scrapbook. The book contains pictures, calling cards, letterheads, invoice forms, menus, and many other examples of work actually done with the electric pen back in 1875.”

Source: MENLO PARK REMINISCENCES. Volume One by Francis Jehl, Dover Publications Inc 1990, originally published by the Edison Institute, 1937 ISBN 0-486-26357-6 page 9

NEW GUINEA TALKING DRUM

From Bill Crawford

This describes the talking drum in the village of Peri on the south coast of the Great Admiralty Island in Papua New Guinea.

“The drum language the children understand but make no attempt to execute. This language consists of formal phrase beginnings which mean ‘Come home =’ or “I am now going to announce how many days it will be before I do something,’ etc. The first one will be followed by the individual combination of beats which is the call of a particular household for any of its members.

“The second is followed by slow beats, interspersed with a formal spacing beat. Every one in the village stops work or play to count these beats, but only a knowledge of who is beating the drum and what he is planning to do in the near future make it possible to interpret the announcement.

“The children stop their play to hear which house call follows the formal introduction, and go back to their games if it is not their own. They seldom bother to further identify the call. If a date is announced they mechanically count the days and may stop to guess who is beating the drum. There their interest ceases. One ceremony is too like another to matter.

“But there are three drum calls which do interest them, the beats announcing that some one is about to die, that some one is dead, and the drum beat which means

‘Trouble,’ = theft, or adultery. For these they will pause in their play and possibly send a small boy to inquire into the cause.

The drum beat for death is so simple that children can make it and are sometimes permitted to do so in the event of the death of an unimportant person.”

Source: Margaret Mead, Growing Up in New Guinea, William Morrow; New York, 1930. p. 43 ff.

CAT PIANO AND TIGER ORGAN CAT PIANO

From Richard Kadrey

Cat Piano: “What should we say about the cat piano? The idea that such an instrument could have existed gives a lot to think about, even if it was built on an experimental basis: a piano where strings are replaced by cats, each of them giving a different note.

“It seems that Father Kirchner, a German Jesuit of the XVIIth century with an interest in musical things, gave the first description of this weird and cruel instrument.

“’Not long ago,’ says he, ‘an actor, as ingenious as illustrious, built such an instrument to cure the melancholy of a great Prince. He gathered cats of differing size and therefore in the pitch of their voices. He enclosed them in a basket specially built for this purpose, so their tails, coming out through holes, were held in tubes. He added keys with thin needles instead of hammers, and installed the cats according to their voices in such a way that each key would correspond to the tail of an animal, and he put the instrument in a suitable place for the pleasure of the Prince. Then he played it, producing chords corresponding to the mewings of the animals. Indeed the keys pressed by the fingers of the musician, by trotting the tails of the cats, would enrage the poor animals and make them scream with a high or low pitch, producing a melody that would make people laugh or even incite mice to dance.’” .

“Johann-Christian Reil, renowned neuro-anatomist from Germany, mentions the cat piano (Katzenklavier) in a list of therapies for mental illness, published in 1802. He even specified that the patient has to sit ‘in such a way that he does not lose sight of the physiognomy and the mimicry of the animals.’

Man-Tiger-Organ

“Of all the noise instruments in history, one of the least equivocal in its intent is Tipu’s Tiger. Captured in India by the British army after the defeat and death by bullet and bayonet of Tipu Sultan in 1799, this large and amazing object is now housed in the Victoria and Albert Museum, London.

“The most succinct and evocative description was written by an employee of the East India Company: “’This piece of Mechanism represents a Royal Tyger in the act of devouring a prostrate European. There are some barrels in imitation of an Organ, within the body of the Tyger, and a row of Keys of natural Notes. The sounds produced by the Organ are intended to resemble the Cries of a person in distress intermixed with the roar of a Tyger. The machinery is so contrived that while the Organ is playing, the hand of the European is often lifted up, to express his helpless and deplorable condition.’

“John Keats saw Tipu’s Tiger in the East India Company’s offices and later referred to it in a satire he wrote on the Prince Regent: ‘that little buzzing noise, Whate’er your palmistry may make of it, Comes from a play- thing of the Emperor’s choice, From a Man-Tiger-Organ, prettiest of

his toys.’

“And when the tiger was first exhibited in the newly-opened Victoria and Albert Museum, the public cranked the handle to make it roar with such sadistic, joyful frequency that students in the adjacent library were driven half-mad by the distraction.

“In a technical analysis of the instrument, Henry Willis speculated that ‘the intended method of use for the keyboard organ was to run the knuckles up and down the scale to produce the effects of a screaming man being killed by a tiger.’ Because the design and materials suggest a European rather than an Indian maker, Willis suggested that the tiger and its victim were constructed by either a malicious Frenchman or a renegade Englishman.

“But whoever made this wonderfully macabre sculpture, Tipu certainly enjoyed it. He was obsessed with tigers, for one thing; for another, as a Muslim whose wealth and land had been plundered by the colonialists, he hated the British. Reportedly, he used to circumcise them when he took prisoners. His walls were decorated with scenes depicting soldiers being dismembered, crushed by elephants, eaten by tigers and other fates too obscene for the British major who saw them to form a verbal description.

“’Better to die like a soldier than to live a miserable dependent on the infidels on the list of their pensioned rajas and nabobs,’ Tipu said at his last military conference. Delicious irony: through the preservation of

imperial spoils, albeit mute and frozen in the act of mauling within a glass case, the objectification of Tipu's hatred endures."

Source: LES MEDECINES DE LA FOLIE by Dr. Pierre Morel and Claude Quetel Pluriel-Hachette Pub., from photocopy; date unknown translated by Francois Baschet

SHADOW THEATRE

From Bruce Sterling

“But the true center of the new Chat Noir was the Theatre d’Ombres, the shadow theatre, a brain child of Henri Riviere which put all the Paris beau monde into a state of wonder by the brilliance of its technique and artistic innovation.

The Theatre d’Ombres was a discovery in the true cabaret spirit. It was a genre which could be used for a variety of effects and incorporated all genres into a small scale replica of Wagner’s ‘total art work’ (Gesamtkunstwerk).

“Using an ingenious combination of shadow and light play, decor painted or superimposed on glass and paper, cut-outs and Japanese-style puppets, Riviere created unparalleled pre-cinematographic effects on the screen-stage. These were underlined by musical accompaniment, with a choir of sometimes up to twenty people backstage, piano or organ; by narration, either of the story-telling or satirical commentary kind; and by acting.

The diversity of the shadow plays does credit to the eclectic black cat. One could pass without transition from the mysticism of Georges Fragerolle’s L’Enfant prodigue, to Maurice Donnay’s Athenian drama, Phryne, to the parodied naturalism of Louis Morin’s, Pierrot pornographe, to the heroic epic, Epopee, which put Paris once again into a Napoleonic mood of patriotic jubilation. Epopee, a military play in two acts and fifty tableaux, was created by Caran d’Ache, one of the epoch’s leading poster

artists. Witnesses say that some of the shadow plays equalled in beauty Turner's impressionistic effects.

"One kind of shadow play consisted of a satirical montage of current events, piece bonemontee, a newsreel with a difference. Salis [Rodolphe Salis, impresario of the "Chat Noir" cabaret]. would improvise a commentary, drawing in references to any notables in the audience. He had respect for nothing and no one, and with an insolent loquacity, Salis would allow his sharp sense of the actual to demolish bankers and the treasury, politicians and parliamentarianism, 'the grand monde, the demi-monde, tout le monde.' In this room, with its profligacy of cats in diverse positions and styles, Salis cast the mould for what was to become the cabaret tradition of the conferencier."

[The Chat Noir cabaret was founded in 1881 and the shadow-play seems to have faded circa 1900]

Source CABARET by Lisa Appignanesi. Grove Press, Inc. New York. Originally published in Great Britain in 1975 by Studio Vista. First published in the United States in 1976 by Universe Books. First Evergreen Edition 1984 ISBN 0-394-62177-8, LC 84-47500 pages 21-24

THE KINORA

From Stephen Herbert

The Kinora was a miniature mutoscope ("flip-book" principle viewer) intended for home use. While the Lumiere brothers were working flat out developing their Cinematographe camera/projector in 1895, they were also developing the Kinora. They had no way of knowing that they were "inventing" cinema (a bunch of people in a dark hall watching films projected on a screen), only that they were creating a moving picture machine.

This technology could have taken off in a number of directions in terms of exhibition: (in arcades, or in the home). So the Lumiere brothers 'hedged their bets' with the Kinora home mutoscope viewing machine, patented in Feb 1896. The Kinora was a development of an idea already patented by Casler (of American Mutoscope & Biograph fame) in America.

As it happened, their 'cinema' projections were very successful, and they didn't bother with the Kinora. A few years later they passed on the idea to Gaumont, who marketed it in France around 1900, with approximately 100 reels available (subjects by Lumiere and others).

Around 1902, versions of the viewer were launched in Britain and it eventually became successful; over a dozen different models of the viewer were made, and something like 600 different reels were available. The apparatus was cheap, easy to use, and non-flammable. A studio was set up to take private motion portraits in London, and

eventually home movie cameras (using unperforated paper negatives) were sold. The Kinora allowed the middle classes to see motion pictures at home, before it was socially acceptable to visit the cinema.

In 1914, the factory burnt down and the system died. The number of surviving machines and reels indicate the popularity of the Kinora in Europe for around 15 years before World War One, and yet there is no public consciousness of this medium at all. Viewing a reel in one of these machines is extraordinary, the mechanism is so simple it is almost non-existent, and yet the result is the same as watching an ordinary movie or miniature TV.

Source: The Kinora, motion pictures in the home 1896-1914 by Barry Anthony (The Projection Box, 1996).

THE WILCOX-GAY RECORDIO

From Bill Burns

Here with the salient points: The Wilcox-Gay Recordio was available nearly 50 years ago, and could record either to tape or “hard disc.” The “discs” in question were not digital, but hard wax or lacquer phonograph records. During the late 1940’s the Wilcox-Gay Corp. of Charlotte, Michigan, manufactured the Recordio 1C10.

This was a unique device, part tape recorder and part disc cutter. Originally intended for music students, it was equally functional for touring pro musicians or in the home.

Disc recorders of the day could only cut audio directly to disc, but the Recordio allowed recording to tape first, then a transfer to a 10-inch, 78 rpm record blank. The tape could be erased and re-used, but it was also possible to make and edit a tape recording before committing it to wax, all inside one machine.

Advertising copy for the Wilcox-Gay Recordio hyped the device as having “full-range, hi-fidelity reproduction,” although it most likely topped off at 5 to 7 kHz at best. To compare, the professional “broadcast quality” RCA 73-B disc lathe had 10 kHz response.

The ad copy went on to boast a full hour of recording time on one slow-moving five-inch reel. The Recordio could be used as a phonograph or PA system, and could record from microphone or telephone.

The icing on the cake was its transportability. The 27-

pound unit could be taken anywhere.

[Apparently there was also a coin- driven public version, “the Wilcox-Gay Coin Recordio.”]

Source: Alan R. Peterson, Radio World for September 4, 1996 In the column called A Look Back.

THE VELVET REVOLUTION IN THE MAGIC LANTERN

From Bruce Sterling

[I suspect that this little Czech theatre's aging combination of film, theater and ballet classifies as "dead media," even if the Laterna Magika theater is not quite so dead as its namesake the magic lantern. If your country has been through forty years of deep-frozen cold war and is being revolutionized by a surrealist playwright, perhaps a theater full of not- quite-dead media makes a very sensible headquarters.]

"Laterna Magika: Civic Forum was looking for a space where they could take shelter. The visual artists offered the U Recickych Gallery, where Civic Forum was in fact headquartered for the first few days, but it was a small space, and suddenly someone came up with the Laterna Magika (the Magic Lantern theater).

The Prague theater that uses a multiscene format, a combination of film, theater, and ballet. The theater was a great success at the 1958 World's Fair in Brussels and again at Expo 67 in Montreal." "I had never been in the dressing room at the Laterna Magika. It was a hot labyrinth with no air. There was practically no ventilation, and everyone smoked like chimneys.

When we went there nine months later with the president of Brazil, who had asked to see the place that had been the headquarters of the revolution, I could not understand how we had managed to survive there. In the

largest dressing room, about three by four yards, the staff, about ten people, held its meetings. Costumes, ballet tutus, and quaint monsters were hanging everywhere. It smelled like make-up, and there were mirrors on all sides.

I could not get used to seeing myself everywhere, and I started to feel a little paranoid.

“The ballet dancers buttered bread, sliced salami, and boiled coffee. The whole Laterna Magika was working for the revolution. Everything was flurried and feverish, but people were unbelievably kind and decent to each other.

In the Laterna Magika, everyone moved quickly and purposefully. If someone frowned, he saw it instantly in the mirror. They worked long into the night, laughing often. From time to time, it was as if Havel had written an absurdist play that he starred in and directed. I will never forget that he took me with them and I was part of almost everything that happened. Once again I had the exhilirating feeling that I was in the right place at the right time, that this was the best place in the world, and that I did not want to be anywhere else.”

“On Sunday, December 3, Vaclav went outside for the first time in fourteen days. He and Olga went for a walk in Pruhonice park. When he returned to the Laterna Magika underground, he said, ‘At last, outside under the high and wide heavens, I realized that this is for real and it is definitely not a dream.’

“For a while, time settled down, it slowed down to a realistic pace, only to run ahead again, still faster. I thought that, to a certain extent, the atmosphere of

unreality was the fault of the underground labyrinth, of the Laterna Magika where amid artificial light, mirrors, and a limited air supply, everything took on a magic, brand-new form. We only saw the light of day on city squares and Letna Plain. Otherwise we did not crawl out from underground.

“At one of the first meetings with the authorities, Vaclav asked about allocating a building for Civic Forum. In the end, they alloted us the building that had belonged to the Union of Czechoslovak-Soviet Friendship on the corner of Wenceslas and Jungmann Square, the Spalicek building. Here, everything seemed to be more real.”

Source VACLAV HAVEL: THE AUTHORIZED BIOGRAPHY by Eda Kriseova. Translated by Caleb Crain. St Martin’s Press, 1993. ISBN 0-312-10317-4

NATIVE AMERICAN SMOKE SIGNALS

From Bill Crawford

A description of smoke signals among the Karankawa.

“They are very sagacious and cautious; and they send messages by smoke signals, some signals calling them together, others warning them to flee, others giving notice of anything new. The proper Smoke for each being given, as soon as one gets the message he passes it to another; and he, in turn, gives it to those who follow; and, in a very short time, whatever news there is has been made known and forwarned in the province. More on the Karankawa.

“On clear days, generally at noon, they signalled news by columns of Smoke from their camp Fires which were started from small pits in the ground, every Indian having a Fire in front of his lodge. The column of Smoke was made to ascend in more than twenty different ways, sometimes diverging or curling in spirals, sometimes rising up in parallel lines. Some looked like the letters V and Y others resembled spiral lines, or two parallel zigzag lines moving upward, or twin columns standing close to each other.

Smoke signals and the Apache.

“Smokes are of various kinds, each one significant of a particular object. A sudden puff, rising into a graceful column from the mountain heights, and almost as suddenly losing its identity by dissolving into the rarified atmosphere of those heights, simply indicates the presence of a strange party upon the plains below; but if

those columns are rapidly multiplied and repeated, they serve as a warning to show that the travelers are well armed and numerous. If a steady Smoke is maintained for some time, the object is to collect the scattered bands of savages at some designated point, with hostile intentions, should it be practicable. These signals are made at night, in the same order, by the use of Fires, which being kindled, are either alternately exposed and shrouded from view, or suffered to burn steadily as occasion may require."

Source: Diary of a Visit of Inspection of the Texas Missions Made by Fray Gaspar Jose de Solis in the Year

FRAUDULENT MEDIA OF THE SPIRIT WORLD

From Bill Wallace

SLATE WRITING

“Slates, prepared and unprepared, have played an important part in the spiritualistic racket. An unprepared slate against the under surface of a table by the medium’s fingers, his thumb resting on the top of the table. Yet the slate will be handed to you in a few moments with scrawled writing on it. The medium uses a thimble arrangement with a piece of slate pencil attached to write the message with one of his fingers.”

“Again, a slate and a piece of chalk may be placed on the floor under the table. Although the subject may hold the medium’s hands across the top of the table and place his feet on the medium’s feet under the table, writing appears. The medium has simply slipped his foot out of the loose-fitting shoe which has a steel toe—leaving the subject with the impression that he still has the foot under control—and written the message with his toes, the front of his sock being cut out to permit their free use.”

“A false, paper-thin flap of silicate has been used to cover writing on a slate. Held under the table, the flap is slipped onto a shelf and the slate produced with the message written on it.”

THE REACHING ROD

“An indispensible tool of the medium is the reaching rod. It is used to pick up spirit trumpets and tambourines, to float ghosts about the room and to aid in the production of countless other phenomena. Constructed on the fishing- rod telescope principle, it can be folded into the size and form of a thick fountain pen. Extended, it may reach as far as ten feet. The end is generally equipped with a small hook or pincers device to be used in picking up objects.”

SPIRIT MUSIC

“To cause spirit music, one medium used an old style Swiss music box fastened under the table.”

“Still other methods of getting music from the air are the concealed musician method and the radio phonograph method.”

TRUMPET SEANCES

“When the mediums learn that spirits could be made to whisper through trumpets or megaphones instead of dumbly rapping out “yes” and “no” on a table or wall panel, psychic communication took a vast step forward.”

“Sometimes a small trumpet not over eight inches in length stands in the middle of the table. A circle is formed about the table, with hands clasped and the medium’s feet under control. When the lights go out, spirits speak through the trumpet. The medium has merely leaned forward and picked it up with his teeth by the suitably constructed mouthpiece, whispering his messages through it.”

“At times a length of garden hose is put into the trumpet, by which it can then be elevated; and the medium, talking through the hose, produces whispers at a greater distance.”

“Sometimes a medium dares to give a light seance, though this is not often as it is too risky. In such cases the principle of radio is used, coils being secreted under rugs and elsewhere.”

SPIRIT PHOTOGRAPHS

“Double exposure is the method mostly used, the spirit being previously photographed against a black background of velvet or some similar material that will not reflect light. Instead of a complete double exposure however, some are made by exposing one-half of the plate for the spirit and the other half for the sitter. A trick slide is used with such a method.”

“Figures are sometimes painted with sulphate of quinine on the back screen. While such figures are not visible to the eye, they appear on the photograph directly behind the sitter.”

“A medium may lay the plates you bring on an innocent-looking table top and print the spirit on them before placing them in the camera. A ghost face is painted in lead on the undersurface of the tabletop, and it is printed on the plate by X-rays. Often the plates thus treated are not even exposed, the face appearing merely through the medium’s having prayed over them.”

“Another method . . . is one in which the medium palms a

much reduced copy of the photograph of the spirit. This picture, painted with luminous paint, is transfered to the plate by the medium simply bringing the two into contact for a moment."

" . . . a special flashlight with the message written on the lens may be pressed secretly against the plate at an opportune moment, thus giving the appearance of a photographed spirit message."

SPIRIT READINGS

One of the tricks of the medium is to answer sealed questions." (Several paragraphs describe methods for reading answers using sleight-of-hand.)

"The same principle is employed when the subject places the card upon which he has written his question between the leaves of a Bible. The center of the back and most of the pages have been cut out, permitting the medium to read the question as he did through the opening in the card in the above trick. But this trick becomes more effective when performed in the following manner. The question is written on a piece of paper and slipped into an envelope. The Bible, hollowed out as above, has two batteries and two three- volt lamps in it, and a piece of glass cemented into the opening in the back binding. Under the pretext of writing a birth date or a name on it, the medium places the envelope on the Bible, which he has been reading, for more solid support. Having actually placed it on the glass window, he switches on the lamps and reads the question through the envelope."

Source: An Exposure of Mediums' Tricks and Rackets, by C. Samuel Campbell.

LITTLE BLUE BOOK NO. 1746. (Edited

THE EDISON WAX CYLINDER

From Manoj Kasichainula

The They Might Be Giants album, Factory Showroom, has a track entitled I Can Hear You which was recorded at the Edison Historic Site on a wax cylinder phonograph without any electricity. Here is the what the members of the band (John and John) say about the song.

"This track was recorded at the Edison Historic Site in West Orange, New Jersey on an Edison wax cylinder recorder. We performed this and other songs in front of a small audience, singing and playing acoustic instruments as loud as we could into a pair of enormous metal cones, the larger of which was perhaps twelve feet long, which fed the sound into a hundred year old non-electrical recording device created by Thomas Edison in the 1890s. The wax cylinder recorder carves a groove into a rotating tube of softened wax with a needle that is vibrating from the sound pressure collected at the small end of the cone. That is the best we can explain it. It looked very cool."

The recording doesn't sound as bad as I would have expected, having never heard a wax cylinder recording.

Source: They Might Be Giants web press release

KIDS' INTERACTIVE TELEVISION: CAPTAIN POWER

From Lauri Christopher Gardner

I remember when I was in the U.S in 1987, I played a game called "Captain Power and the Soldiers of the Future." It was a game that came on VHS videotape. You used a starship-shaped gun to fire at the screen; when you were hit, you "died," causing the canopy, pilot, and the chair to eject, thereby ending the game. In many ways this game was heads above others, especially considering how good the graphics were.

Here's the advertisement:

DON'T JUST STAND THERE. FIRE BACK!
[picture]
"Lord Dread™ is threatening the future of the human race! Captain Power™ battles him in every week on TV and he needs your help.
"Grab your PowerJet XT-7™. Fire invisible beams at enemy targets on his TV show.and SCORE! Or be hit!
"This is not a test. The TV show WILL FIRE BACK!
"Sure, you're good.but are you great? Get Captain Power interactive videotapes with three different skill levels. Practice with the PowerJet XT-7. And practice some more.
"Are you going to help Captain Power and the Soldiers of the Future™? Or are you just going to stand there? "
The Power of the future is in your hands!"

Source: Marvel Amazing Spiderman comics issue #300, May 1988

THE DUBRONI INSTANT CAMERA

From Bruce Sterling

‘Instant’ Camera from 1864 When Dr. Edwin H. Land announced the ‘instant’ camera in 1947, many people proclaimed that the Polaroid Land camera was the first instant camera. It was the first camera to use a paper roll to produce pictures right after they were taken, but there were earlier inventors who were able to make other types of ‘instant’ pictures.

“W.H.F. Talbot suggested a daguerreotype camera in 1839 with extra parts to hold mercury. The mercury was vaporized to develop the image almsot as soon as the picture was taken. One camera in 1855 had a built-in ‘darkroom’ so the photographer could reach inside to develop the photographic plates.

“The first successful instant camera was patented in England in 1864 by G. J. Bourdin. It was called the ‘Dubroni.’ The developing fluids were put into the camera back with a small tube. The Dubroni was made in at least five sizes.

“It is very rare. A complete camera with the entire developing kit would sell at auction for $10,000 to $15,000.”

Source: Antiques column by Ralph and Terry Kovel Austin American Statesman May 12, 1996

THE SINGING TELEGRAM; THE DEATH OF GEORGE P. OSLIN

From Paul Di Filippo

“George P. Oslin, the Western Union executive who created that durable art form, the singing telegram, in the grim Depression year of 1933, died on Thursday at his home in Delray Beach, Fla. He was 97.

“Mr. Oslin is credited with sending history’s first singing telegram, sung by a Western Union operator named Lucille Lipps, to the star vocalist Rudy Vallee on July 28, 1933, which was Vallee’s birthday.

“At that magical moment, Mr. Oslin was the public relations director of Western Union, then based in New York. He held the post for 35 years, retiring in 1964.

“In an interview after he died, his wife, Susanna Meigs Oslin, noted that by the time Lucille Lipps sounded her first note, telegrams had come to convey mixed associations. During World War I, Mrs. Oslin noted, ‘To a lot of people, the telegram was a scary thing because it meant you were being told you lost a loved one.’

“And Mr. Oslin recalled in 1993 that back in 1933 he had thought that he had to convince people ‘that messages should be fun.’ But he reported in his book The Story of Telecommunications (1992, Mercer), that when he invented the singing telegram ‘I was angrily informed that I was making a laughingstock of the company.’

“Mr. Oslin also liked to accentuate the positive in singing-

telegram history. He once said that the message he sent to Vallee, which was chronicled by the newspaper columnist Walter Winchell, ‘started America on a zany musical binge.’ .

“Western Union ‘made millions’ in the years that followed, Mr. Oslin later reported, with messages being sung to numerous well-loved tunes. But it has been said that declining demand and curtailment in the number of telegraph offices led the company to discontinue its singing-telegram services temporarily in 1974.

“In 1980, Western Union returned to the singing-telegram business, but nowadays Western Union will only sing a singing telegram, over the telephone, to one tune, ‘Happy Birthday’, although the customer, of course, gets to compose the lyrics. The cost begins at $16.95, plus applicable taxes, for a singing telegram of 1 to 15 words sing to a recipient in the United States.

“Stagedoor Johnnies may want to know that all Western Union’s telegram-singers do their work these days in Bridgeton, Missouri.”

Source: New York Times Obituaries, Tuesday October 29, 1996 “George P. Oslin, 97, Father of Singing Telegram, is Dead “by Eric Pace

CHILDREN'S DEAD MEDIA

From Stefan Jones

A lot of the Dead Media examples Bruce provided are from the deep dark past. Here are some from a more recent epoch… kid media from when I was growing up, now dead and forgotten.

FILM LOOPS
A proto-VCR contraption, developed for schools. The media was a film cartridge: An endless loop of super 8mm film in a sealed, asymmetrical transparent plastic case. The player was about the size of a carousel- type slide projector. Operation was marvelously simple; the operator merely jammed the cart into a slot in the side of the projector and hit play. I seem to remember a reverse and still frame setting. There was no sound; running time was about five minutes. My high school had a few dozen of these; the ones I remember involve demonstrations of biological processes (cell division, metamorphosis, reptile homeostasis). There was also one of "Galloping Girdy," the bridge in Washington state that wiggled itself to death. Major flaws: Bulbs burned out frequently; my teachers took about five tries to get the cartridge inserted properly.

KIDDIE FILM STRIP PROJECTOR
When I was a kid, a cousin got a swell visual storytelling gadget for christmas. The projector was a TV-shaped box with a rear-projection screen up front and a turntable up top. The media was a 35mm film strip enclosed in a stiff

plastic holder; I seem to remember these “sticks” having gear teeth along one side. Each stick was accompanied by a 45 RPM (?) record. There may have been nine or ten slides per “show.” Operation was not quite foolproof. The stick was inserted in a slot up top, and the corresponding record queued up; lots of leeway for error and accidental breakage, there. Once inserted properly, the stick descended into the machine, one frame height at a time; this in itself was fun to see. I don’t know what synchronized the sound and pictures, but it worked quite well. The stories were kid stuff: Raggedy Ann & Andy, etc. The one that interested me most at the time was a quickie adaption of Doyle’s *The Lost World*. Very dramatic. The “production values” of the stories were pretty good: Nice narration and music, plus brightly colored cartoon artwork.

VIEW-MASTER KNOCKOFFS

I was going to describe the View-Master here, but I recently learned that the things are still in production! Indeed, gift shops at historical landmarks and scenic wonders still carry View-Master reels for touristas to bring home. I find this really remarkable. Who would buy the things, in this age of Game Boys and cynical, post-literate youngsters? Perhaps they’ve become “old fashioned” enough to be acceptable to Amish families. (After all, the classic View-Master ran on ambient light, and the reels were strictly rated G.) While the View-Master struggles on, its many variants and knockoffs have passed on. Here are a few: -- View-Master itself released a

“talking” version when I was a kid; I think it had small strips of magnetic tape next to each slide. The viewer was a beast, from what I remember; it had to contain a tape player, batteries and loudspeaker.—I remember a friend getting a knock-off of the View-Master. The media were rectangular cards, and inserted into the viewer vertically. Notches along the edge allowed the advance mechanism to get a grip on the card. This strikes me as a much saner scheme than the View-Master proper, which had circular reels.—Another knockoff, which I remember being advertised on TV under the name “Captain Stereo”, also had rectangular cards. This variant had no slides; the color pictures that formed the stereo pairs were simply printed on the card! I imagine the viewer somehow projected light on the front of the card.

PORTABLE FILM VIEWERS

At least one company offered a kiddie film viewer when I was a youngster. Light was provided by the sun or a handy light bulb; the film was advanced by a hand crank. The carts, each about the size of a had a minute or so’s worth of 8mm film.

The only one I remember was an excerpt from a Mickey Mouse cartoon. I’ve asked some friends to think about Dead Media. I’m getting some interesting feedback.

Someone mentioned Teddy Ruxpin, the animatronic story-telling bear (who had two chances at life before snuffing it, and whose mechanism is still begging to be hacked and exploited for dadaist purposes), and QXL, the

quiz robot.

Both of these casette droids are *toast*, and these are just two of a growing legion of interactive dolls, video-watching puppies, and space fighters that react to stuff on cancelled TV shows.

These things are *really* dead; unlike, say, an orphan computer platform, there's no audience of obsessed users willing to churn out new software for these. If this trend continues, we'll no doubt someday see semi-sapient robot robot things, perhaps in the form of animals with pee and spit-up proof plush shells, languishing unused in closets for lack of new programs. Or, maybe, covered in green vinyl and reprogrammed to do yardwork.

Somewhere between live media and dead media is ephemeral media, something that might deserve a passing comment, if only to contrast it to the really dead stuff.

Example: I've been working for a multimedia company. I get lots of trade junk mail. Every once in a while I get a thick envelope with a folding cardboard and plastic filmstrip viewer, a really nifty item. But after looking at the attached film strip once (I've seen 'em advertise things like monitors, virus removers and data conversion services) the thing's garbage. The thing's too simple to become "dead," but its usefulness is pfft!

ROBERTSON'S PHANTASMAGORIA

From Bruce Sterling

[Is it psychology? Anthropology? Feminism? Is it literary critism? Is it a densely footnoted and meticulously referenced technical history of the dead- media inventions of Enlightenment pseudoscience? Yes, it's all this and more! in Terry Castle's collection of essays in 18th-century culture studies,

"The Female Thermometer." [It's a privilege to quote at considerable length from this terrific work by Professor Castle of Stanford University]

"In Germinal Year VI (March 1798) a Belgian inventor, physicist, and student of optics named Etienne-Gaspard Robertson presented what he called the first 'fantasmagorie' at the Pavillon de l'Echiquier in Paris. [Footnote: "Robertson (originally Robert) was born in Liege. On his colorful career, see his Memoires recreatifs, scientifiques, et anecdotiques d'un physicien- aeronaute (Paris 1830-34). I have used the modern reprint, introduced by Philippe Blon, 2 vols. (Paris, 1985) Stendhal describes one of Robertson's provincial shows in his Memoires d'un touriste (1838), in the section entitled, 'Nivernais, le 18 avril.'"]

"Robertson, whose long and unusual career reflects the excitement and instability of his epoch, was both a brilliant eccentric and a tireless self-promoter. He first came to public notice in 1796 when he proposed to the Directoire a scheme for burning up the British fleet with a

gigantic ‘miroir d’Archimede’, an assemblage of mirrors designed to concentrate solar rays on a distant object until the object caught fire. This particular plan was never put into action, but ‘Citoyen’ Robertson carried out a number of other public-spirited ventures in the years that followed. He experimented with galvanism and gave popular demonstrations in physics and optics in the 1790s and early 1800s. He was best known, however, as a balloon aeronaut, setting an altitude record in a montgolfiere in Hamburg in 1803. He later accompanied the Russian ambassador to China, where he demonstrated ballooning technique in the 1820s.

“Robertson’s phantasmagoria grew out of an interest in magic, conjuring, and optical effects. As he recalled in his Memoires recreatifs, scientifiques and anedotiques of 1830-34, he had been fascinated in youth with the conjuring device known as the magic lantern, invented by Athanasius Kircher in the seventeenth century. Kircher’s device, from which all our modern instruments for slide and cinematic projection derive, consisted of a lantern containing a candle and a concave mirror. A tube with a convex lens at each end was fitted into an opening in the side of the lantern, while a groove in the middle of the tube held a small image painted on glass. When candlelight was reflected by the concave mirror onto the first lens, the lens concentrated the light on the image on the glass slide. The second lens in turn magnified the illuminated image and projected it onto a wall or gauze screen. In darkness, with the screen itself invisible, images could be made to appear like fantastic luminous

shapes, floating inexplicably in the air."

Source The Female Thermometer: 18th-Century Culture and the Invention of the Uncanny by Terry Castle Oxford University Press, 1995 ISBN 0-19-508097-1

DEAD MEDIA: ROBERTSON'S PHANTASMAGORIA; SERAPHIN'S OMBRES CHINOISES; GUYOT'S SMOKE APPARITIONS; THE MAGIC LANTERN

From Bruce Sterling

"In the 1770s a showman named Francois Seraphin produced what he called Shadow Plays, or 'Ombres Chinoises,' using a magic lantern at Versailles; another inventor, Guyot, demonstrated how apparitions might be projected onto smoke."

"Robertson began experimenting in the 1780s with similar techniques for producing 'fantomes artificiels.' He soon devised several improvements for the magic lantern, including a method for increasing and decreasing the size of the projected image by setting the whole apparatus on rollers. Thus the 'ghost' could be made to grow or shrink on front of the viewer's eyes.

"Robertson recognized the uncanny illusionist potential of the new technology and exploited the magic lantern's pseudonecromantic power with characteristic flamboyance. He staged his first 'fantasmagorie' as a Gothic extravaganza, complete with fashionably Radcliffean decor. An observer described the scene at the Pavillon de l'Echiquier:

"'The members of the public having been ushered into the most lugubrious of rooms, at the moment the spectacle is to be begin, the lights are suddenly extinguished and one

is plunged for an hour and a half into frightful and profound darkness; it's the nature of the thing; one should not be able to make anything out in the imaginary region of the dead. In an instant, two turnings of a key lock the door: nothing could be more natural than than one should be deprived of one's liberty while seated in the tomb, or in the hereafter of Acheron, among shadows.'

"Robertson then emerged, spectrelike, from the gloom, and addressing the audience, offered to conjure up the spirits of their dead loved ones. A long newspaper account (cited in his memoirs) recorded the somewhat comical scenes that followed on one of these early occasions:

"'A moment of silence ensued; then an Arlesian- looking man in great disorder, with bristling hair and sad wild eyes, said: 'Since I wasn't able. to reestablish the cult of Marat, I would at least like to see his face.'

"'Then Robertson poured on a lighted brazier two glasses of blood, a bottle of vitriol, twelve drops of aqua fortis, and two numbers of the journal Hommes- Libres. Immediately, little by little, a small livid, hideous phantom in a red bonnet raised itself up, armed with a dagger. The man with the bristling hair recognized it as Marat; he wanted to embrace it, but the phantom made a frightful grimace and disappeared.

"'A young fop asked to see the apparition of a woman he had tenderly loved, and showed her portrait in miniature to the phantasmagorian, who threw on the brazier some sparrow feathers, a few grains of phosphorus and a dozen

butterflies. Soon a woman became visible, with breast uncovered and floating hair, gazing upon her young friend with a sad and melancholy smile.

"'A grave man, seated next to me, cried out, raising his hand to his brow: 'Heavens! I think that's my wife!' and ran off, not believing it a phantom anymore.'.

"Robertson, it should be allowed, disclaimed the accuracy of this account and accused its author, Armand Poultier, of trying to get him in trouble with the authorities. This particular exhbition, Poultier had written, concluded with an old royalist in the audience importuning Robertson to raise the shade of Louis XVI: 'To this indiscreet question, Robertson responded very wisely: I had a recipe for that, before the eighteenth of Fructidor, I have lost it since that time: it is probable I shall never find it again, and it will be impossible from now on to make kings return in France.'

"This inflammatory story was false, Robertson complained in his memoirs, but nonetheless the police temporarily closed down the phantasmagoria and forced him to decamp for Bordeaux, where he remained for over a year."

Source The Female Thermometer: 18th-Century Culture and the Invention of the Uncanny by Terry Castle Oxford University Press, 1995 ISBN 0-19-508097-1

ROBERTSON'S PHANTASMAGORIA

From Bruce Sterling

[More excellent material from Professor Terry Castle's fine work. My hat is off to her for her meticulously detailed research on Etienne-Gaspard Robertson, a little-known titan of dead media.]

"When he [Robertson] returned to Paris he began producing even more elaborate and bizarre spectacles in the crypt of an abandoned Capuchin convent near the Place Vendome. Here, amid ancient tombs and effigies, Robertson found the perfect setting for his optical spectre-show, a kind of sepulchral theatre, suffused with gloom, cut off from the surrounding city streets, and pervaded by (as he put it) the silent aura of 'des mysteres d'Isis.' His memoirs, along with a surviving 'Programme Instructif' from the early 1800s, provide a picture of a typical night in the charnel house. At seven o'clock in the evening spectators entered through the main rooms of the convent, where they were entertained with a preliminary show of optical illusions, trompe l'oeil effects, panorama scenes, and scientific oddities.

"After passing through the 'Galerie de la Femme Invisible' (a ventriloquism and speaking-tube display orchestrated by Robertson's assistant 'Citoyen Fitz- James'), one descended at last to the 'Salle de la Fantasmagorie.' Here, the single, guttering candle was quickly extinguished, and muffled sounds of wind and thunder (produced by 'les sons lugubres de Tamtam') filled the crypt. Unearthly music emanated from an invisible glass harmonica.

“Robertson then began a somber, incoherent speech on death, immortality, and the unsettling power of superstition and fear to create terrifying illusions. He asked the audience to imagine the feelings of an ancient Egyptian maiden attempting to raise, through necromancy, the ghost of her dead lover at a ghastly catacomb: ‘There, surrounded by images of death, alone with the night and her imagination, she awaits the apparition of the object she cherishes. What must be the illusion for an imagination thus prepared!’ [footnote: “A surviving program from early 1800 entitled ‘Fantasmagorie de Robertson,’ containing a list of experiments and illusions performed at the Cour des Capucines, is located in the University of Illinois library.’]

“At last, when the mood of terror and apprehension had been raised to a pitch, the spectre-show itself began. One by one, out of the darkness, mysterious luminous shapes, some seemingly close enough to touch, began to surge and flit over the heads of the spectators.

“In a ‘Petit Repertoire Fantasmagorique’ Robertson listed some of the complex apparitions he produced on these occasions. Several, we notice, specifically involved a metamorphosis, or one shape rapidly changing into another, an effect easily achieved by doubling two glass slides in the tube of the magic lantern over one another in a quick, deft manner. Thus the image of ‘The Three Graces, turning into skeletons.’

“But in a sense the entire phantasmagoria was founded on discontinuity and transformation. Ghostly vignettes

followed upon one another in a crazy, rapid succession. The only links were thematic: each image bore some supernatural, exotic, or morbid association. In selecting his spectral program pieces Robertson drew frequently upon the 'graveyard' and Gothic iconography popular in the 1790s. Thus the apparition of 'The Nightmare,' adapted from Henry Fuseli, depicted a young woman dreaming amid fantastic tableaux; a demon pressing on her chest held a dagger suspended over her heart. In 'The Death of Lord Lyttleton,' the hapless peer was shown confronting his famous phantom and expiring.

"Other scenes included 'Macbeth and the Ghost of Banquo,' 'The Bleeding Nun,' 'A Witches' Sabbath,' 'Young Interring his Daughter,' 'Proserpine and Pluto on their Throne,' 'The Witch of Endor,' 'The Head of Medusa,' 'A Gravedigger,' 'The Agony of Ugolino,' 'The Opening of Pandora's Box.' Interspersed among these were single apparitions familiar from the earlier phantasmagoria shows, often the bloody 'revolutionary' spectres of Rousseau, Voltaire, Robespierre, and Marat.

"Robertson concluded his shows with a rousing speech and a macabre coup de theatre. 'I have shown you the most occult things natural philosophy has to offer, effects that seemed supernatural to the ages of credulity,' he told the audience; 'but now see the only real horror. see what is in store for all of you, what each of you will become one day: remember the phantasmagoria.' And with that, he relit the torch in the crypt, suddenly illuminating the skeleton of a young woman on a pedestal."

Source The Female Thermometer: 18th-Century Culture and the Invention of the Uncanny by Terry Castle Oxford University Press, 1995 ISBN 0-19-508097-1

PHANTASMAGORIA ENTERS THE MAINSTREAM

From Bruce Sterling

“Phantasmagoria shows rapidly became a staple of London popular entertainment. Mark Lonsdale presented a ‘Spectrographia’ at the Lyceum in 1802; Meeson offered a phantasmagoria modeled on Philipstal’s at Bartholomew Fair in 1803. A series of ‘Optical eidothaumata’ featuring ‘some surprising Capnophoric Phantoms’ materialized at the Lyceum in 1804. In the same year the German conjurer Moritz opened a phantasmagoria and magic show at the King’s Arms in Change Alley, Cornhill, and in the following year, again at the Lyceum, the famous comedian and harlequin Jack Bologna exhibited his ‘Phantoscopia.’ Two ‘Professors of Physic,’ Schirmer and Scholl, quickly followed suit with an ‘Ergascopia.’

“In 1807, Moritz opened another phantasmagoria show at the Temple of Apollo in the Strand, this one featuring a representation of the raising of Samuel by the Witch of Endor, the ghost scene from Hamlet, and the transformation of Louis XVI into a skeleton. In 1812 Henry Crabb Robinson saw a ‘gratifying’ show of spectres, their ‘eyes etc’ all moving, at the Royal Mechanical and Optical Exhibition in Catherine Street. In De Berar’s ‘Optikali Illusio,’ displayed at Bartholomew Fair in 1833, Death appeared on a pale horse accompanied by a luminous skeleton.

“How realistic were the ‘ghosts’? Strange as it now seems, most contemporary observers stressed the convincing nature of phantasmagoric apparitions and their power to surprise the unwary. Robertson described a man striking at one of his phantoms with a stick; a contributor to the Ami des Lois worried that pregnant women might be so frightened by the phantasmagoria that they would miscarry. One should not underestimate, by any means, the powerful effect of magic-lantern illusionism on eyes untrained by photography and cinematography.”

“Better images and a more complex technology were required. Brewster’s own solution was the ‘catadioptrical phantasmagoria’, an apparatus of mirrors and lenses capable of projecting the illuminated image of a living human being. ‘In place of chalky ill-drawn figures, mimicking humanity by the most absurd gesticulations,’ he wrote, ‘we shall have phantasms of the most perfect delineation, clothed in real drapery, and displaying all the movements of life.’

“In the renowned show of ‘Pepper’s Ghost,’ exhibited at the Royal Polytechnic Institution in London in the 1860s, just such an apparatus was used to great effect. Wraithlike actors and actresses, reflected from below the stage, mingled with onstage counterparts in a phantasmagorical version of Dickens’ ‘The Haunted Man’ on Christmas Eve, 1862. ‘The apparitions,’ wrote Thomas Frost, ‘not only moved about the stage, looking as tangible as the actors who passed through them, and from whose proffered embrace or threatened attack they vanished in an instant, but spoke or sang with voices of unmistakable

reality.’”

[We have quoted rather extensively from Chapter 9 of Professor Castle’s work, but no mere ascii can do justice to its many remarkable period illustrations, including a priceless depiction of Robertson’s audience beset by phantom devils and in a stampeding panic]

Source The Female Thermometer: 18th-Century Culture and the Invention of the Uncanny by Terry Castle Oxford University Press, 1995 ISBN 0-19-508097-1

ROBERTSON'S FINAL PHANTASMAGORIA

From Bruce Sterling

"Paris' Pre-Lachaise cemetery was designed as a 'walk-about cemetery,' a notion based on the English-style gardens which were so fashionable during the Romantic era. It was established in 1804 in a 17 hectare park, and its layout was conceived by the architect Brongniart.

"It is here that the tomb of Etienne-Gaspard Robertson can be found, built several months after his death in 1837 and designed by Girardin, the architect.

"Very early on, Robertson developed a form of stage-show based on known light projection systems, such as Kircher's lantern. It was an impressive spectacle for its time, using sophisticated effects. The theme of death particularly fascinated the public. More than death and its skeletons, however, Robertson was adept at making the most of the 'resurrection' theme, through the projection of portraits of the deceased, some of them public figures, or specially requested projections for inconsolable families. He made such virtual reincarnations credible through procedures which bore witness to his talent as a technician.

"Able to combine his knowledge as a man of science with his artistic sensibility, he has often been considered as one of the forerunners of cinema, indeed of the audio-visual media as a whole. He was a true director who knew how to use constantly updated special effects: the

diffusion of incense, mysterious sound effects, the importance of light in reproducing the climatic effects of daylight, contre-jour, etc, and above all, the beginnings of a sound-track. with the help of a ventriloquist “able to make the dead speak” and the use of a harmonica with a high-pitched sound resulting from the chiming of glass bells.

“Robertson’s monument looks like an invitation to an ‘imaginary voyage.’ Although it has no chapel, it is imposing in size, measuring four metres in height. Two bas reliefs, located on the sides of the monument, evoke the physicist’s tumultuous life.

“The first is a reminder of Robertson the aerostat specialist. It shows a small boy, leaning on a safety barrier, watching attentively before a crowd of people as an aerostat lifts up into the sky.

“The second is more curious. Guarded by two owls, it depicts two symmetrical groups which appear to be confronting one another: a group representing the dead and another representing the living move back to make way for a floating winged skeleton playing a trumpet. This bas relief is anecdotal, evoking a scene from a phantasmagorical show.

“Unlike the surrounding tombs, there is no trace of a portrait of the physicist and the theme of death is given a high profile. Above the two bas reliefs and at the base of the half-draped sarcophagus which tops the monument, a row of young girls’ heads alternate with winged skulls. These somewhat disconcerting figures are a reminder of

those unfailingly successful phantasmagorical themes wherein woman is a character representative of Love and Death, holding the secret of the great mystery of our origins. This is no longer the standardized image of the neo-classical woman, but a virtual image.

“Could the winged skeleton playing a trumpet, hovering above the scene of the last judgement, be a reference to the trumpet-playing automaton which Robertson liked so much? Or does it, in a wider sense, evoke the phantasmagorist’s attraction to automatons? Robertson had bought from the famous musician J. Maelzel a trumpet- playing android which could play as well as a musician. On the monument, the automaton has disappeared: he is nothing more than a skeleton, proving that even a machine can die and that the instrument alone survives, thanks to the universal nature of music.”

Source Etienne Gaspard Robertson at Pre Lachaise Cemetery by David Liot Muse des arts et mtiers: La Revue, Sept. 1994, n 8, p.57-61. MUSEE DES ARTS ET METIERS - 292, rue Saint-Martin - 75003 PARIS - FRANCE

AMERICAN MISSILE MAIL

From Greg Riker

“Throughout its history, the Postal Service enthusiastically has explored faster, more efficient forms of mail transportation. Technologies now commonplace, railroads, automobiles, and airplanes, were embraced by the Post Office Department at their radical birth, when they were considered new-fangled, unworkable contraptions by many.

“One such technology, however, remains only a footnote in the history of mail delivery. On June 8, 1959, in a move a postal official heralded as ‘of historic significance to the peoples of the entire world,’ the Navy submarine U.S.S. Barbero fired a guided missile carrying 3,000 letters at the Naval Auxiliary Air Station in Mayport, Florida.

‘Before man reaches the moon,’ the official was quoted as saying, ‘mail will be delivered within hours from New York to California, to Britain, to India or Australia by guided missiles.’

“History proved differently, but this experiment with missile mail exemplifies the pioneering spirit of the Post Office Department when it came to developing faster, better ways of moving the mail.”

Source: US Postal Service,

MCDONNELL DOUGLAS LASERFILM VIDEODISC PLAYER

From Tom Howe

Recently, 700 of these Laserfilm VideoDisc players turned up at a surplus firm for $39 each, postpaid in the continental US. These are new-in-the-box units that this firm is planning on stripping down for parts, if the units don't sell intact. The units don't include any software (two empty caddies are included), and I don't know where to find even a single disc to use for playback demonstration; but these units may be of interest to collectors of dead VideoDisc formats. I purchased one and the following notes reflect my observations.

The McDonnell Douglas Laserfilm VideoDisc Player This was the last and shortest-lived of the competing VideoDisc formats that emerged in the 1980's.

It had the distinction of using ordinary photographic film as the playback medium. The film was cut in the shape of a 12" disc which was loaded into the player with a caddy, much like the RCA CED System.

Data was recorded on the disc as a spiral track of dots, which interrupted the laser beam as it was projected through the disc. Thus Laserfilm is a transmissive system rather than reflective, which is characteristic of the popular LaserDisc format.

The first unit was available in 1984, and the last was made in 1986, as this format was apparently never marketed successfully outside of McDonnell Douglas.

All of the players were very well-constructed industrial units, and featured an RS-232 port for external computer control.

McDonnell Douglas used multiple units running in unison for flight simulation. The commercial failure of this format is somewhat surprising, since the use of photographic film, disc mastering and replication was supposed to be much simpler than competing VideoDisc formats.

Indeed, the duplicate discs were merely photographic inverses of the masters. The masters used dark dots on a transparent background, whereas the replicas used transparent dots on a black background. The players were unique in being able to play either a replica or the original master, although to play the master it had to be loaded in the caddy with the label side facing down.

The playback time was limited to 18 minutes of full motion video per disc, and perhaps this was its major downfall. Competing formats were capable of 60 minutes of video per side, or 120 minutes total per disc.

The discs were recorded in CAV format, and could produce 33,200 still frames, 42 hours of compressed audio, or 36 hours of Still-with-Sound (assuming 28.6 seconds of compressed sound per frame).

Source: LASERFILM VideoDisc Player LFS-4400 Operating Instructions, 1986 McDonnell Douglas Electronics Co., Box 426, St. Charles, Missouri 63301

TWO-TRACK PLAYTAPE; THE STANTON MAIL CALL LETTER PACK

From Robert Spaun

“In early 1967 the four-track cartridge was controlling the industry with Bill Lear and his 8-track format waiting in the wings to become the ‘format of choice’ for the next decade of pre-recorded taped music.

“Enter Frank Stanton, innovator of the 2-track PlayTape system. Stanton conceived the compact 2-track system in the 1940’s war years, when he served in the Navy. Sears and MGM records bought the first working model.

“The machine was unveiled to the general public at an MGM Records distributor meeting in New York in mid-1966. It was almost instantly a success. PlayTape was touted as a replacement to the transistor radio with the disc jockey removed. It was a light little machine, playing whatever music you wanted to hear . The self- winding tapes played from eight to 24 minutes, and they played anywhere. Quite an accomplishment in 1967!

“Stanton felt that Playtape was a ‘standard system- not competitive with anybody. We have our own niche, from $1.00 - $3.00 retail cartridges, from mono to stereo, from the Beatles and Sinatra to Shakespeare and poetry.’ He would be proven wrong.

“The first two PlayTape units offered were a $19.95 unit sold by Sears exclusively, and an MGM model (retailing at $29.95) that had tone controls and a better speaker. Stanton had in mind over 15 different models to be

available in 1967, home tabletop models featuring hi- fi speakers, an auto hang-on unit, a wide variety of portable units and special stereo models.

“Units were cheaply made, sounded like you would expect a 3” speaker to sound and were troubled with the same crosstalk, azimuth problems of the 8-track.

“In addition to musical entertainment, Stanton had the business market in mind for the PlayTape system as well. He introduced a special dictating device for the business market which he envisioned as a replacement for written memos and letters. His idea was marketed to the Smith Corona Corporation and called the Mail Call Letter Pack.

“The units that recorded the messages were advertised at ‘less than $70.00 a pair.’ Letter Pack cartridges were offered in 3, 6, or 10 minute lengths and were reusable. Even though the idea was a forerunner of the IBM dictating machine and to some extent the Internet and E-mail, the concept did not take off and music is still the medium for which PlayTape is remembered.

“In September of 1967, PlayTapes were distributed in five distinctive color cartridges in the following categories:

Black cartridge = equivalent to a 4-song EP, $1.49
Blue cartridge = children’s albums = $1.00-$1.50
White cartridge = 8 songs like an LP, $2.98
Gray cartridge = talk and educational = $1.00-$1.50

“In its heyday of 1967 and 1968, the personalities in the PlayTape inventory reads like a ‘Who’s Who’ in the entertainment world. In the popular music category were

such greats as Frank and Nancy Sinatra, Dean Martin, Sammy Davis, Connie Stevens, Peggy Lee, Nat King Cole, Wayne Newton, Judy Garland, Nancy Wilson, Petula Clark, Connie Francis, Ella Fitzgerald, Edie Gorme, Steve Lawrence and hundreds of others.

“The rock n roll category includes such names as the Beatles, the Animals, the Supremes, the Lovin’ Spoonful, the Grateful Dead, the Mamas and Papas, the Righteous Brothers, the Temptations, the Four Tops, Smokey Robinson and Stevie Wonder.

“Also in the PlayTape inventory were the standards - Herb Alpert, Sergio Mendes and an assortment of current Country music hit artists. The total number of artists available on PlayTape at the beginning of 1968 was over 3,000!

“A big boost to the PlayTape format was a contract in April of 1967 to license the entire Motown catalog. Previously, Motown had only once licensed their entire catalog, to Ampex in the open-reel format. Another boost was a contract with Pepsi to promote the youth market. Pepsi offered a PlayTape unit for $12.95 plus 6 cork liners from Pepsi cans. Pepsi promotion increased the sale of PlayTape cartridges almost twofold.

“The PlayTape format targeted two distinct markets = the youth music market and the business market. For whatever reasons, the business market never took hold. The music market enjoyed a limited success. The PlayTape was limited to two tracks, and even though there were several car units, they never really targeted

the car audio market as did Mr. Muntz and Mr. Lear.

“Both of these factors helped lead to Playtape’s of educational and business fields, rather than entertainment. LearJet and Muntz both introduced portable players for their formats in the late 1960’s, which stripped PlayTape of its unique portability selling point. Consumers had to commit to a uniform format, and PlayTape was not to be the choice.

“PlayTape did however enjoy several more years in the limelight in Europe, most notably Germany.

Source: Web article by Lynn Fuller

INUIT CARVED MAPS

From George H. Brett II

“Three-dimensional maps of coastlines were carved of wood as long as three hundred years ago. These Inuit charts were usually carved from driftwood and are made to be felt rather than looked at.

“Usually the actual landmass has been highly abstracted, it is the edges that can be ‘fingered’ on a dark night in a kayak. Since they are made of wood rather than paper, they are impervious to the weather, and will float if they are accidentally dropped overboard; being three-dimensional they are more functional in terms of accurately rendering shorelines to people in boats or kayaks.”

There is an illustration of two of the wood maps on page 231. This section has an interesting preamble about Inuit spatial sensibilities and how they relate to their sense of direction.

As Papanek says: “This radically different orientation system has been cited by both Marshall McLuhan and Edmund Carpenter as a result of Inuit living in an aural, acoustic, non-linear bubble of space, in a society that is moving directly from a pre-literate to a post-literate (electronic) mode, and has not be moulded by linear thinking.

Source: Papanek, Victor. The Green Imperative: natural design for the real world. Thames and Hudson, 1995. ISBN 0-500-27846-6.

EDISON'S VERTICAL-CUT RECORDS

From Stefan Jones

Thomas Alva Edison was indisputably the inventor of the phonograph, and the first major manufacturer of these machines.

His wax cylinder machines found their way into hundreds of thousands of homes, and entertained millions.

Less well known is Edison's bungling attempts to follow up on the success of the cylinder phonograph. Although acoustically superior to Berliner's disc-playing gramophone, the cylinder machines began losing ground to discs in 1901 and were almost moribund after the first world war. When Edison finally relented, he didn't follow the rest of the pack.

The below are excerpted from The Fabulous Phonograph by Roland Gelatt:

"The great wartime phonograph boom came along just in time to accelerate the fortunes of Edison's new Disc Phonograph. It had been officially unveiled in October 1913, when the cylinder was failing fast as a viable article of commerce; and it was pubicised with all the elan that Edison's ingenious advertising department could muster."
[All of the records you are likely familiar with, be they shellac 78, 45 singles or 33 /13 RPM vinyl LPs, have laterally cut grooves. Vertical cuts were a holdover from cylinders, but actually offered better sound, SEJ]

"The combination of vertical-cut recording, individually ground diamond styli, and Edison's usual high standards

of construction acted to make these instruments superior acoustically to any competing talking machine..”

“Highly paid singers were put under contract: Emmy Destinn, Frieda Hempel, [etc.]. But Edison was incapable of utilizing this talent to anyone’s satisfaction but his own. He was constantly interfering with the choice of repertoire and would stubbornly refuse to issue recordings that bore the approval of both his own recording directors and the artists themselves.” [Due to their popularity in Europe, and Edison’s own output, American phonograph manufacturers of the Teens produced machines with adaptors that allowed them to play both lateral and vertical cut discs. These faded away as the superior marketing and star-power of Columbia and other major labels overwhelmed the market.—SEJ]

“In 1925 electrical recording had delivered the final blow to Edison’s vertical-cut cylinders and discs. [Even when played back on an acoustic machine, electrically mastered discs captured a greater range of sound and allowed musicians to play naturally, rather than directing their efforts at a recording horn.—SEJ]

“At first the Edison publicists had tried to maintain that electrical recording figured in the mysterious Edison ‘secret process’<b> but despite the insinuations. the records continued to be recorded mechanically. To offset this drawback, the Edison company launched a long-playing record in 1926 that would give up to twenty minutes of uninterrupted entertainment per side.

“But no one at Thomas A. Edison, Inc. bothered to unfold

the possibilities. Complete symphonies, entire operas were not found among the long-playing records issued. Instead there appeared a collection of dinner music played by the Hotel Commodore Ensemble and some operatic overtures played by Sodero's Band and the American Symphony Orchestra. Not one Edison 'Long Playing Record' contained a piece of music lasting longer than the standard four minutes."

[Edison introduced a few electrically recorded, standard lateral-cut records in the summer of 1929. Ten weeks later, on November 1st, the company announced that it was discontinuing product of both phonographs and records, including its "Blue Amberol" plastic cylinder recordings, which continued to sell steadily in a few parts of the South, decades after the rest of the country had relegated them to attics and junkheaps.]

[While Columbia and Berliner shellac records remain accessible to this day, thanks to the still-honored practice of putting a 78 rpm setting on turntables, Edison's vertical cut disks are utterly unplayable without one of the specialized machines designed to accommodate them. They are truly dead media.]

Source: Roland Gelatt, The Fabulous Phonograph, J.B. Lippincott Company, New York. First Edition, 1955

THE FLAME ORGAN; THE BURNING HARMONICA; THE CHEMICAL HARMONICA; KASTNER'S PYROPHONE

From Richard Kadrey

Here is how to make flame sing: obtain a glass tube, one or two inches in diameter, open at both ends, and perhaps two or three feet long. Light a propane torch or similar burner, and insert the nozzle about one fourth of the way into the open lower end of the tube.

If conditions are right, you will hear the tone will begin, not abruptly, but with a growing volume. Gather together a tuned set of such tubes, develop the mechanisms to shut the flames on and off in a controlled manner, and you will have created a flame organ.

The sounds of such an arrangement, according to people who have worked with flame tones, are highly varied.

The system can be refined so as to dependably produce clear, steady tones at the frequency of the tube's fundamental. Or the mechanism can be adjusted to bring out harmonics. On the other hand, you can take a less controlling approach, and let the system come forth with a menagerie of whoops, shrieks and moans.

One consistent characteristic: the attacks are not sharp; rather, each tone grows as the resonance establishes itself.

The earliest references to "burning harmonica" or "chemical harmonica" come to us from the late 1700s.

A century later the physicist Georges Fredric Eugene Kastner published Les flammes chantantes (Paris, 1875), a description of his fire organ, the pyrophone.

A photograph of this instrument appeared in Kenneth Peacock's article on color organs in Experimental Musical Instruments, Volume VII #2, September 1991.

It appears as a moderately large console containing a small keyboard, with ten glass pipes rising from it. Later references to fire music generally take Kastner's pyrophone as a starting point.

Of modern fire organs there are not many. One has been created by engineers at the Tokyo Gas Company. It is fully functional and played regularly in public. In the following pages you will read about three more, created by contemporary artists-in-fire.

TELELOGOSCOPY; TELEVISION SCREEN NEWS

From Paul Lindemeyer

May I submit for your approval the story of my own favorite dead medium, Television Screen News.

I've been digging into lost TV history for a while now, hoping to get a book or documentary out of it, and this device is one of the most interesting I've come across. Television Screen News, or Telelogoscopy, the ancestor of today's video character generators, was another of the many mechanical television innovations of John Logie Baird.

Patented in 1927, the device used a disc scanner to televise a moving band of black letters, perhaps four at a time, on a white background.

At first individual 2-1/4" x 3" letter tiles were slotted into a roll of varnished linen, but by 1929, a more practical typewriter and rolls of paper tape replaced this arrangement.

Television Screen News served a need in the days when experimental television could not transmit audio and video at once, and visual definition was too low to allow intricate title cards to be used. It was used to identify stations, performers, and songs as well as its most obvious application, news bulletins.

"Stand by for Television Screen News," spoken by an announcer interposed on the video frequency, was

frequently heard during the Baird 30-line programs given through the BBC London transmitter from 1929-35. W2XAB of the Columbia Broadcasting System used a similar device for station identification in 1932-33.

The visual aspect of Television Screen News was said to be similar to the “zipper” or “motogram” revolving belt used to flash messages across the sides of buildings. It was a reliable test of picture quality for the home enthusiast and was thought in the early 1930s to have great possibilities for educating the deaf and other special applications.

However, along with mechanical television, Television Screen News became obsolete before it could see widespread use.

Source: H.J. Barton Chapple, How ‘Screen News’ Is Televised, Radio Review and Television News, Jan.-Feb. 1933 (pages 292-293); Benn Hall, Television: Talkies of the Air, The Billboard, February 25, 1933 (page 15).

PHONOGRAPH HISTORY

From Stefan Jones

A History of the Phonograph, with Special Emphasis on Dead Phonograph Formats

Most of this material and all quotes come from THE FABULOUS PHONOGRAPH by Roland Gelatt, J.B. Lippincott, NY, 1955. Although the book ends when 78 rpm records were still in production, “Hi-Fi” was a suspicious fad, and Stereo was still over the horizon, Gelatt’s book is a great read and has great insights as to why recording formats, even technically superior ones, can become Dead Media. I would love to hear what Gelatt would have to say about the last fifteen years. A Note on Terminology: “Phonograph” is the proper name for Edison’s original tin- foil cylinder sound recorder and player, and for the much more practical wax-cylinder player-recorder he commercialized and sold until 1929. The lateral-groove-inscribed-disc playing machine we most often think of as a record player is more properly called a “gramophone,” after the original designed by Emile Berliner. The basic technology reigned virtually unchallenged, with relatively minor improvements, from 1901 to the 1980s. I will use “record player” to refer to all types of machines that play back sound recorded and reproduced via a vibrating needle.

The PHONOGRAPH was invented by Thomas Alva Edison in 1877. The first model used a vertically vibrating needle to inscribe a “hill and dale” pattern in a sheet of tin foil wrapped around a cardboard cylinder. Edison, ever the

publicity hog, exhibited the machine to the staff of the Scientific American. A few hundred (?) of the temperamental machines were built and sold for use by traveling exhibitors. A fair number of the celebrities and potentates of the day had their voices recorded, but the tin foil recordings were not durable and no commercial recordings were ever offered.

The GRAPHOPHONE, a much improved phonograph that used wax-covered cardboard cylinders, was developed by Chichester A. Bell and Charles Sumner Tainter in 1881. After being rebuffed by Edison, whom they thought would be delighted with their work, they set up limited production in a plant in Washington D.C. Edison knocked-off the graphophone, and introduced his own improved phonograph. Bell and Tainter in turn stole an Edison innovation: solid wax cylinders. Both firms vied for leadership in a non-existent market for office sound recording devices. Just as lawsuits threatened to eliminate one or the other machine, investor J.H. Lippincott bought out both firms. He tried to lease the machines to businesses via a franchise system. To Edison's chagrin, the biggest customers were drug stores, who turned the phonographs into crude jukeboxes. The D.C. area franchise, the Columbia Phonograph Company (!), began recording and selling wax cylinders containing music and recitations. Lippincott was struck with paralysis in 1890 and his virtually moribund empire was taken over by Edison. Edison still refused to cede that the phonograph's killer app was music. The resurgent American Graphophone Company and Columbia threw off

their shackles to go it on their own; they introduced reasonably priced home graphophones. Edison followed suit, introducing cheap home units and commercially recorded cylinders.

MEANWHILE, German emigre Emile Berliner toiled to perfect his GRAMOPHONE, which used a laterally vibrating needle to etch sound waves in disks of smoked glass. Photoengraving was used to etch the patterns in metal disks. He was awarded a patent in 1887. In 1889 Waltershausen, Germany toy maker Kammerer & Reinhardt licensed the design; they created a tiny toy record player with 5" celluloid or hard rubber disks. (Gelatt, page 64: "Most of the selections were in German, though a small number were recorded in English, French, Spanish, Italian, and Russian. The Lord's Prayer and Twinkle, Twinkle, Little Star became the big sellers in England. Kammerer & Reinhardt manufactured gramophones for two or three years, then dropped them in favor of more lucrative products.")

Berliner introduced his first "serious" gramophone in America in 1893. The hand-turned turntable and heavy rubber discs did not sound anywhere as good as the cylinders, but the machines were cheap and the discs could be mass produced; the metal engraving produced by photoengraving could be used to stamp out records. By 1893, both Edison's phonograph and the Graphophone were selling briskly.

Hand-cranked models sold for as little as $10. Dozens of small record companies emerged to fill the need for

software. The cylinders all had to be recorded from live music; hired bands played the same selection over and over in front of a bank of recording machines. Columbia became the master of marketing cylinders, and its catalog listed hundreds of titles. Most recordings of the time were folk music ("coon shouters" to use Edison's term) and popular ballads.

Italian Gianni Bettini sought to uplift the audience with better fare and created the MICRO-PHONOGRAPH, a derivative but much improved wax cylinder machine.

The crystal diaphragm that vibrated the needle was replaced with mica, and the needle itself was mounted on a "spider" that transmitted the force of the vibration more efficiently. The results were critically acclaimed, both for content and technique. Famous instrumentalists and stars from the Metropolitan Opera who shunned contact with the phonograph industry gratefully performed for Bettini's machine. His toney cylinders sold for anywhere from $2.00 to $6.00, versus $.50 for a typical Columbia release. Bettini closed up shop in 1902, sold his patents to Edison, and moved to France, where he produced machines and recordings for several more years, although never in great number. He left the record player industry for good in 1908. Bettini's collection of original recordings was destroyed in WWII.

Columbia, which marketed a line of graphophones, introduced the GRAPHOPHONE GRAND in 1898s. It used a cylinder 4.5" in diameter instead of the usual 2". The bulky machine, which sold for $150, was touted as

playing at many times the usual volume.

Edison followed suit with the EDISON CONCERT GRAND PHONOGRAPH. Gelatt: “But despite extensive advertising by both companies, the large- cylinder machines did not find a secure footing in the American market. After a few years they disappeared entirely.” (Gelatt briefly notes that Pathe (q.v.) marketed a “larger and louder” “Salon” cylinder in France just after the turn of the century; perhaps this was a derivative of the 4.5” cylinders?)

The cylinder makers took little notice at first of Berliner’s gramophone, but by the end of the century they were desperate enough to try challenging Berliner’s patents. The result of the 1900 lawsuit by the American Graphophone Company against Frank Seaman, Berliner’s chief pitchman and head of distribution, resulted in Seaman making and selling Gramophones for American Graphophone.

The maker of Berliner’s motors founded Victor Talking Machine. Berliner’s patent-holding United States Gramophone Company ended up wondering what had happened. Eventually Victor and the Berliner interests pooled their patents (Victor’s founder, Eldridge Johnson, had created the wax-disc mastering process) and dominated the record business for nearly twenty years.

Cylinder sales dropped off sharply after 1901. Columbia sold cylinders until 1912, but found its true fortune in supplying discs to Victrola owners.

By the end of WWI, the gramophone, Berliner’s lateral-groove disc record player, was triumphant. Edison

refused to play ball; cylinders still sold in rural markets and he was convinced of the format's superiority.

When criticism of the cylinder's two-minute play length began to sting he introduced the "Blue Amberol" four minute plastic cylinder (1912). In 1913 he introduced his VERTICAL GROOVE ("hill and dale") DISC PHONOGRAPH. It was technically superior to anything on the market, but as was his habit Edison did not follow up with quality records that appealed to the high end of the market.

A few European producers, Pathe, Okeh, and Vocalian, marketed vertical-cut disks for the American and Continental markets, but as soon as the Gramophone/Victor patents ran out in 1919 they switched to the lateral-groove format. Edison continued selling cylinders until leaving the phonograph business entirely in 1929.

Just before the end he released a series of poorly received long-playing twenty-minute "hill and dale" records, and announced (but presumably did not produce) a conventional lateral cut phonograph.

EUROPE Europe was definitely a follower when it came to phonograph technology. Edison's tin-foil cylinder phonograph thrilled audiences, but failed to inspire imitators or empire builders.

The wax cylinder phonograph was introduced to Europe in 1888, via licensed subsidiaries. High prices kept the machine out of British homes for some time, but in France things were different.

Around 1890, Paris bistro owners Charles and Emile Pathe put a Edison machine in their bar to the delight of their patrons. So many people offered to buy the player that in 1894 they began manufacturing “Le Coq,” an inexpensive knock-off, and made cylinders as well.

(Aside: “So popular did the ‘Cock’ become that the swaggering bird was adopted as Pathe’s trademark. It can still be seen and heard still at the beginning of Pathe’s newsreels.” Gelatt, page 102. Note the present tense! Newsreels were not a dead medium in 1955.)

Having famous opera stars convenient to their studios made Pathe’s recordings an instant success. Their 1899 catalog featured 1,500 selections. Cylinders were the mode in France until 1908.

The rest of Europe favored the disk. Berliner’s brother Joseph helped get a German branch of the gramophone manufacturer under way, and a robust British branch of the firm set up subsidiaries all over the continent.

In London in 1904, William Michaelis introduce the NEOPHONE, a hill-and-dale disc. Gelatt, page 169: “Neophone records were made of a plastic material laminated to a cardboard base; they were exceptionally light, exceptionally cheap , and exceptionally scratchy.”

The Neophone Company offered the “Repro-Neo” adaptor to allow gramophones to play the vertical cut discs. This, and innovations such as a twenty-inch record with a ten minute playing time, didn’t keep Neophone from disappearing in 1908. The Pathe Brothers introduced a vertical cut disc in 1906, eventually favoring it over their

popular cylinder line.

They sold their own disc players, plus an adaptor similar to the “Repro-Neo.” The inexpensive discs sold widely, even in the U.S.A., but did not seriously challenge the lateral-cut discs. Pathe abandoned the hill- and-dale method entirely in 1920.

Source: THE FABULOUS PHONOGRAPH by Roland Gelatt, J.B. Lippincott, NY, 1955

PALPLUS TELEVISION LETTERBOX FORMAT

From Charlie Crouch

Widescreen Flops

When a TV station transmits a widescreen movie, it must choose between cropping the sides or putting 'letterbox' black borders at the top and bottom. A widescreen TV set can then expand the letterbox image to fill its 16:9 screen. The trouble is, the picture quality is reduced.

The MAC system was designed to solve this problem, with a signal that suited both ordinary and widescreen TVs. But it flopped. Digital TV will play the same tricks but was, until recently, seen as a next-century product. So in 1988, European electronics companies started five years' work on PALplus, a scheme in which the black borders of the letterbox contain analogue "helper" signals. These let a PALplus TV set fill a wide screen without loss of quality.

But so many viewers with ordinary sets complained about letterboxed PALplus movies that Channel 4 [a commercial channel in the UK] scrapped plans for PALplus horseracing. Some of C4's movies are still transmitted in PALplus. But when digital TV is launched next year, PALplus will drop into the dustbin of history.

Source: Daily Telegraph, London, Dec 10, 1996 "TechnoTurkey" column by Barry Fox

HERON'S NAUPLIUS

From Bradley O'Neill

HERON'S AUTOMATED THEATER, NAUPLIUS: 2nd century AD.

Heron of Alexandria, great inventor and tinkerer of his day, wrote two major treatises on mechanics and automata.

The first work, Pneumatica, comprises an application of various theories of vacuum, steam, pulleys, siphons, and air, that intrigued both Epicurean and Stoic philosophers.

His next work, On Automata, fleshed out the applied details of his theories and experiments with early automata, and also contained the plans for his automated theatrical machine, Nauplius.

Physically, Nauplius was a tall pedestal, not unlike a large grandfather clock. Where we would expect to find the face of the clock, instead we find an expansive facade of a Greek temple with doors that open and close. The theater is completely self-contained and self-operating once it has been wound-up. All action takes place behind a silhouetted screen on parallel tracks.

Here is a very brief summary of the five-scene theatrical plot of the automated Nauplius:

Scene 1. Doors open, a ship is repaired by twelve figures [Danaids] arranged in three rows. Some saw, others hammer. Great noise. The "actual" sound of working. Doors close.

Scene 2. Doors open. The ship is launched to sea. Doors close.
Scene 3. Doors open. Empty sea. The ships sail across the stage. Dolphins jump. The winds pick up. The ships run with sail close-hauled. Doors close.
Scene 4. Doors open. No more ships. Nauplius stands by Athena with torch and real fire burns above the stage as if cast by torch. Doors close.
Scene 5. Doors open. Shipwreck of Ajax's boat. Ajax swims. A machine raises Athena above the stage. Thunder crashes. Lightning bolt strikes. Ajax disappears. Doors close.
THE END

Heron's text, On Automata, uses the automated theater as a pedagogical device to explain the physical principles of the machinery he employed. It goes into detail on the greatest effects of Nauplius, a kind of "Making Of" behind-the-scenes affair. We get to see how the dolphins swim, how the lightning snaps down and up so quickly, etc. Unfortunately, poor translations have ruined much. We know that the various technologies existed up to 4 centuries prior to Heron, and were variously implemented by Ctesibius in his lost proto-version of Nauplius, circa 2 BC.

Source: Ancient Greek Gadgets and Machines by Robert S. Brumbaugh, Thomas Y Crowell Company, 1966. T16.B87 1966

THE IBM SELECTRIC TYPEWRITER

From David Morton

[Most people know IBM for two of its products: the personal computer and the Selectric typewriter. The Selectric is now out of production and, according to author Sam Kalow, IBM has dropped parts and service for these models. Surviving examples are many, and they are often highly prized by their owners. How do you deal with the task of filling out forms in the computer age? You dust off your old typewriter.. David Morton]

“The announcement of the IBM Selectric typewriter in July 1961 initiated what turned out to be the ET (later OP) Division’s most popular product. Except for the IBM Personal Computer, the Selectric was used by more people and sold more units than any other IBM machine. Almost everybody is familiar with this product as the ‘golf ball’ typewriter. The single element which holds the embossed characters for printing is about the size and the embossing reminiscent of the dimples of a golf ball.

“The inspiration for using a single printing element rather than traditional typebars came from H. S. “Bud” Beattie. Beattie was the manager of ET engineering in 1961. In 1946 he had invented a high-speed, single-element printer to be used in data-processing applications and was always motivated to utilize this technology in a typewriter. Today, high-speed printers, such as laser or ink jet technology, use the Selectric as the minimum standard for ‘correspondence’ or ‘letter’ quality.

“The ribbon on the Selectric was specially designed to fit into a cartridge so that the user did not have to touch the ribbon itself. The ribbon moves back and forth as part of the print mechanism, and the user can easily change ribbons as well as print elements. Thus, with colored ribbons, and plate writing ribbons, the typist selects the quality and color of the impression. In addition, the print mechanism has a lever to control the force with which the element strikes the platen to accommodate carbon copies and prepare stencils.

“The excitement generated by the Selectric extended beyond the ETD sales force to all its customers. People would crowd around the machine being demonstrated, amazed by the rapidly rotating and tilting print mechanism. Unlike the well-known type-bar action, it was hard to understand how the Selectric worked. For example, if two keys are pressed simultaneously or almost simultaneously on a typebar machine, electric or manual, it is likely that the bars, in moving toward the paper, will strike each other, either jamming or producing uneven print.

“With the Selectric, however, only one key can be pressed at a time, and if there is only a momentary lag, the machine prints the characters in sequence; there cannot be an overstrike since there is only the single printing element. This feature was highlighted as a memory or stroke storage.

“The ability to have several fonts on the same page, or different-colored impressions, was recognized by many

typists as a capability beyond that of any typewriter they had seen or used before.

“The customer excitement about the Selectric translated to high sales. This machine was one of the first examples of manufacturing automation and helped keep the cost down and the quality high.

“The Selectric is a classic example of technology driving the market versus utilizing a technology to satisfy a known market requirement. Customers were not clamoring for a typewriter without type bars or one that had no moving carriage. Likewise, while ribbon changing was considered a nuisance, operators had become accustomed to soiled fingers, and sometimes clothing, when replacing a worn-out ribbon with a new one.

“And who ever heard of a typed letter containing two different type styles and even different colors of type?. So innovative and dramatic was the single element technology that once secretaries and their bosses had viewed the Selectric in operation, the machine became the definitive product of choice.

“The Selectric was a superb piece of mechanical engineering with thousands of finely machined parts working together. The major investment was tooling up for the unique parts, and no competitor was willing to challenge either IBM’s patents or its manufacturing capability. The Selectric remained a unique product for over a decade.

“The Selectric printing mechanism also appealed to the data processing side of IBM. Modified typebar electric

typewriters were used as input/output writers on computer consoles. In most cases fan-fold or continuous-form paper was used. However, the moving carriage of the typebar machines could cause the paper to get out of alignment or tear. ETD made pin-feed platens to better hold the paper in place, but the stationary carriage of the Selectric eliminated the problem of the paper's being dragged back and forth.

"The Selectric was also developed into a terminal for remote access to a data-processing system, the Models 2740 and 2741.

"The Selectric announcement, with its new single element technology, was an advertiser's delight. While IBM typebar machines, models "A," "B," and "C," had been highlighted in print ads featuring ease, speed, and quality, there really wasn't that much to shout about. The Selectric changed all that, and ETD's Advertising Department and its agency, Benton & Bowles, dramatized in words and pictures the unique and revolutionary characteristics of the Selectric. ETD virtually built an entire business around a typewriter that put the image on the page with something resembling the shape of a golf ball.

"The design of the entire Selectric product also lent itself to creative depiction and description in the print and TV ads that were developed. The lack of a moving carriage on the Selectric allowed famed industrial designer Elliot Noyes to create a cover design for the machine that was sculptured, flowing, functional, and totally integrated, one

that had never before been seen on a typewriter. Part of the enormous appeal of the Selectric can be attributed to its advanced appearance. The Selectric technology was the inspiration for further development of automatic and, ultimately, electronic typewriters."

Source: C. E. DeLoca and S. J. Kalow, The Romance Division: A Different Side of IBM (Wykoff, NJ: D&K Book Co., Inc., 1991)

THE BLICKENSDERFER TYPEWRITER; THE SCIENTIFIC KEYBOARD

From Darryl Rehr

In response to the recent posting on the IBM Selectric, I offer the following. As a future collector of antique typewriters, I was blissfully oblivious to the release of the Selectric on my eleventh birthday. Now, these many years later, I have become aware that the electric, single-element typewriter dates back MUCH further. This excerpt is from the Blickensderfer section of my upcoming book Antique Typewriters and Office Collectibles

There are few old typewriters with as much charm and as much history as the Blickensderfer Typewriter. People never cease to be amazed when they see its little type wheel spin into action at the press of a key, whirring into position before brushing past the ink roller on its way to deposit each letter upon the paper.

Invented by George C. Blickensderfer, it was introduced to the public in 1893 at the Columbian Exposition in Chicago. It created quite a stir at the time, and it's said that other major manufacturers dropped out of a planned typewriter competition when the Blickensderfer appeared.

Although company literature mentions Models 1,2 and 3, apparently the first model actually manufactured for the public was the Blickensderfer No. 5, a diminutive typewriter with a spacebar that folded inward so the

machine would fit inside its oak case. It was produced at the company factory in Stamford, Connecticut, but did not appear in substantial numbers until 1895.

The dazzling star of the Blickensderfer lineup is the Blickensderfer Electric, which first appeared around 1902, but died a quick death. The Blick Electric essentially did everything that the IBM Selectric did more than 50 years later; everything except succeed in the marketplace, that is. Very few of these machines survive, and if you find one, don't plug it in. The insulation may fail and damage the motor.

It's thought that most Blickensderfer Electrics ran on DC current, but at least one example has an AC motor. Hundreds of different Blickensderfer type elements were available in every imaginable type style and language. Extra type elements, in fact, are often found with surviving Blicks today.

Most Blickensderfers are found with what the company called its Scientific keyboard. The most often-used letters (DHIATENSOR) were placed on the bottom row, closest to the user. The company did offer the Universal (QWERTY) keyboard upon request, but it strongly advised against it.

Source: Antique Typewriters and Office Collectibles by Darryl Rehr (forthcoming)

THE SLIDE RULE

From Paul Di Filippo

“HISTORICAL NOTES ON THE SLIDE RULE

“Since logarithms are the foundation on which the slide rule is built, the history of the slide rule rightly begins with John Napier of Merchiston, Scotland, the inventor of logarithms. In 1614 his “Canon of Logarithms” was first published. In presenting his system of Logarithms, Napier sets forth his purpose in these words:

“’Seeing there is nothing (right well beloved Students of Mathematics) that is so trublesome to mathematical practice, nor doth more molest and hinder calculators, than the multiplications, divisions, square and cubical extractions of of great numbers, which besides the tedious expense of time are for the most subject to many slippery errors, I began to consider in my mind by what certain and ready art I might remove these hindrances.’

“From Napier’s early conception of the importance of simplifying mathematical calculations resulted his invention of logarithms. This invention in turn made possible the slide rule as we know it today. Other important milestones in slide rule history follow.

“In 1620 Edmund Gunter, of London, invented the straight logarithmic scale, and effected calculation with it by the aid of compasses.

“In 1630 William Oughtred, the English mathematician, arranged to Gunter logarithmic scales adapted to slide along eash other and kept together by hand. He thus

invented the first instrument that could be called a slide rule.

“In 1675 Sir Isaac Newton solved the cubic equation by means of three parallel logarithmic scales, and made the first suggestion toward the use of an indicator.

“In 1722 John Warner, a London instrument dealer, used square and cube scales.

“Circular slide rules and rules with spiral scales were made before 1733, but their inventors are unknown.

“In 1775 Thomas Everard, an English Excise Officer, inverted the logarithmic scale and adapted the slide rule to gauging.

“In 1815 Peter Roget, an English physician, invented a Log Log scale.

“In 1859 Lieutenant Amadee Mannheim, of the French Artillery, invented the present form of the rule that bears his name.

“Cylindrical calculators with extra long logarithmic scales were invented by George Fuller, of Belfast, Ireland, in 1878 and Edwin Thacher, of New York, in 1881.

“A revolutionary slide rule construction, with scales on both the front and back surfaces of body and slide and with a double-faced indicator referring to all scales simultaneously, was patented in 1891, by William Cox, who was mathematical consultant to Keuffel and Esser Co. With the manufacture of Mannheim rules and this new rule, K&E became the first commercial manufacturer of slide rules in the United States...

“Many types of slide rules have been devised and made in small quantities for the particular purposes of individual users. Rules have likewise been made specially for chemistry, surveying, artillery ranging, steam and internal combustion engineering, hydraulics, reinforced concrete work, air conditioning, radio and other special fields. However, the acceptance of such rules has been relatively limited.

“The slide rule has a long and distinguished ancestry. The rule described in this manual incorporates the most valuable features than have been invented from the beginning of slide rule history, right up to date.”

Source: K&E Slide Rules, A Self Instruction Manual by Lyman M. Kells, Ph.D., Professor Emeritus of Mathematics, Willis F. Kern, Former Associate Professor of Mathematics, and James R. Bland, Professor of Mathematics, All at the United States Naval Academy. Published by Keuffel and Esser Co., New York, Hoboken, Philadelphia, Detroit, Chicago, Milwaukee, St. Louis, Dallas, Denver, San Francisco, Los Angeles, Seattle, Anchorage, Toronto, Montreal. Copyright 1943, 1945, 1947, 1955.

WIDE-SCREEN MOVIES: GANCE'S POLYVISION, WALLER'S CINERAMA

From Ian Campbell

"Among the many breakthroughs of Napoleon [film 1927, dir. Abel Gance, France] was its use of multiple imagery, for which Gance's general term was polyvision. Polyvision referred to superimposition (as many as sixteen images laid on top of one another), the split screen (as many as nine distinct images in a frame), and the multiple screen (the triptych, used three times in Napoleon, although two have been lost, whereby three [unsynchronized] cameras and projectors and screens could create a single wide-screen image with an aspect ratio of 4:1, or three separate, side-by-side images that reinforced, reverse or played against each other in counterpoint).

" With polyvision and rapid cutting, Gance became the unchallenged master of montage in France. The triptych, which was later reinvented as Cinerama, was an invention whose inventor was conveniently forgotten. The final reel of Napoleon was also shot in 3-D and again in colour, though Gance disliked the results and declined to release those experimental reels, deciding at last on the triptych."

"Cinerama, unlike 3-D, dazzled its patrons by bringing the audience into the picture rather than the picture into the audience. Cinerama originally used three interlocked cameras and four interlocked projectors (one for stereophonic sound). The final prints were not projected

on top of one another (superimposed, as in 3-D), but side by side. The result was an immense wrap-around screen that was really three screens.

“The wide, deeply curved screen and the relative positions of the three cameras worked on the eye’s peripheral vision to make the mind believe that the body was actually in motion. The difference between a ride in an automobile and a conventionally filmed ride is that in an automobile the world also moves past on the sides, not just straight ahead.

“As early as the Paris exposition of 1900, the energetic inventor-cinematographers had begun displaying wraparound and multi-screen film processes. (Multi-screen experiments have long been popular at world fairs, for example, the New York fair of 1963-64 and Expo ‘67 in Montreal.) As early as 1927, Abel Gance had incorporated triple-effects, both panoramic and triptych, into his Napoleon.

“In 1938, Fred Waller, Cinerama’s inventor, began research on the process. But when This is Cinerama opened in 1952, audiences choked, quite literally, with a film novelty that sent them racing down a roller coaster track and soaring over the Rocky Mountains. A magnificent six-track (in later Cinerama films, seven track) stereophonic sound system accompanied the galloping pictures; sounds could travel from left to right across the screen or jump from behind the screen to behind the audience’s heads.

“Cinerama remained commercially viable longer than 3-D

because it was more carefully marketed. Because of the complex projection machinery, only a few theatres in major cities were equipped for the process. Seeing Cinerama became a special event; the film was sold as a "road-show" attraction, with reserved seats, noncontinuous performances, and high prices. Customers returned to Cinerama because they could see a Cinerama film so infrequently. (The second, Cinerama Holiday, came out three years after This is Cinerama.) And although Cinerama repeatedly offered its predictable postcard scenery and its obligatory rides and chases, the films were stunning travelogues.

"Cinerama faced new troubles when it too tried to combine its gimmick with narrative: The Wonderful World of the Brothers Grimm (1962), It's a Mad Mad Mad Mad World (1963), How the West Was Won (1963). As with 3-D, what Aristotle called the "Spectacle" (he found it the least important dramatic element) overwhelmed the more essential dramatic ingredients of plot, character, and ideas.

"In 1968, Stanley Kubrick's 2001, A Space Odyssey subordinated a modified Cinerama (shot with a single camera but projected on a Cinerama screen) to the film's sociological and metaphysical journey, letting the big screen and racing camera work for the story rather than letting the story work for the effects. Despite the artistic and commercial success of 2001, Cinerama is even deader than 3-D, partially because the mid-1970's combination of 70mm and Panavision lenses (which Kubrick also used), enhanced by Dolby Stereo soundtracks, comes close to

reproducing the immense sights and sounds of Cinerama without clumsy multimachine methods of the earlier process.

“In 1952 the gimmick successfully pulled Americans away from the small screen at home, but not enough of them at once to offer the film industry any real commercial salvation.”

Source: A Short History of the Movies, Gerald Mast, Macmillan, New York, 1992. ISBN 0-02-377070-8

WIDE SCREEN MOVIES: CINEMASCOPE, TODD-AO, MGM CAMERA 65, CINEMASCOPE 55, SUPER PANAVISION 70, ULTRA PANAVISION 70

From Ian Campbell

WIDE SCREEN

“A third gimmick of the 1950’s also took advantage of the size of the movie screen. The new format, christened CinemaScope, was the most durable and functional of them all, requiring neither special projectors, special film, nor special optical glasses (this lack of special equipment especially pleased the theatre owners).

“The action was recorded by a single, conventional movie camera on conventional 35mm film. A special anamorphic lens squeezed the images horizontally to fit the width of the standard film. When projected with a corresponding anamorphic lens on the projector, the distortions disappeared and a huge, wide image stretched across the curved theatre screen.

“Once again the novelty was not new. As early was 1928, a French scientist named Henri Chretien had experimented with an anamorphic lens for motion picture cameras; in 1952, the executives of 20th Century Fox visited Professor Chretien, then retired to a Riviera villa, and bought the rights to his anamorphic process.

“The first CinemaScope feature, Henry Koster’s The Robe (1953), convinced both Fox and the industry that the

process was a sound one. The screen had been made wide with a minimum of trouble and expense. A parade of screen-widening “scopes” and “visions” followed Fox’s CinemaScope, some of them using anamorphic lenses, one nonanamorphic process (Vistavision) printing the image sideways on a celluloid strip, and some of them achieving screen width by widening the film to 55mm, 65mmm, or 70mm, notably Todd-AO, MGM Camera 65, CinemaScope 55, Super Panavision 70, and Ultra Panavision 70. The first 70mm film of the 1950s was Oklahoma (1955, directed by Fred Zinnemann and shot in Todd-AO).”

Source: A Short History of the Movies, Gerald Mast, Macmillan, New York, 1992. ISBN 0-02-377070-8

DEAD CINEMA COLOR PROCESSES

From Ian Campbell

“From the earliest days of moving pictures, inventors and filmmakers sought to combine colour with recorded movement. The early Melies films were hand-painted frame by frame. Most silent films (Griffith’s, Lubitsch’s, and Gance’s most notably) were bathed in colour tints, adding a cast of pale blue for night scenes, sepia for interior or daylit scenes, a red tint for certain effect, a green for others. Such colourings were obviously tonal, like the accompanying music, rather than an intrinsic part of the film’s photographic conception.

“As early as 1908, Charles Urban patented a colour photographic process, which he called Kinemacolor. But business opposition from the then powerful Film Trust kept Kinemacolor off American screens.

“In 1917, the Technicolor Corporation was founded in the US. Supported by all the major studios, Technicolor enjoyed monopolistic control over all colour experimentation and shooting in this country. Douglas Fairbanks’ The Black Pirate (1926) and the musicals Rio Rita (1929) and Whoopee! (1930) used the Technicolor process, which added a garish grandeur to the costumes and scenery.

“In the 1920’s Technicolor was, like Urban’s Kinemacolor, a two-colour process: two strips of film exposed by two separate lenses, one strip recording the blue-green colours of the spectrum, the other sensitive to the red-

orange colours, then bonded together in the final processing. But by 1933 Technicolor had perfected a more accurate three-colour process: three strips of black and white film, one exposed through a filter to cyan, the second to magenta, the third to yellow, originally requiring a bulky three-prism camera for the three rolls of film.

“Before WWII, colour was both a monopoly and a sacred mystery. Colour negatives were processed and printed behind closed doors. Natalie Kalmus, the ex-wife of Herbert Kalmus who invented the process, became Technicolor’s artistic director and constructed an officical aesthetic code for the use of colour (she preferred mutedly harmonious colour effects to discordantly jarring ones), a code as binding on a film’s colour values as was the Hays Code on its moral values. Until 1949, every film that used Technicolor was required to hire Mrs. Kalmus as ‘Technicolor Consultant.’

[The film history series “Cinema Europe: The Other Hollywood” (BBC TV, 1996) shows some remarkable clips of the French Pathe Studios tinting process. It differed from earlier (vaguer) hand tinting by using an assembly line of women using stencils and pantographs. The best of these films are as precise as the hand tinted postcards of the day. It’s also mentioned that once the novelty of motion wore off, early film audiences were dissatisfied with monochromatic cinema because they had become accustomed to the rich colours of the magic lantern shows.“Cinema Europe” is a great tv series for film buffs, but also has a few interesting examples of dead media.

including a German phonographic “synchronized” sound film excerpt]

Source: A Short History of the Movies, Gerald Mast, Macmillan, New York, 1992. ISBN 0-02-377070-8

NORWEGIAN TRANSPORT WIRES

From Richard Kadrey

“How could it be possible that there were farmhouses in the middle of the mountain side? There were no roads of course; sometimes not even a path. Still they have cattle, and cattle would need food. Hay. The answer was the transport wire.

“By a well-developed network of transport wires they could move anything (even the cattle itself) up and down the mountain sides without trouble. Once established, this system generated a whole culture of its own. Since the length of the wire could exceed the range of the human voice, signals would be needed. ‘Sla pa traden’ (from the Norwegian language) means literally to knock on the wire, and that is precisely what was done.

“Different ‘codes’ for every need gave a large number of signals. Though modern agriculture no longer gives room for such methods of small scale cattlery, this system is still alive in some rare places in Norway. Later in history, when the telephone spread to everywhere, the expression transferred to that new system of wires. Nowadays, ‘sla pa traden’ is a commonly used phrase in Norwegian for using the telephone.”

Source: Sla Pa Traden (Music On Transport Wires) by Atle Pakutsch Gundersen; Experimental Musical Instruments, Vol. 12, #2; December 1996; pp 22

THE PNEUMATIC POST AND THE DREYFUS AFFAIR

From Mark Hayhurst

“Today, the pneumatic post survives only in Paris and Italy. Pneumatic tubes are still however widely used for the transport inside many cities of the world of small batches of telegrams, express letters and air mail letters. These tubes are generally of a diameter of about 3 inches and the messages are carried in cylinders which are propelled along the tube by an air pressure differential from the back to the front, attaining speeds of around 25 mph.

“Letters and cards which have been transported in the tubes are invariably creased where they have been rolled up for insertion in a cylinder.

“The Most Famous Pneu in History “For generations the pneumatic letter-card was known affectionately as the petit bleu since, between 1897 and 1902, it was on blue paper and it was under this name that a ‘Telegramme’ was a vital piece of evidence in the enquiries which led to the eventual acquittal of Dreyfus. At a court-martial in December 1894 he had been found guilty of passing military secrets to the Germans and was transported to Cayenne. In 1896 the contents of a waste paper basket in the office of Schwartzkoppen, the German military attache in Paris, were taken to the French Intelligence Staff and found to include a torn-up pneu which had never been sent.

“When pieced together, it was found that the petit bleu contained a message to another French officer, Esterhazy, implicating him in the offences attributed to Dreyfus. Thus started the chain of events which culminated in 1906 with the ceremonial restoration of his commission to Dreyfus in that courtyard of the Ecole Militaire lying just behind the Pavillon de l’Artillerie which had housed the telegraph office Ecole Militaire until its closure in 1891.

“The standard work in France on the pneumatic post is ‘Cent ans de tubes pneumatiques’ J Boblique, Echo de la Timbrologie, 1966.

“The engineering aspects of the service are recounted in ‘Le reseau pneumatique de Paris’ M Gaillard, Revue des PTT de France, 1, 1959.”

Source: The Pneumatic Post of Paris by J.D. Hayhurst O.B.E. Edited by C.S. Holder Prepared in digital format by Mark Hayhurst Copyright1974. The France & Colonies Philatelic Society of Great Britain.

DEAD SYNTHESIZERS: THE HAZELCOM MCLEYVIER

From Richard Kadrey

“Like an object caught in the Starship Enterprise’s malfunctioning transporter, the McLeyvier shimmered between existence and Limbo for a few years beginning in 1981. Designed by composer/technologist David McLey and aggressively (not to mention prematurely) marketed by Hazelcom Industries of Canada, this high-end digital system was to be another all-in-one box performance/production wonder machine.

“’Only a few people really know the McLeyvier intimately,’ says composer Laurie Spiegel. She worked on later versions of the instrument. ‘In many ways they were absolutely wonderful, and in many other ways absolutely infuriating.’ “The McLeyvier’s functions reportedly included notational score display, editing, and printout (‘push a button and printed sheet music appears in publishable form’). A disk memory was capable of storing six hours of music material, and played it back via analog hardware with up to 128-voice polyphony.

“The computer was to accept commands ‘in any language’ including Braille. Priced between $15,000 and $30,000 depending on the options, the McLeyvier appeared at successive trade shows as the Interactive Music Processor and the Amadeus, before sinking without a trace. ‘With the indomitable spirit of David facing Goliath,’ in the words of the press release, Hazelcom proved itself not

quite up to the job.

"'One of the big problems,' Speigel states, 'was that the company put out a computer-controlled analog system in the very year when digital synthesis was becoming the big thing.' When McLey decided that music was more important to him than instrument manufacture, Spiegel was put in charge of redesigning the software to fit the proposed new digital hardware. Soon after, however, Hazelcom's attention became diverted to other ventures, and the project was scrapped. According to Spiegel, 'Only about eight of them were ever in serious use.'

"'It was a very special instrument,' she goes on. 'It was unbelievably reconfigurable, on the assumption that there is no best way to set up an instrument; it varies from person to person, and from piece to piece. Instead of coming up in any fixed way, the first thing it did when the program booted was to run an initialization program so that the user could customize it completely. As an integrated music environment, I don't think there's anything as good out there. You memorized a couple hundred commands, and you could use them at any point, so your world wasn't chopped up into a lot of separate editors. You had random access to everything all the time. Also, it was a musical language, an operating system for music composition. The vocabulary consisted of things like 'invert,' 'ostinato,' and 'transpose.' It had certain limitations,' she concludes, 'but it could do things that nothing else today can.'"

Source: Mark Vail, Vintage Synthesizers, Miller Freeman, Inc (pp. 78-79)

DEAD SYNTHESIZERS: THE CON BRIO ADS 200

From Richard Kadrey

“The ADS (Advanced Digital Synthesizer) system comprised a dual-manual splittable keyboard, a video display for envelopes, a ‘control cube’ the size of a filing cabinet for disk drives and computer hardware, and a rainbow-buttoned front panel for 64-oscillator additive synthesis and real-time sequencing that would have looked at home on the Starship Enterprise of the Star Trek of your choice. The analogy is apt, in fact, the ADS 100’s most notable public appearance was in the sound effects for Star Trek: The Motion Picture. No price was given when the ADS 100 was introduced, but it sure looked expensive.

“Well, to reduce a three-year tale to a few words, it was (expensive). ‘We wasted three years,’ (Tim) Ryan recalls.

“We never made a dime off the thing.’ “A midget all-in-one box version, the ADS 200, followed soon after. Its display now sported musical notation, the sequencer played back four tracks, the rear panel offered CV and gate interfaces, and the microprocessor count had jumped from three to five. Happily, the multicolored buttons remained and the filing cabinet was nowhere in sight. With the ADS 200, Con Brio’s synthesis facility finally rated a description: ‘Additive synthesis, phase modulation, frequency modulation, nested phase and frequency modulation, and combinations of all modes.’

“’It was totally configurable in software,’ Ryan says, ‘and we had 16 stage envelope generators for both frequency and amplitude, so it was kind of like the grandfather of the Yamaha DX7. On ours, you could build your own algorithms, using any of all of the 64 oscillators in any position in the algorithm. If you wanted additive, you could add 16 of them together. The phase modulation was similar to what Casio did with their CZ series. You could designate any tuning you wanted and save it. You could split the keyboard, stack sounds, model different parts of the keyboard for different parts of the sound, and save that as an entity - the kind of things that are common now.’ “Compared with the first version, Con Brio’s second model was a hit: of the three instruments manufactured, one was actually sold, for $30,000.

“By 1982, the Con Brio had dropped one of its two manual [keyboards] and, with it, a few thousand from the price tag. The ADS 200-R featured a 16-track polyphonic sequencer with 80,000 note storage capability and editing functions available from the scoring screen. The 32-voice version, expandable to 64, sold (or rather didn’t sell) for $20,500, with an additional $25,000 worth of options. Only one was ever built.

“Why did Con Brio turn up an evolutionary blind alley, while other companies have had great success with similar concepts? ‘It was a labor of love,’ Ryan says reflectively. ‘We didn’t have much sales savvy, and that was eventually our downfall. Another thing was the intimidation factor: it had something like 190 buttons on it. We figured that no musician would ever want to enter

commands, so we went to the trouble of putting on all those buttons. But obviously that approach was as cryptic as a computer language would have been. It was an amazing feat technologically, but with complete disregard for the people we had to sell the thing to."

Source: Mark Vail, Vintage Synthesizers, Miller Freeman, Inc (pp. 78-79)

DEAD SYNTHESIZERS: ARP 2600

From Richard Kadrey

“ARP’s founder, Alan R. Pearlman, recognized the importance of teaching musicians how to use the technology, so he designed a new instrument with a fixed selection of basic synthesizer functions. This instrument, dubbed the Model 2600, was an integrated system with the signal generating and processing functions in one box and the keyboard in another. “Pearlman believed that schools with small or medium- sized music departments were the main market for this new instrument. To further enhance the 2600’s educational value, Pearlman put the graphics on the console’s front panel so that the signal paths were easy to follow, and used sliders and slide switches so that the control and switch settings were easy to see.

“The first production run had blue panels, painted sheet-metal cases, and polished wood handles. ‘That’s not what I wanted,’ Pearlman recalls. ‘I wanted the instrument to be housed in a rugged case that would travel safely. But those were the days when nobody listened to you if you were over 30, so the young designer had his way.’ Musicians and retailers however quickly shot down the ‘Blue Marvin’ or ‘Blue Meanie’ design in favor of the vinyl-covered luggage-style case with the dark gray panel that remained in production from 1971 to 1981. ..

“As Roger Powell says, ‘The 2600’s main assets are the same things that made it hard to sell initially. The 2600 boiled down virtually all analog synthesis capabilities into

a single box. You could experiment with it or use it pre-patched. It was a magic matrix, definitely enough stuff to use musically. On top of that, it stayed in tune and was reasonable robust and roadworthy.

“As analog synths went, it was easy to use. You could easily see and recognize panel setting patterns, even in the darkness of the stage. As one well-known 2600 user said many years ago, ‘It’s the only synth that I can operate when I’m drunk.’”

Source: Mark Vail, Vintage Synthesizers, Miller Freeman, Inc (pp. 78-79)

DEAD SYNTHESIZERS: THE ADAPTIVE SYSTEMS, INC. SYNTHIA

From Richard Kadrey

“The Synthia was yet another bid for the obviously limited high-end market for computerized all-in-one-box ultra-keyboards. Although the Synthia’s projected price was a mere $20,000, few musicians seem to have had a close encounter with a working model.

“The most, um, interesting aspect of the Synthia was its touch-responsive plasma screen, a computer display-cum-data-entry device that followed the user’s finger as he or she sketched around bar graphs, the ultimate in intuitive user interfaces. “Among the touch-responsive displays were editing screens for harmonic content (up to seven partials), envelope parameters, keyboard setups, controller assignments, and, once again, an implementation of the timbre window concept (called ‘time slices’).

“The Synthia’s controller section was also particularly impressive. Four panel positions were available for sliders, joysticks, and touch plates, which could modulate a number of parameters including the pitches of individual harmonics. There were also three expression pedals, three switch pedals, and of course a velocity-and-aftertouch-sensitive keyboard. The accompanying computer, or ‘control unit,’ was housed in a separate box, and could accommodate incoming data from four keyboards.”

Source: Mark Vail, Vintage Synthesizers, Miller Freeman, Inc (pp. 78-79)

THE LIBRARY CARD CATALOG

From Albin Wagner

"WASHINGTON, A library card catalog from Union Theological Seminary in Richmond is poised to become history at the Smithsonian.

"It's a commonplace item you probably never thought about, an increasingly outmoded relic like the manual typewriter.

"And it's quietly slipping into another era, replaced by computerized catalogs.

"A rescue effort mounted on the Internet, however, will guarantee that the card catalog doesn't fade without a fanfare. "The National Museum of American History is the proud new owner of the handsome oak cabinet, bought by the seminary in the 1920s. "'I think there already are some youngsters who have not seen a card catalog,' remarked Alva T. Stone, head cataloger at the Florida State University law library in Tallahassee.

"She said the widespread use of card catalogs 'was undoubtedly a significant factor in the evolution of American libraries from 19th century repositories staffed by curators to the democratic, accessible, and user-responsive institutions' of today.

"By e-mail, Stone contacted a Smithsonian official in March about the idea of preserving 'a representative card catalog as an artifact of what we call 'modern' civilization.'" "When a positive reply and specifications came from the American history museum, Stone used an

Internet library network to find a prime candidate in Richmond.

“Peggy Kidwell, a specialist at the American history museum, said she was interested in an oak unit that had 60 drawers and book cards, that was near Washington and could easily be moved there, and that was made by the Library Bureau.

“That company was one of a group that banded together to form Remington Rand, one of the first manufacturers of computers, Kidwell explained.

“Enter the UTS library. It had an oak, Library Bureau card catalog containing cards that spanned decades, ranging from hand-written to manually typewritten.

“’It is so representative. And it is unusual that it’s in such spectacularly good condition,’ Kidwell said.

“The seminary was about to move to a new library and wasn’t taking its card catalog, according to head cataloger Thomason. UTS uses a computerized catalog in its $11.8 million, nearly 300,000-volume William Smith Morton Library. “In December, the American Library Association published an article by Alva Stone of Florida State, in which she wondered: ‘Will all of the card catalogs disappear from the face of the earth?’ “Not yet, said the Smithsonian’s Kidwell.

“Card catalogs still are used in many places, she said, and she recently heard from a company that makes a limited number of them. Albin Wagner, CA, CRM Chief, Bureau of Records Management New Jersey Division of Archives

and Records

Source: Richmond Times-Dispatch Monday, February 17, 1997, by Peter Hardin,

THE LIBRARY CARD CATALOG

From Bruce Sterling

“Today is the last day that libraries can place orders for catalogue cards with the Library of Congress, which is halting production of the cards. Libraries wishing to maintain card catalogues will have to turn to commercial suppliers. The Library of Congress has since 1902 sold duplicates of its three-by-five-inch cards to libraries around the world.

“However, card sales have declined since 1968, when cataloguing information became available in an automated format; they fell to 579,879 last year, from a peak of 78 million in 1968.

“Critics of automated systems point out that errors in coversion have led to books’ being lost and have limited cross-referencing options, and that the cards themselves, many of which are being discarded, have inherent historical value.”

Source: The Atlantic Monthly, Volume 279 Number 2 February 1997 ISSN 0276-9077

DEAD DIGITAL DOCUMENTS

From Patrick I. LaFollette

[The following essay was part of a lengthy net discussion about the archival security of stored digital information. It first appeared in the "Mollusca" Internet mailing list. It was brought to my attention by Steve Jackson and is quoted by permission of Pat LaFollette]

There are three separate issues involved in the archiving of digital documents. The first is captured in this quote from Steve Long: "About 2 years ago I threw away over 100 eight inch floppy disks because could no longer find machines to read them. Fortunately I was able to convert most of the important data to 5.25 inch floppy disks. Now, my computer has 5.25 and 3.5 inch disks but most users are replacing the 5.25 inch with CD-ROM drives and don't have the space in their PC to include all three. In another couple of years, I will have to convert to 3.5 inch or CD-ROM for my information. After that, who knows, but you can almost guarantee that the storage medium will change again."

The physical media changes as storage technology advances. The marketplace requires that there be one or two "universal" formats at any particular time so that electronic products can be distributed. At present these are the 3.5 inch floppy disk and CD-ROM. The new DVD format is physically the same shape as CD-ROM and DVD readers will be "backwards compatible,", able to read CD-ROMs, at least for a while. But after DVD has reached its planned maximum capacity of about 15Gb, who can guess

what will come next?

The second issue is made clear by William Schleihauf.

“The various media being talked about, tape in particular, has a lifespan of only a few years (and that’s not counting the operators playing frisbee with the tapes on the night shift!). Companies now are discovering that some tapes created only a few years ago are coming up with i/o errors, and thus the data is lost. The newer cassettes are better, but again, the half-life is measured in years, not decades. CDROM, guess what, maybe a century, on average, or so the forecasting is.”

The currently available digital media are not of “archival” quality, unlike (acid free) paper. Perhaps it’s just as well that the physical format of the media keeps changing. It forces people to copy their data to new disks every now and then, while the old ones are still readable! I’ve read lengthy discussions of the archival properties of CD-ROM disks.

Estimates for some CDR (CD- Recordable) media exceed 200 years, twice as long as commercially pressed CDs. But the glass masters from which commercial CDs are pressed might last millennia. On the other hand, how long are CD readers likely to be around? The first generation of DVD readers will be backwards compatible, but I doubt CD technology in its present form will last as long as the phonograph. (My LPs, and even some 45s and 78s, are still in playable shape, but my turntable died years ago).

But all that kind of misses the point. One of the tasks performed by traditional librarians and archivists is to

protect paper from the ravages of time, the elements, insects, fungus, fire, flood, and undergraduates. Paper can last for hundreds of years, but only if it is taken care of. Paper can also turn to dust in days or weeks. The analogous task for electronic librarians will be to protect their bits, independent of storage method or medium, by periodically transferring them all to whatever appears to be the most secure and accessible storage technology of the time, and by distributing copies of them to as many other widely dispersed locations as possible. But there does not yet seem to be an established tradition of digital librarianship to shoulder this responsibility and pass it on from one generation to the next. It's very difficult to establish traditions and a commitment to the long term when the technology is in such a state of flux.

A major advantage of the digital medium is that so long as the physical media is readable, copies made from it will be identical. There is no degradation from generation to generation as there is with analog reproduction processes such as microfilm and photocopying. Nothing is fugitive. And unlike books, which are produced in finite (often rather small) numbers that decrease over time, there never need be such thing as a "rare" digital document, so long as it is periodically copied and made available.

Digital media may not hold up as well as paper to adversity and neglect, but its content can be much more widely distributed. Local disasters (wars, fires, floods, hackers, budget cuts) would have a much less lasting impact on a properly managed digital archive than on a conventional library. As soon as the event is past and the

equipment is replaced, identical copies of the data can be restored from other unaffected archives.

The third and most intractable issue affecting computer documents is, as William Schleihauf pointed out, the coding scheme in which the data are recorded.

“Everything stored in a computer is stored with a specific coding scheme. You need to have the “magic decoder ring” to get it all back. If you create a file/document with Word Perfect v.6 today, there’s no guarantee that you’ll be able to read it 10 years from now.”

The real problem here is the use of non-standard “proprietary” document and database formats by DBMS, word processors, page layout programs, and typesetting systems. They tend (often deliberately) to be mutually incompatible as well as changing over time.

A solution to this problem was agreed upon eleven years ago by the international standards organization, but is only gradually gaining wide acceptance, primarily in the publishing industry, government, large corporations, and the European Common Market. The solution is SGML (Standard Generalized Markup Language), ISO 8879 (1986) which defines a single international standard for coding documents that is hardware, operating system, and software independent.

Electronic documents in SGML format avoid the problems of proprietary formats and obsolescence, but can be converted to a proprietary format if this is necessary to perform a particular task. Most commercial typesetting and CD-ROM display software now accept SGML

documents directly, without conversion. Actually, WWW browsers are quasi-SGML viewers in that HTML (HyperText Markup Language) files are SGML documents. The new buzz word in publishing circles is “repurposing” documents. That is, taking a computer file (the manuscript for a reference book, for example) and using it to produce a CD-ROM or online database.

If the text is in SGML format, it can be used for all three purposes without modification. What allows this to be done is that in SGML, it is the content, rather than the appearance, that is marked. In any other text markup systems, one would say [start italic] Astraea undosa [end italic] to put the name in italic. In SGML you would say [start genus] Astraea [end genus] [start species] undosa [end species]. The rule “print genus in italic” (or red or 14pt gothic) is defined separately from the document, and can be changed without changing the document itself.

There are a variety of SGML editors that allow documents to be created and maintained directly. Unfortunately, it’s still pretty much a “big boy” technology, the software expensive and clunky, and the conversion of existing electronic documents labor intensive. But this situation should improve in time, as more companies enter the arena. The bottom line to all this is that digital documents are, and will continue to become an ever more useful supplement to the published literature, and an inexpensive method of distributing large volumes of data, but are not likely to take the place of paper any time soon.

Given that digital storage methods will continue to evolve

for the foreseeable future, I would want to witness digital librarians staying ahead of the technological wave, maintaining the security and utility of their holdings, for a generation or three before I will have as much confidence in them and their holdings as I do in paper, conventional libraries, and old fashioned librarians.

OFFICIALLY DELETED DIGITAL DOCUMENTS

From Bruce Sterling

[A group of historians and librarians has filed suit against Mr John Carlin, the official Archivist of the United States. Their complaint is that historically valuable email and other governmental electronic documents are being wantonly destroyed despite their manifest historical value. The following is a much-edited communication on this topic from Page Putnam Miller, Director of the National Coordinating Committee for the Promotion of History, and an activist in this lawsuit against the US National Archives and Records Administration]

"Public Citizen, Historians, and Librarians File Suit Against The Archives Challenging Policies that Allow Destruction of Electronic Records "On December 23 Public Citizen, joined by the American Historical Association, the Organization of American Historians, and the American Library Association, filed a complaint against the National Archives in the United States District Court for the District of Columbia.

"The suit challenges the Archivist's promulgation of a 'General Records Schedule' authorizing all federal agencies, at their discretion, to destroy the only electronic version of Federal agency records stored on agency electronic mail and word processing systems, provided the agency has printed a hard copy of the electronic record on paper or microform.

“The complaint states that the Archivist has ‘improperly ignored the unique value of electronic records’ and ‘has abdicated his statutory responsibility to appraise the historical value of such electronic records.’ The complaint asks the court to declare the General Records Schedule 20 null and void, and to prevent agencies from destroying electronic records created, received or stored on electronic mail or word processing systems.

“This new lawsuit builds on the Armstrong v. Executive Office of the President (Civil Action No. 89- 0142). The inadequacy of National Archives’ guidance to agencies on the preservation of e-mail was at the heart of that case, frequently called the PROFS case. [The PROFS computer email of Lt. Col. Oliver North and others, which they had assumed to be deleted, eventually became central evidence in the Iran-Contra scandal in the United States, bruces] “In 1989 the National Security Council, as well as other agencies, routinely destroyed e-mail, which according to the National Archives did not meet the standard of a ‘record”Ä¶

“In general practice, before a government agency may destroy its records, it must give public notice and the Archivist must appraise the records to determine whether they warrant continued preservation. “Many in the historical and archival community. stressed that the National Archives was abdicating its role in appraising records with these regulations. There are values to records that go beyond their administration and operational use, and agencies are sometimes shortsighted in apprising the long term and historical value of records.

The regulations give enormous authority to agency heads. “Additionally, with the changes in technology, some archivists are now recommending that information systems be appraised, not just individual records.”

Source: NCC Washington Update, vol. 2, #43, December 27, 1996; article by Page Putnam Miller, Director of the National Coordinating Committee for the Promotion of History

THE BABY MARK I COMPUTER

From Charlie Crouch & Albin Wagner

"Enthusiasts rebuild 7ft Baby computer that changed world" by Russell Jenkins

"A primitive forerunner of the personal computer has been rebuilt by a team of engineers as a 50th anniversary tribute to the unsung pioneers whose genius founded the electronic digital age.

"The computer was officially born on June 21, 1948, when Tom Kilburn, a young research engineer, ran the first program through the Mark 1 machine, beating the Americans and making Manchester the birthplace of the computer.

"The Mark 1, or Baby, as it came to be known, was the world's first electronic digital computer capable of storing a program. Its mass of cathode ray tubes and more than 500 valves were part of a machine that stood 7ft high and 18 ft long.

"Volunteer computer archivists, led by Chris Burton, a retired engineer, have recreated over three years the earliest model of Baby at Manchester Computing, part of Manchester University, several hundred yards from where it all began.

"The replica will be switched on in its own gallery at the Manchester Museum of Science and Industry in June next year as the centerpiece to the city's birthday celebrations of the computer age.

“Mr Burton, of the Computer Conservation Society, was inspired to rebuild Baby as a homage to the men he believes were as important as James Watt to the advent of the steam age. They were ‘modest, clever’ men, he said, who never received the acclaim they deserved.

“Mr Burton, a retired ICL computer engineer from Oswestry, Shropshire, said: ‘The first objective is to recognise the achievement of men whose light has never been allowed to shine out. I want to make manifest a triumph of British innovation to counter the general misunderstanding that computers were an American invention. They were not.’

“Another aim is to show today’s computer-literate youngsters what it was like to be one of the handful of people with a vision of how information could be stored electronically, and to give them an idea of the conditions in which the pioneers worked. The equipment was always in danger of overheating and exploding.

“Contemporary photographs show earnest, white-coated young men adjusting dials and checking cathode ray tubes. They were men like the late Professor Freddie Williams, who oversaw the project as holder of the Chair of Electrotechnics.

“The guiding force behind Manchester’s success was Tom Kilburn, a Yorkshire man then aged 26. He was joined by Geoff Tootill, Dai Edwards, Alec Robinson and Tommy Thomas. They were following on the work of Alan Turing on Colossus, the Second World War code-breaker based at Bletchley Park. The team was in a race between

Cambridge and the United States. In America, the ENIAC computing machine boasted 18,000 vacuum tubes (valves) but it could not store a program.

“The Manchester team perfected the use of cathode ray tubes for storing data. The prototype had a memory of 1024 bits - tiny by modern standards.

“Professor Williams once said: ‘A program was laboriously inserted and the start switch pressed. Immediately the spots on the display tube entered a mad dance. In early trials it was the dance of death leading to no useful result. But one day it stopped and there, shining brightly in the expected place, was the expected answer. It was a moment to remember. Nothing was ever the same again.’”

Source: The Times (London) February 18, 1997, page 8

THE READIES

From Bruce Sterling

[The following article originally appeared in the literary avant-garde magazine transition in 1930. While the article was clearly satirical in intent, many of its insights seem strikingly prescient in describing the future characteristics of electronic text on the Internet.

"The Readies" remain an imaginary medium, but this is one of the few works of science fiction to examine the technological basis of literature, the medium of print]

The word "Readies" suggests to me a moving type spectacle, reading at the speed rate of the day with the aid of a machine, a method of enjoying literature in a manner as up-to-date as the lively talkies. In selecting "The Readies" as title for what I have to say about modern reading and writing I hope to catch the reader in a receptive progressive mood, I ask him to forget for a moment the existing medievalism of the BOOK (God bless it, it's staggering on its last leg and about to fall) as a conveyor of reading matter, I request the reader to fix his mental eye for a moment on the ever-present future and contemplate a reading machine which will revitalize this interest in the Optical Art of Writing.

In our aeroplane age radio is rushing in television, tomorrow it will be a commonplace. All the arts are having their faces lifted, painting (the moderns), sculpture (Brancusi), music (Antheil), architecture (zoning law), drama (Strange Interlude), dancing (just

look around you tonight) writing (Joyce, Stein, Cumming, Hemingway, transition). Only the reading half of Literature lags behind, stays old-fashioned, frumpish, beskirted. Present-day reading methods are as cumbersome as they were in the time of Caxton and Jimmy-the-Ink. Though we have advanced from Gutenberg's movable type through the linotype and monotype to photo-composing we still consult the book in its original form as the only oracular means we know for carrying the word mystically to the eye. Writing has been bottled up in books since the start. It is time to pull out the stopper.

To continue reading at today's speed I must have a machine. A simple reading machine which I can carry or move around and attach to any old electric light plug and read hundred thousand word novels in ten minutes if I want to, and I want to. A machine as handy as a portable phonograph, typewriter or radio, compact, minute, operated by electricity, the printing done microscopically by the new photographic process on a transparent tough tissue roll which carries the contents of a book and is no bigger than a typewriter ribbon, a roll like a miniature serpentine that can be put in a pill box. This reading film unrolls beneath a narrow magnifying glass four or five inches long set in a reading slit, the glass brings up the otherwise unreadable type to comfortable reading size, and the reader is rid at last of the cumbersome book, the inconvenience of holding its bulk, turning its pages, keeping them clean, jiggling his weary eyes back and forth in the awkward pursuit of words from the upper left hand

corner to the lower right, all over the vast confusing reading surface of a page.

Extracting the dainty reading roll from its pill box the reader slips it smoothly into its slot in the machine, sets the speed regulator, turns on the electric current and the whole, 100,000; 200,000; 300,000 or million words, spills out before his eyes and rolls on restfully or restlessly as he wills, in one continuous line of type, its meaning accelerated by the natural celerity of the eye and mind (which today are quicker than the hand); one moving line of type before the eye, not blurred by the presence of lines above and below as they are confusingly placed on a columned page.

My machine is equipped with controls so the reading record can be turned back or shot ahead, a chapter reread or the happy ending anticipated. The magnifying glass is so set that it can be moved nearer to or farther from the type, so the reader may browse in 6 points, 8, 10, 12, 16 or any size that suits him. Many books remain unread today owing to the unsuitable size of type in which they are printed. A number of readers cannot stand the strain of small type and other intellectual prowlers are offended by Great Primer. The reading machine allows free choice in type-point, it is not a fixed arbitrary bound object but an adaptable carrier of flexible, flowing reading matter. Master-compositors have impressed upon apprentices for years that there is no rubber type. Well, now that the reading machine exists with strong glass to expand to contract the size of letters, compositors can’t ding on that any more.

The machine is equipped with all modern improvements. By pressing a button the roll slows down so an interesting part may be read leisurely, over and over again if need be, or by speeding up, a dozen books can be skimmed through in an afternoon without soiling the fingers or losing a dust wrapper. Taken in high gear ordinary literature may be absorbed at the rate of full length novels in half hours or great pieces of writing may be re-read in half-lifetimes. The underlying principle of reading remains unaffected, merely its scope is enlarged and its latent possibilities pointed.

To save the labor of changing rolls or records, a clip of a dozen assorted may be put in at a time and automatically fed to the machine as phonograph discs are changed at present. The Book of the Day or Book of the Hour Club could sell it output in clips of a dozen ready to slip into the reading machine. Maybe a book club called the Dozen a Day would result. Reading by machinery will be as simple and painless as shaving with a Schick razor and refills could be had at corner drug stores or telephone booths from dawn to midnight.

Already we are familiar with news and advertisements reeeling off before our eye in huge illuminated letters from the tops of corner buildings, and smaller propaganda machines tick off tales of commercial prowess before our eyes in shop windows. All that is needed is to bring the electric street signs down to the ground, move the show- window reading device into the library by reducing the size of the letter photographically and refining it to the need of an intimate, handy, rapid

reading conveyor.

The accumulating pressure of reading and writing alone will budge type into motion, force it to flow over the column, off the page, out of the book where it has snoozed in apathetic contentment for half a thousand years. The only apparent change the amateur reader may bemoan is that he cannot fall asleep as promptly before a spinning reading roll as he can over a droning book in his lap, but again necessity may come to the rescue with a radio attachment which will shut off the current and automatically stop the type-flow on receipt of the first sensitive vibration of a snore.

My reading machine will serve as a wedge. Makers of words will be born; fresh, vital eye-words will wink out of dull, dismal, drooling type at startled smug readers. New methods crave new matter; conventional world-prejudices will be automatically overcome, from necessity reading-writing will spring full blown into being. The Revolution of the Word will be won. Reading-writing will be produced not so much for its sonorific sleep-producing qualities as its mental-eye-provoking pleasures.

Let's let writing out of books, give it a chance and see what it does with its liberty. Maybe there are butterflies in the core of those cloth-cased cocoons stacked away in libraries. Let's let them out and have a look. With reading words freely conveyed maybe books will become as rare as horses after the advent of the auto, perhaps they will be maintained only for personal pleasure or traditional show, as the gorgeously-trapped brew-steeds of Munich.

Let's look for literary renaissance through the Readie; a modern, moving, word spectacle. Let's have a new reading medium in time with our day, so that industrious delvers in the Word-Pile may be rapidly read and quickly understood by their own generation at least.

The Readies are no more unusual than the Talkies, and not a scratch on television. As soon as the reading machine becomes a necessity it will be out of date. Pocket reading machines will be the vogue then; reading matter probably will be radioed and words recorded directly on the palpitating ether. But the endless imaginative possibilities of the new medium need not lead us astray. The low-brows are presently revelling in their Movies and Talkies while the almost extinct high-brow is content to sit at home sipping his thin alphabet soup out of archaic volumes of columns, mewling a little like a puling baby taking much from the tip of an awkward wooden spoon.

Those Mental Obfuscates who can't make out the Readies on the dim literary horizon of the day will be the first to accept that as a commonplace tomorrow and they will be the loudest in grumbling if anything happens to the Readie mechanism to interrupt the eager optical word-flow as for as much as a billimeter-augenblick.

Bob Brown, June 1930

Source: In transition, A Paris Anthology: Writing and Art from transition Magazine 1927-1930 Anchor Books, Doubleday 1990 ISBN 0-385-41161-8

CASELLI'S PANTELEGRAPH (PART ONE)

From Bruce Sterling

[A beautifully written, classic article placed on the Web from one of the great global centers of dead media production, France]

"Both Christophe in his The Fenouillard Family, written in 1893, and Jules Verne in his recently discovered manuscript Paris in the 20th Century dating from 1863, mention a process enabling the long-distance transmission of drawings, ideograms or facsimiles: the Caselli pantelegraph.

"Its inventor, Giovanni Caselli, born in Siena in 1815, was the incumbent of an ecclesiastical living. While teaching physics at the University of Florence, he devoted his research to making progress in the telegraphic transmission of images, an issue which had been proving a stumbling block for several researchers for quite a few years, including the Britons Bain and Bakewell, due to a failure to achieve a perfect synchronization between transmitting and receiving devices.

"In 1856, the results were conclusive enough for the Grand Duke of Tuscany to take an interest in Caselli's invention and, the following year, Caselli went to Paris where he was to be given decisive help by the famous inventor and mechanical engineer Paul Gustave Froment, to whom he had been recommended by Foucault, who had already entrusted Caselli with the task of making his

pendulum.

“Once completed, the final device met with unequivocal enthusiasm from the Parisian scientific world and a Pantelegraph Society was created to prepare its exploitation.

“What is more, the Emperor Napoleon III himself, passionately interested in mechanics and modern inventions, visited Froment’s workshops on May 10th 1860 to watch a demonstration of the device. The enthusiastic Emperor gave Caselli access to the lines he needed in order to continue his experiments in Paris, from the

Froment workshops to the Observatory. Then, in November of the same year, a telegraphic line was also allocated to Caselli between Paris and Amiens to enable a real inter- city experiment, which was apparently a total success.

“Caselli had in fact managed to eliminate the last remaining fault in his machine by making the synchronization timers independent of the current relayed by the telegraphic line itself, which was too sensitive to atmospheric disturbances.

“The French press was brimming with laudatory articles on the pantelegraph, while the top brass from high society and the scientific and administrative worlds hurried along to Froment’s workshops to find out about the new process. In September 1861, King Victor-Emmanuel invited Caselli and his machines to a series of triumphant demonstrations at the Florence Exhibition.

“Finally, in 1863, the French Legislature and Council of State adopted texts authorizing the official exploitation of an initial line between Paris and Marseille, while across the Channel, Caselli obtained authorization for the experimental use of a line between London and Liverpool over a four-month period.”

“However, the Pantelegraph Society did not prove equal to the market which was apparently opening up and, failing to undertake any energetic promotion of the device, was content to wait passively for its capital to be remunerated via the flood of orders which were supposed to pour in from all over the world.

“In Italy, after an initially euphoric reception, the sluggishness of the administration and haughtiness of ministers led Caselli to give up any further development of his invention. In France, he clashed with the Telegraphs administration which, fearing competition with its ordinary telegraphic network, refused to lower the tariff for handwritten dispatches, which were nevertheless prohibitive, and even advised taxing such dispatches at a higher rate than ordinary ones.

“When the pantelegraph appeared, France was in fact in the process of setting up a complete telegraphic network, using the Hugues, Morse and then Baudot systems, replacing the former Chappe optical telegraph, which had been experimented since 1792. More than just a technical step forward, a qualitative transformation in the use of the telegraph system was underway.

“What had until then been an instrument of the governing

powers and the stock exchange, was about to establish itself as a relatively commonplace means of communication, conveying a variety of urgent yet trivial pieces of news such as births, deaths, marriages or tourist hotel reservations. Because it had previously been limited to two powerful forces requiring extreme rapidity and perfect secrecy, the State and Finance, the Chappe telegraph had quickly become a myth within French society.

“What is more, popular literature glorified the telegraph’s somewhat worrying and imperial vocation in this respect as, for example, in Alexander Dumas’ The Count of Monte Cristo, or in the chronicles of the would- be-poet Barthelemy. The myth of instantantaneousness at the exclusive service of the government or the banking sector was about to become outdated at the very time when Caselli thought he was reaching his goal.

“Designed to transmit images, the pantelegraph, like today’s fax, was perfectly able to transmit written texts correctly. However, whether conscious or not, there was a general refusal to allow it any other other role than the transmission of a banking signature or a trademark, since this was the only system capable of doing so, and the administration went on to ensure it was gently stifled out of existence.

“Any innovation strategy contains a great many traps, not the least of which is indeed to become fascinated to the extent of being hemmed in by the new technology contained within a given invention and which

distinguishes it from all other existing processes, to the ultimate detriment of its flexibility of use and any real possibilities of development.

“In this respect, the pantelegraph adventure was all the more remarkable given that a tremendous short-cut was almost taken in the history of telecommunications at the time when its destiny was at stake in Paris. Indeed, in 1863, two top civil servants from the Chinese Empire requested a demonstration at the Froment workshops and could not hide their amazement and admiration in the face of an invention which, in one swoop, solved the tricky problem of the telegraphic transmission of ideograms.

“In 1884, fairly far-reaching negotiations appear to have taken place between China and Italy with the aim of carrying out experiments on the Caselli pantelegraph in Peking, but these were not followed up. However, this particular use of the telegraph, anticipated very early on by Caselli, was taken up much later by the Japanese, to whom we owe the massive diffusion of the fax.

“Today, pantelegraphs lie dormant in a few rare museums. Those kept at the Musee National des Techniques were given another chance to prove their reliability in 1961, between Paris and Marseille, during the commemoration of the first tests, and in 1982, at the Postal Museum in Riquewihr, where they operated faultlessly, six hours a day, for several months.”

Source: Caselli’s Pantelegraph by Julien Feydy.- Musee des arts et metiers La Revue, June 1995, n 11, p.50-57.

BAIN'S FACSIMILE TELEGRAPHY

From Bruce Sterling

[This World Wide Web article was first published in CONNEXION, the quarterly trade magazine of Ericsson Corporation, a Swedish multinational telecommunications company]

"While Queen Victoria never actually said, 'I'll drop you a fax,' she might well have done so if the history of telecommunications had taken a slightly different turn. The principle for facsimile transmission over wires was first patented as early as 1843, seven years after the invention of the electric telegraph, by Scottish psychologist Alexander Bain.

"Bain himself never performed a fax transmission, but it is clear from his patent application for 'improvements in producing and regulating electric currents and improvements in timepieces and in electric printing and signal telegraphs,' that his invention made facsimile transmission entirely feasible.

"Bain's invention used two electric pendulums, one at each end of the wire. Each of the pendulums was made to oscillate synchronously over a rotating roll. The sender wrote the text of his message using an electrically conductive material, then wrapped the message round the roll. As the pendulum swung over the paper, the transmitting needle picked up impulses where there was text, but no impulse where there was a gap in the text. At the other end of the line, the receiving needle made marks

on photosensitive paper corresponding to the signals from the sending needle, thus reproducing the text being transmitted.

“Proof that Bain’s principle was sound was eventually provided by Frederick Blakewell, an English physicist, who demonstrated a working facsimile machine at the World Exhibition of 1851, the largest exhibition of new technology ever held. His device was based on the same principle as Bain’s design, also using rotating cylinders and styluses for recording and writing. So Queen Victoria could indeed have sent a fax, had she been so inclined, when she visited the exhibition in the huge Crystal Palace!”

Source: The fax boom that came a century late by by Lars Fimmerstad, ERICSSON CONNEXION

NEWSPAPERS BY RADIO, IN 1938

From Richard Kadrey

[Note how much of the hype in this 1938 article mirrors what we hear today about the Web]

“Your Newspaper By Radio!

“A private newspaper with any spot in your home as the press room, the world’s best editors and reporters on your staff, and the radio as your copy boy, this is not the dream of Jules Verne, but an actual accomplishment, available today to anyone in the United States owning an ordinary radio receiver.

“No thundering press will deafen you when your paper is printed, but instead, equipment contained in a small attractive box, will silently print your ‘latest edition’ while you sleep, completing it in time for breakfast.

“Facsimile transmitters have been announced by two manufacturers, Finch Telecommunications Laboratories, Inc., of New York City, and RCA Victor, of Camden, N.J.

“Predicted to be in wide-spread use within the year, many large broadcast stations have started tests with the system, and actual broadcasts on a definite schedule will be an accomplished fact as soon as these test are completed. Of great significance is the fact that the Federal Communications Commission has granted broadcasters permission to operate the facsimile equipment on the regular broadcast frequencies.

“Translated into actual use, this means that when the

householder is through listening to his favorite station, he merely turns a switch which will, at the correct time, again turn on the radio for reception of the same station, but this time instead of sounds emitting from the loudspeaker, an up-to-the-minute newspaper will unfold.

“At present one of the largest eastern broadcast stations, WOR, is supplying this type of transmission, though not yet on a regular schedule. It is being done both on the regular broadcast channels as well as on the ultra-short waves. Plans are underway for regular service of facsimile transmissions early this spring.

“Along other stations that have received FCC permission to make facsimile broadcasts are WGN, Chicago; KSD, St. Louis; WHO, Des Moines; WGH, Norfolk, VA; WHK, Cleveland; KSTP, St. Paul; KMJ, Fresno, and KFPK, Sacramento.

“The facsimile recorder will be sold at a price no higher than the average good broadcast receiver. When production is increased the price is expected to be reduced to that of the average medium priced midget receiver. With the exception of the recorder, no special equipment is required except the broadcast receiver itself.

“This new medium of entertainment and education is not to be confused with television, differing most widely from it in that its operation produces tangible newspaper on which appears the printed word, photographs, drawings, sketches and even advertisement. As the newspaper is produced, it can be removed from the machine and

preserved if desired, differing from the conventional type only in size.

“Briefly, the operation of the transmitter and recorder is as follows:

“The copy to be transmitted, whether it is pictures, news flashes, line drawings or comic strips, involves no special printing or preparation because the material itself can be inserted directly into the transmitter. An electric bulb, throwing a spot of light, moves back and forth across the copy top be transmitted. This action is similar to that of the human eye as it sweeps from left to right across a line of type.

“In its movement across the copy, the spot of light is reflected back into a light-sensitive photo-electric cell. When the scanning light strikes the white portions of the copy, it returns a full reflection to the light- sensitive cell. When it strikes a black area, no light is reflected, while for the shaded areas, a corresponding reflection is obtained.

“Because of the action of intermittent light at the cell, these reflections are changed into electrical energy or impulses. At the receiver or recorder, these impulses operate a stylus sweeping in synchronism with the scanning of the transmitter.”

Source: Tim Onosko, Wasn’t the Future Wonderful?, Dutton (pp. 92-93); reprint of article from Modern Mechanix, May 1938

TELEVISION IN THEATRES, AT 50,000 VOLTS

From Richard Kadrey

[The articles in the book were taken from Modern Mechanics magazine articles published between 1930-37. Unfortunately, few of the individual articles carry a date, so it's hard to pinpoint the exact year —RK]

"Television Shown In Theaters

"Television in theaters, already a success in England, may soon entertain American audiences. Just opened in a New York office building, a demonstration 'theater' exhibits the Baird system used abroad, which throws brilliant images as large as fifteen by twenty feet upon the screen. Installed in a number of British theaters, it offers televised news scenes to supplement regular movie shows, and all-television shows of major sporting events.

"Occupying the center of the theater, the projection booth contains all the essential apparatus and controls, except for a special receiving aerial on the roof and high-tension power supply from a 50,000 volt rectifier. One of its two receiver-projectors serves as a stand-by, in case of tube failure, while the other is in operation. Each set employs twenty-seven tubes, including a cathode- ray tube of new design, whose intensely bright four-by- five-inch image is magnified by the projection lens. From the same booth, the operator controls the accompanying sound and all the stage lights."

Source: Tim Onosko, Wasn't the Future Wonderful?, Dutton (p. 88)

GOULD'S 3-D TELEVISION

From Richard Kadrey

"Television in Three Dimensions

"A device which can produce a 360 degree picture by television through a stereoscope scanner has been invented by Leslie Gould, a radio engineer of Bridgeport, Connecticut. With Mr. Gould's television system it is possible to televise a boxing match, a play, an orchestra, or any other spectacle whose scene of action can be compressed into a reasonable space.

"The new invention makes use of neon tubes of various sizes and colors, depending upon the magnitude of the image. The spot on which the television subject is located is scanned by beams from two rotating arms, as shown in the drawing above.[Note: imagine an elongated two-vane ceiling fan.-R.K.]. At the extremity of each arm is a scanning drum containing a photo electric cell, which picks up images to be televised.

"The scene which is going to be televised must be flooded with a great quantity of strong light. Each electric eye catches the light reflected through the apertures in the revolving drums from the light portions of the body, and flashes to the transmitter the electrical impulses set up by the variations in light."

Source: Tim Onosko, Wasn't the Future Wonderful?, Dutton (p. 85)

DUSTON'S TALKING BOOK

From Richard Kadrey

[The following "talking book" machine, which can play, record, and reproduce more books, reminds me of the Lumiere Bros. early movie cameras, which were also mini- movie labs]

From "Modern Mechanics" magazine sometime between 1930-37

"BOOK READS ITSELF ALOUD!

"After 500 years, books are given voice by a Detroit inventor. The talking book is here at last!

"Merle Duston, young Detroit inventor, has succeeded in recording spoken thought in a new way, infinitely cheaper than the present printed method, and on a medium by which machinery does the reading or the thought!

"Ordinary paper, treated chemically, is run through a simple machine in which the modulations of a voice are recorded by photo-electric tubes by a reflected light process.

"Entirely new is the method of recording, and new also is the fact that there is no further treatment required to develop the soundtrack.

"Electric impulses bring forth the sound track lines, but just how the black lines emerge on the impregnated paper Mr. Duston is frank to say he does not know. Electrodes connected to the output terminal of an amplifier rest on

the paper and darken portions of it. An ordinary pickup is used to play back, and the same machine may be used for recording and reproducing.”

Source: Tim Onosko, Wasn’t the Future Wonderful?, Dutton (p. 85)

DEAD HUMAN LANGUAGES

From Bruce Sterling

[Bruce's remarks: On the grand occasion of our two hundredth Working Note, I offer the suitably large, round, and grave topic of dead human languages. The obsolescence and extinction of human language is obviously a very large and challenging field of study.

But is dead language "dead media"? Until this, our 200th Working Note, I have simply ducked this issue. However, the following press release describes this phenomenon so clearly that I have decided to offer it to the list.

The cultural, social and intellectual loss contingent on the extinction of a human language staggers the mind. If dead languages were in fact "dead media," they would obviously be enormously important phenomena, far overshadowing high Cahill-Rating curios such as optical telegraphy or mechanical television. The modern causes of language loss, travel, tourist culture, radio and television, have clear technological bases. Modern language loss is not a competition of tongues on a level demographic playing field, modern language is clearly shaped and sometimes driven into extinction by mass media. So are dead languages a proper field of study for the "dead media" scholar? Or should dead languages be classed as anthropology, archaeology, or linguistics, rather than media studies?

As list editor, I have made no final decision on this matter, and I would appreciate advice and counsel from list

subscribers. [Some pro arguments (as I see them): the "death" of, say, Hittite or Sumerian is certainly not in question. It seems perverse to suggest that a human language isn't a "medium," since the spoken word is a complex, dynamic, sophisticated and powerful method of communication. A dead and indecipherable written language, within the context of its recording technology, papyrus, clay, bark, would almost certainly qualify as "dead media." A dead computer language also makes good sense as "dead media." So why draw the line at human language?

The con arguments are also multiform: First and foremost, this may be simply too large a subject for the Dead Media Project. Dead languages number in the thousands, and the subject opens entire new sets of classification and definitional problems. What is a "language," and what differentiates a dead language from dead dialect, dead argot, dead slang, dead grammar,or even single dead words? Is Latin really and truly "dead," or was Latin merely subsumed by Romance languages? If a spoken language with no technological basis is to be considered a "medium," shouldn't we have to worry also about, say, lost forms of dance? Lost music? Performance art? Religious ritual? Divination? Games? Mimes, even? I am fiercely determined to draw the line at mimes. Bruce Sterling]

NEWS For immediate use April 18, 1997 "Unusual Brogue Of Ocracoke, N.C. Islanders Threatened With Extinction" By DAVID WILLIAMSON UNC-CH News Services "CHAPEL HILL, The unique dialect of 'O'cockers', what people

native to the North Carolina barrier island Ocracoke call themselves, may disappear within a few decades, thanks to the unholy influence of ferries, roads, 'dingbatters', people who live elsewhere, and electronic media.

That's what two North Carolina linguists have discovered after studying the island brogue. In warm weather, dingbatters invade the once-isolated island, near where Lt. Robert Maynard lopped off the pirate Blackbeard's head in 1718, in large numbers, bringing tourist dollars and more conventional American English. The electronic invasion, which has less impact, is nearly constant.

"Study authors are Drs. Walt Wolfram, William C. Friday, distinguished professor of English, and Natalie Schilling-Estes, coordinator of the N.C. Language and Life Project, both at N.C. State University.

"'Legislative action now protects a wide range of animals and plants on the brink of extinction, thanks to the combined efforts of concerned scientists and citizens,' the researchers say. 'At the same time, the dramatic decline of the world's languages goes largely unnoticed, except by the affected speakers and a small group of linguists and anthropologists.'

"Worldwide, people speak an estimated 6,000 tongues, most of which are rapidly headed toward extinction, they say. At the current rate of language loss, between 50 percent and 90 percent of these languages will die out within the next century. In California alone, about 25 distinct languages, not merely dialects of the same one, have lost their last speaker in the past century.

“Wolfram and Schilling-Estes began the most detailed study ever undertaken of Ocracoke speech in 1992, building on the work of retired University of North Carolina linguist Robert Howren, former UNC-CH honors student Wynne C. Dough and others. By comparing elderly, middle-aged and young islanders, they found elements of both Southern English, which N.C. residents speak on the mainland, and Northern speech overwhelming native sounds and replacing words.

“’We have found a drastic decline in some of the traditional features of the dialect,’ said Schilling- Estes, who earned her Ph.D. at UNC-CH in 1996 and is a visiting scholar at Duke. ‘The ‘oy’ sound for ‘i’ is disappearing, along with other distinct vowel sounds and words such as ‘pizer,’ meaning ‘porch’ and ‘meehonky’ for the game hide-and-seek.’ “Words such as ‘mommuck’ for ‘harass’ and ‘quamished’ for ‘nauseated’ appear to be hanging on, she said. The brogue, which did not originate with pirates or Shakespeare as some claim, has survived chiefly because of the island’s former isolation. Most Ocracokers descend from southern English and Irish immigrants.

“Schilling-Estes said she and Wolfram were not surprised to find the dialect disappearing, but they were almost startled at how cooperative Ocracokers were during their many visits, countless questions and audio taping.

“’We weren’t expecting the people there to be so remarkably warm and open and so willing to help us learn about their dialect and their island,’ she said. ‘Because we believe in giving back to the communities we

work in, we have helped by teaching eighth graders about the dialect, having T-shirts made that have Ocracoke words on them, and establishing a museum exhibit on language that's very popular down there.' [Bruce's remarks: I would suggest that the academic "preservation" of folk culture is an extremely effective way of killing it.]

"Why should anyone care whether languages and dialects disappear? Wouldn't communication be more efficient if everyone spoke a common language?

"'A window of scientific opportunity closes when a language dies,' the authors write. 'The more languages there are, the more information we have about how language in general works, just as we learn more about the general nature of life from biological diversity.

"'But there's more. When a language dies, an essential and unique part of a human culture dies with it. To imagine the personal impact, consider what it would be like to be the last speaker of a language with no one to talk to in your native tongue, the language of your childhood experience and your most fundamental emotional, artistic and spiritual expression.'

"Likewise, whenever a dialect disappears, not only do linguists lose a unique tool for scientific study of major languages, but also a distinct, colorful and often fascinating portion of a culture disappears, the two say. "'Saying that dialect loss is not as important as language loss is like saying that we should be vitally concerned with the preservation of dogs, but not worried about

particular breeds of dogs.’

Source: University of North Carolina at Chapel Hill press release, April 18, 1997

THE POLYRHETOR AT THE 1939 WORLD'S FAIR FUTURAMA

From Daniel B. Howland

The General Motors Futurama at the 1939 New York World's Fair was one of the most elaborate dark rides in history.

A chain of over three hundred seats snaked past gigantic animated tableaux of the city of the future, 1960, to be exact. The ride was narrated, and the narration was in sync with the scenery.

The people sitting behind you would soon hear what you were hearing; the people in front, what you were about to hear.

How do you deliver sound to an individual car in a ride? You build a twenty ton gizmo called the Polyrhetor.

The cars travelled in pairs, which cuts the job down to delivering about 150 separate soundtracks at once.

The soundtrack was broken up into 22 segments of about 39 seconds each, and recorded onto the audio track of motion picture film. Engineers looped each of these 22 segments, and rigged seven light beams and pickups to each loop.

Okay, let's deliver the sound to the cars.

The track was divided into 22 segments, over which a pair of cars traveled in 39 seconds, and each track segment corresponded with a film loop.

Under the track were seven smaller tracks, hooked to the sound pickups. Under each pair of cars rode a miniature trolley, the wheels of which rode in these wee tracks and were electrically hooked to the speakers.

As the first two cars entered the first segment of track, the trolley entered groove number one, and out came the sound from film loop number one, pickup number one. The trolley under the second set of cars rode in groove two, and received the soundtrack from film loop number one, pickup number two, and so on. By the time the first set of cars moved out into the second track segment, film loop number two, pickup one, the eighth set moved into its groove in the first track segment, and the narration from pickup one began again.

In the late 1960's, Disneyland designers faced similar problems with "Adventure Through Inner Space" and the "Haunted Mansion." I have yet to confirm it, but I feel confident a system similar to the Polyrhetor, probably substituting magnetic tape for film loops, was used in these rides.

For years, the Haunted Mansion "Ghost Host" narration has been shut off, but every Halloween they fire it up and it still works, both technically and aesthetically.

The Futurama was a huge hit, far and away the most popular attraction at the fair.

Designer Norman Bel Geddes did everything he could to extend the run of the ride beyond the Fair's 1940 finale.

When GM decided against building a permanent public

relations building to house it, he considered loading the whole shebang into 44 trucks and taking it on tour.

Then he came up with a much more practical idea, the entire ride could be installed inside a Zeppelin and flown around the country. Sadly, America had other things on its mind in 1940, and this lovely scheme came to nothing.

Source: 1939, The Lost World of the Fair by David Gelernter, Free Press,1995. ISBN 0-02-874002-5 The Designers Go to the Fair: Norman Bel Geddes, the General Motors Futurama and the Visit-to-the-Factory Transformed" by Roland Marchand. Design Issues, Volume VIII, Number 2, Spring 1992, MIT Press Journals. ISSN 0747-9360

A VINE VENDING MACHINE IN THE 1960S: THE SONY VIDEOMAT

From Daniel B. Howland

The See-Yourself-on-TV Vending Machine "Want to analyze your golf swing, or perfect your fly- casting technique? This unique $3,000 'vending machine' makes it easy. Pop a quarter into the slot, and Sony's Videomat takes and records a moving picture of you for 30 seconds. Overhead lights blink on, and a miniature TV camera, mounted below the unit's TV screen, captures the action.

"The TV pictures are recorded on a rapidly spinning magnetic disk about the size of an LP phonograph record. The machine then plays back the instant movie twice on its built-in 19-inch color TV set. The conventional picture tube was turned sideways to produce a tall, narrow screen, the shape best suited for picturing standing and moving people.

"The low-cost recording disk is a lightweight aluminum hoop covered with a sheet of ultra-thin plastic film that is coated with the same magnetic substance used on conventional magnetic tape. At the start of each new recording, the machine erases the disk, which has a predicted life of several thousand record-playback cycles.

"Besides its obvious use at sports centers and country clubs, Sony expects the unit to be bought by clothing stores, so customers can observe how their clothes fit as they move [thereby replacing wasteful mirrors costing tens of dollars], and by cocktail lounges, for the

amusement of patrons between drinks. Drama schools and dancing studios should find it a useful teaching aid.

[An entire production of Hamlet or Swan Lake could be recorded with as few as one hundred of the disks, and viewed up to two times before automatic erasure.]

[The Videomat looks like the box a magician might use to stick swords through an assistant, with the sideways video screen about eye level. On top are two headlamps that wouldn't look out of place on the rollbar of a 4X4 truck. The photo shows a modish woman smiling at the image of herself posing.]

[The Videomat is a relic of the days when seeing oneself on a video screen was still a novelty. A cartoon from the 1964/1965 World's Fair Official Souvenir Book shows a boy at the RCA pavilion.

"Look here, son," says the host, "You've been lost five times, today alone. How about letting some other kids get a crack at being on color TV?" And today we appear on video when we buy a Big Gulp.]

Source: Popular Science, May 1966 (Picture News, Page 87)

THE TELEGRAPH: THE MORSE PENDULUM INSTRUMENT, THE MORSE REGISTER

From Paul Di Filippo

[Bruce Sterling remarks: Paul Di Filippo was kind enough to send me this one-volume technical compendium from 1900 A.D., and it is a veritable brass mine of dead media. The beautiful period etchings (sadly mixed with blurry, up-to- date photos), are especially impressive, and the work now has a signal place of honor on my dead media reference shelf. The turn of a century seems to inspire technical writers to great flights of summary fancy, and Edward W. Byrn's deep-breathing peroration on the telegraph rivals the writing of John Perry Barlow.]

"Of all the inventions which man has called into existence to aid him in the fulfillment of his destiny, none so closely resembles man himself in his dual quality of body and soul as the telegraph. It too has a body and soul. We see the wire and the electro-magnet, but not the vital principle which animates it. Without its subtile, pulsating, intangible spirit, it is but dead matter. But vitalized with its immortal soul it assumes the quality of animated existence, and through its agency thought is extended beyond the limitations of time and space, and flashes through the air and sea throughout the world.

"Morse's first model, his pendulum instrument of 1837, is illustrated in Fig. 5. A pendulum carrying a pencil was in constant contact with a strip of paper drawn beneath the

pencil. As long as inactive the pencil made a straight line. The pendulum also carried an armature, and an electro-magnet was placed near the armature. A current passed through the magnet would draw the pendulum to one side. On being released the pendulum would return, and in this way zigzag markings, as shown at 4 and 5, would be produced on the strip of paper, which formed the alphabet. A different alphabet, known as the Morse Code, was subsequently adopted by Morse...”

“The alphabet consisted simply of an arrangement of dots and dashes in varying sequence. The register is an apparatus operated by the combined effects of a clock mechanism and an electro-magnet. Under a roll, see Fig. 8, a ribbon of paper is drawn by the clockwork. A lever having an armature on one end arranged over the poles of an electro-magnet, carries on the other end a point or stylus. When an electric impulse is sent over the line the electro-magnet attracts the armature, and the stylus on the other end of the lever is brought into contact with the paper strip, and makes an indented impression. A short impulse gives a dot, and a long impulse holds the stylus against the paper long enough to allow the clock mechanism to pull the paper under the stylus and make a dash.

“the Morse register has been practically abandoned, as no expert telegrapher requires the visible evidence of the code, but all rely now entirely on the sound-click of the electromagnet placed in the local circuit and known as a sounder, the varying time length of gagps between the clicks serving every purpose of rapid and intelligent

communication."

[Note that the telegraph's early hard-copy peripheral was simply tossed aside as useless!]

"The invention of the telegraph has been claimed for Steinheil, of Munich, and also for Cooke and Wheatstone, in England, but few will deny that it is to Prof. Morse's indefatigable energy and inventive skill, with the preliminary work of Prof. Henry, that the world to-day owes its great gift of the electric telegraph, and with this gift the world's great nervous forces have been brought into an intimate and sensitive sympathy."

Source: The Progress of Invention in the 19th Century by Edward W. Byrn Munn and Co., Publishers, Scientific American Office, 361 Broadway, New York 1900

THE TELEGRAPHY ECOSYSTEM OF 1900

From Paul Di Filippo

[We continue quoting from this valuable pop-science tome from 1900, so kindly sent us by noted futurist and antiquarian Paul Di Filippo:]

"...When practical telegraphic communication was solved by Henry, Morse, and others, further advances in various directions were made. Efforts to increase the rapidity in sending messages soon grew into practical success, and in 1848 Bain's Chemical Telegraph was brought out. (U. S. Pats. No. 5,957, Dec 5, 1848, and No. 6,328, April 17, 1849.) This employed perforated strips of paper to effect automatic transmission by contact made through the perforations in place of the key, while a chemically prepared paper at the opposite end of the line was discolored by the electrical impulses to form the record. This was the pioneer of the automatic system which by later improvements is able to send over a thousand words a minute.

"The duplex telegraph was invented by Dr. William Gintl, of Austria, in 1853, and was afterwards improved by Carl Frischen, of Hanover, and by Joseph B. Stearns, of Boston, Mass, who in 1872 perfected the duplex (U. S. Pats No. 126,847, May 14, 1872, and No. 132,933, Nov. 12, 1872). This system doubled the capacity of the telegraphic wire, and its principle of action permits messages sent from the home station to the distant station to have no effect on

the home station, but full effect on the distant station, so that the operators at the opposite ends of the line may both telegraph over the same wire. This system has been further enlarged by the quadruplex system of Edison, which was brought out in 1874 (and subsequently developed in U. S. Pat No. 209,241, Oct. 22, 1878). This enabled four messages to be sent over the same wire at the same time, and is said to have increased the value of the Western Union wires $15,000,000.

“In 1846 Royal C. House invented the printing telegraph, which printed the message automatically on a strip of paper, something after the manner of the typewriter (U.S. Pat. No. 4,464, April 18, 1846). The ingenious mechanism involved in this was somewhat complicated, but its results in printing the message plainly were very satisfactory. This was the prototype of the familiar “ticker” of the stock broker’s office, seen in Figs 10 and 11. In 1856 the Hughes printing telegraph was brought out (U.S. Pat. No. 14,917, May 20, 1856), and in 1858 G. M. Phelps combined the valuable features of the Hughes and House systems (U.S. Pat. No. 26,003, Nov. 1, 1859).

“Facsimile telegraphs constitute another, although less important branch of the art. These accomplished the striking result of reproducing the message at the end of the line in the exact handwriting of the sender, and not only writing, but exact reproductions of all outlines, such as maps, pictures, and so forth, may be sent. The fac simile telegraph originated with F. C. Bakewell, of England, in 1848 (Br. Pat. No. 12,352, of 1848).

“The Dial Telegraph is still another modification of the telegraph. In this the letters arranged in a circular series, and a light needle or pointer, concentrically pivoted, is carried back and forth over the letters, and is made to successively point to the desired letters.”

Source: The Progress of Invention in the 19th Century by Edward W. Byrn Munn and Co., Publishers, Scientific American Office, 361 Broadway, New York 1900

THE TELEGRAPH: FIRE ALARMS, BURGLAR ALARMS, RAILROAD-SIGNAL SYSTEMS, HOTEL ANNUNCIATORS, DISTRICT MESSENGER SERVICES

From Paul Di Filippo

“Among other useful applications of the telegraph is the fire alarm system. In 1852 Channing and Farmer, of Boston, Mass, devised a system of telegraphic fire alarms, which was adopted in the city of Boston (U.S. Pat. No 17,355, May 19, 1857), and which in varying modifications has spread through all the cities of the world, introducing that most important element of time economy in the extinguishment of fires. Hundreds of cities and millions of dollars have thus been saved from destruction.

“Similar applications of local alarms in great numbers have been extended into various departments of life, such as District Messenger Service, Burglar Alarms, Railroad-Signal Systems, Hotel Annunciators, and so on.” [Bruce Sterling remarks: It seems to me little appreciated that the telegraph as a species radiated into many specialized niches. Fire alarms and burglar alarms might be better described as “networks of sensors” rather than “media” per se, but these alarm systems were technically impossible before the telegraph, and their economic scope and influence on society must have been huge. I confess I have no idea what a “District Messenger Service”

may have been. The deeply symbiotic relationship of railways and telegraphs is a subject worthy of close study. Dead forms of “hotel annunciator” still await the Necronaut who can resurrect this modest but intimate medium.]

Source: The Progress of Invention in the 19th Century by Edward W. Byrn Munn and Co., Publishers, Scientific American Office, 361 Broadway, New York 1900

THE HOTEL ANNUNCIATOR

From Paul Lindemeyer

[Bruce Sterling writes; Dead forms of 'hotel annunciator' still await the Necronaut who can resurrect this modest but intimate medium.'

You asked for it. The annunciator, an American invention of the 1830s, was designed to replace the old system of manually ringing bells to summon servants. It was intended for large urban hotels with many rooms, where hand bell ringing would obviously have been impractical. As it operated in New York's opulent St. Nicholas Hotel, built in 1853, each guest room was equipped with a push button and a dial. The dial's pointer could be turned to read Ice Water, Bellhop, Room Service, etc. Guests turned the dial to the service type desired and pushed the button. At the front desk, a buzz tone was heard and a metal disc dropped to the bottom of a case filled with discs for all the various rooms. Each disc had a room number and a service type stamped in it, i.e., "MAKE UP 405." The appropriate servant would then be dispatched. The first annunciators had only one disc per room (and no dials), the guest making the request verbally when a servant arrived. By the 1850s the system had been refined for the even greater convenience of hotel patrons.

Source: Charles Lockwood, MANHATTAN MOVES UPTOWN (New York: Barnes & Noble, 1976)

THE TELEGRAPH: INDUCTIVE TELEGRAPHY

From Bruce Sterling

“Telegraphing by induction, i.e., without the mechanical connection of a conducting wire, is another of the developments in telegraphy in recent years, and finds application to telegraphing to moving railway trains. When an electric current flows over a telegraph line, objects along its length are charged at the beginning and end of the current impulse with a secondary charge, which flows to the earth if connection is afforded. It is the discharge of this secondary current from the metal car roof to the ground which, on the moving train, is made the means of telegraphing without any mechanical connection with the telegraph line along the track.

“ a rapid series of impulses, caused by the vibrator of an induction coil, is made to produce buzzing tones of various duration representing the alphabet, and these tones are received upon a telephone instead of a Morse register. “In 1881 William W. Smith proposed the plan of communicating between moving cars and a stationary wire by induction (U. S. Pat. No. 247,127, Sept 13, 1881). Thomas A. Edison, L. J. Phelps, and others have further improved the means for carrying it out. In 1888 the principle was successfully employed on 200 miles of the Lehigh Valley Railroad.” [Bruce Sterling remarks: Inductive telegraphy, being wireless, would seem to have been a precursor of radio (“wireless telegraphy”). Note the use of telephone receivers, which produced

specialized buzzes instead of Morse code. Inductive telegraphy, used only on moving trains (and requiring a moving train in order to produce its signal) is another striking example of the symbiosis of telegraphs and railroads.]

Source The Progress of Invention in the 19th Century by Edward W. Byrn Munn and Co., Publishers, Scientific American Office, 361 Broadway, New York 1900

RECORDING AND TELLING STORIES WITH THE INCA QUIPO

From Bruce Sterling

“In place of writing they used some strands of cord or thin wool strings, like the ones we use to string rosaries; and these strings were called quipos. By these recording devices and registers they conserved the memory of their acts, and the Inca’s overseers and accountants used them to remember what had been received or consumed.

A bunch of these quipos served them as a ledger or notebook. The quipos consisted of diverse strings of different colors, and on each string there were several knots. These were figures and numbers that meant various things. Today many bunches of very ancient quipos of diverse colors with an infinite number of knots are found. On explaining their meaning, the Indians that know them relate many things about ancient times that are contained in them.

There were people designated for this job of accounting. These officials were called quipos camayos, and they were like our historians, scribes, and accountants, and the Incas had great confidence in them.

These officials learned with great care this way of making records and preserving historical facts. However, not all of the Indians were capable of understanding the quipos; only those dedicated to this job could do it; and those who did not study quipos failed to understand them. Even among the quipo camayos themselves, one was unable to

understand the registers and recording devices of others. Each one understood the quipos that he made and what the others told him.

There were different quipos for different kinds of things, such as for paying tribute, lands, ceremonies, and all kinds of matters pertaining to peace and war. And the quipo camayos customarily passed their knowledge on to those who entered their ranks from one generation to the next. The quipo camayos explained to the newcomers the events of the past that were contained in the ancient quipos as well as the things that were added to the new quipos; and in this way they explain everything that that transpired in this land during all the time that the Incas governed.

These quipos are still used in the tambos to keep a record of what they sell to travellers, for the mitas, for herders to keep track of their livestock, and for other matters.

And even though many Indians know how to read and write and have traded their quipos for writing, which is without comparison a more accurate and easier method, still, in order to show the great subtlety of this method of preserving history and keeping accounts for people who had no writing and what they achieved with it, I wish to give the following example of what happened in our times.

Two Spaniards left together from the town of Ica to go to the city of Castro Virreina, and arriving at the tambo of Cordoba, which is a day's travel from Ica, one of them stayed there and the other continued his trip; at this

tambo this latter traveller was given an Indian guide to accompany him to Castro Virreina. This Indian killed the Spaniard on the road and returned to the tambo. After some time passed, since the Spaniard was very well known, he was missed. The governor of Castro Virreina, who at that time was Pedro de Cordoba Mejia, a native of Jaen, made a special investigation to find out what had happened. And in case the man had been killed, he sent a large number of Indians to look for the body in the puna and desert. But no sign of him could be found, nor could anyone find out what had become of him until more than six years after he had been killed.

By chance the body of another Spaniard was found in a cave of the same desert. The governor ordered that this body be brought to the plaza so that it could be seen, and once it was brought, it looked like the one the Indian had killed, and, believing that it was he, the governor continued witht he investigation to discover the killer.

Not finding any trace or evidence against anybody, he was advised to make an effort to find out the identity of the Indian who was given to the deceased as a guide at the tambo or Cordoba. The Indians would know this in spite of the fiact that more than six years had passed because by means of the record of the quipos they would have kept memory of it. With this the governor sent for the caciques and quipo camayos.

After they were brought to him and he continued with the investigation, the quipo camayos found out by their quipos the identity of the Indian who had been given as a

guide to the aforementioned Spaniard. The Indian guide was brought prisoner immediately from his town, called Guaytara, and, having given his declaration in which he denied the crime, he was questioned under torture, and at once confessed to having killed the man, but explained that the wrong body had been brought. However, he would show them the place where he had killed the man and where the body was located.

Police officers went with him to the puna, and they found the body where the Indian guide had hidden it, and it was in a cave located some distance from the road. With the great cold and dryness of the paramo, the body had not decomposed, but it had dried out, and thus it was whole. The first body that was brought was never identified, nor was the killer.

The extent of the achievement of the record and memory of the quipos can be appreciated by this case."

Source: History of the Inca Empire: An account of the Indians' customs and their origin together with a treatise on Inca legends, history and social institutions by Father Bernabe Cobo Translated and edited by Roland Hamilton University of Texas Press 1979 Third reprinting 1991 This book is an excerpt from Historia del Nuevo Mundo a much larger manuscript completed in 1653 by Bernabe Cobo, a Peruvian Jesuit

THE TELEGRAPH

From Bruce Sterling

[Bruce Sterling remarks: Mr. Byrn's ruminations on media evolution are of particular interest. Note his remarkable dead-media nostalgia for "the dusty archives of the patent office." Will the "coming generation" render the judgement of history—or is the subject "beyond human estimate" and too impressive for speculation?] <b>"As the art of telegraphy grows apace toward the end of the Nineteenth Century, individuality of invention becomes lost in the great maze of modifications, ramifications, and combinations. Inventions become merged into systems, and systems become swallowed up by companies. In the promises of living inventors the wish is too often father to the thought, and the conservative man sees the child of promise rise in great expectation, flourish for a few years, and then subside to quiet rest in the dusty archives of the Patent Office. They all contribute their quota of value, but it is so difficult to single out any one of those which as yet are on probation, that we must leave to the coming generation the task of making meritorious selection.

"Today the telegraph is the great nerve system of the nation's body, and it ramifies and vitalizes every part with sensitive force.

"In 1899 the Western Union Telegraph Company alone had 22,285 offices, 904,633 miles of wire, sent 61,398,157 messages, received in money $23,954,312, and enjoyed a profit of $5,868,733.

“Add to this the business of the Postal Telegraph Company and other companies, and it becomes well nigh impossible to grasp the magnitude of this tremendous factor of Nineteenth Century progress. Figures fail to become impressive after they reach the higher denominations, and it may not add much to either the reader’s conception or his knowledge to say that the statistics for the whole world for the year 1898 show: 103,832 telegraph offices, 2,989,803 miles of wire, and 365,453,526 messages sent during that year. This wire would extend around the earth about 120 times, and the messages amounted to one million a day for every day in that year. This is for land telegraphs only, and does not include cable messages.

“What saving has accrued to the world in the matter of time, and what development in values in the various departments of life, and what contributions to human comfort and happiness the telegraph has brought about, is beyond human estimate, and is too impressive a thought for speculation.”

Source: The Progress of Invention in the 19th Century by Edward W. Byrn Munn and Co., Publishers, Scientific American Office, 361 Broadway, New York 1900

FLOWER CODES

From Richard Kadrey

The Romance of Flowers

“Language of flowers dictionaries which had their first popularity in Paris, were subsequently published in English with equal success. Le Langage des Fleurs by Mme. Charlotte de la Tour was the first flower dictionary, published in Paris in 1818. The great delight of the English in these books began in the day of George IV and continued through the early years of Queen Victoria’s reign.

“The Americans were slower to become enthusiastic and started to take an interest somewhat later. ‘Le Langage des Fleurs’ ran to eighteen editions and Mme. Charlotte de la Tour was a toast of Paris society. It would have been to her displeasure that her book was pirated in America and Spain, although it proved flowers speak an international language.

“In the era of Victorian manners and morals with the accent on gentility, shy Victorians used language-of-flowers books to express their sentiments when they were loath to let words pass their lips.

“One Victorian writer declared that with the help of a flower language book, a courting couple walking decorously in the garden could present flowers to each other and carry on a conversation of considerable wit, compliments and flirtation banter.”

Flowers and their meaning

ARBOR VITAE - Unchanging friendship.

CAMELIA, WHITE. - Loveliness.

CANDY-TUFF. - Indifference.

CARNATION, DEEP RED. - Alas! for my poor heart.

CARNATION, WHITE. - Disdain.

CHINA-ASTER. - Variety.

CLOVER, FOUR-LEAF. - Be mine.

CLOVER, WHITE. - Think of me.

CLOVER, RED. - Industry.

COLUMBINE. - Folly.

COLUMBINE, PURPLE. - Resolved to win.

DAISY. - Innocence.

DEAD LEAVES. - Sadness.

DEADLY NIGHTSHADE. - Falsehood.

FERN. - Fascination.

FORGET-ME-NOT. - True love. Forget me not.

FUCHSIA, SCARLET. - Taste.

GERANIUM, SCARLET. - Consolation.

GERANIUM, ROSE. - Preference.

GOLDEN-ROD. - Be cautious.

HELIOTROPE. - Devotion.

HONEY-FLOWER. - Love, sweet and secret.

HYACINTH, WHITE. - Unobtrusive loveliness.

IVY. - Fidelity.

LADY'S SLIPPER. - Win me and wear me.

LILY, DAY. - Coquetry

LILY, WHITE. - Sweetness.

LILY, YELLOW. - Gaiety.

LILY OF THE VALLEY. - Return of happiness.

MIGNONETTE. - Your qualities surpass your charms.

MONKSHEAD. - Danger is near.

MYRTLE. - Love.

OATS. - The witching soul of music.

ORANGE BLOSSOMS. - Chastity.

PANSY. - Thoughts.

PASSION FLOWER. - Faith.

PEACH BLOSSOM. - I am your captive.

PEAR. - Affection.

PRIMROSE. - Inconstancy.

QUAKING GRASS. - Agitation.

ROSE. - Love.

ROSE, DEEP RED. - Bashful shame.

ROSE, YELLOW. - Jealousy.

ROSE, WHITE. - I am worthy of you.

ROSEBUD, MOSS. - Confession of love.

SHAMROCK. - Lightheartedness.

STRAW. - Agreement.

STRAW, BROKEN. - Broken agreement.

SWEEP PEA. - Depart.

TUBEROSE. - Dangerous pleasures.

VERBENA. - Pray for me.

WITCH HAZEL. - A spell.

HENRY MILLS' TYPEWRITER

From Bruce Sterling

"Occupying an intermediate place between the old-fashioned scribe and the printer, the typewriter has in the latter part of the Nineteenth Century established a distinct and important avocation, and has become a necessary factor in modern business life.

"Like most other important inventions, the typewriter did not spring into existence all at once, for while the practical embodiment in really useful machines has only taken place since about 1868, there have been many experiments and some success attained at a much earlier date. The British patent to Henry Mills, No. 395 of 1714, is the earliest record of efforts in this direction. At this early date no drawings were attached to patents, and the specification dwells more on the function of the machine than the instrumentalities employed. No record of the construction of this machine remains in existence, and it may be fairly considered a lost art.

"In quaint and old-fashioned English, the patent specification proceeds as follows: "'ANNE, by the Grace of God, &c., to all whome these presents shall come, greeting: WHEREAS, our trusty and well-beloved subject, Henry Mills, hath by his humble peticon represented vnto vs, that he has by his greate study, paines, and expence, lately invented, and brought to perfection 'An Artificial Machine or Method for the Impressing or Transcribing Letters Singly or Progressively one after another as in Writing, whereby all Writing whatever may be Engrossed

in Paper or Parchment so Neat and Exact as not to be Distinguished from Print, that the said Machine or method, may be of greate vse in Settlements and Publick Recors, the Impression being deeper and more Lasting than any other Writing, and not to be erased, or Counterfeited without Manifest Discovery, and having therefore humbly prayed vs to grant him our Royall Letters Patents, for the sole vse of his said Invention for the term of fourteen yeares.'"

Source The Progress of Invention in the 19th Century by Edward W. Byrn Munn and Co., Publishers, Scientific American Office, 361 Broadway, New York 1900

TYPEWRITERS: THE COMPTOMETER, THE NUMEROGRAPH, THE BOOK TYPEWRITER

From Bruce Sterling

“It is not practicable to give a full illustration of the state of the art in typewriters, as it has grown to an industry of large proportions. Nearly 1,700 patents have been granted for such machines, and more than 100 useful and meritorious machines have been devised and put upon the market. Among these may be mentioned the Hall, Underwood, Manhattan, Williams, Jewett, and many others.

“Besides the regular typewriters, various modifications have been made to suit special kinds of work. The ‘Comptometer’ used in banks is a species of typewriter, as is also the Dudley adding and subtracting machine, known as the ‘Numerograph,’ and covered by patents Nos. 554,993, 555,038, 555,039, 579,047 and 579, 048. Typewriters for short hand characters, and for foreign languages, and for printing on record and blank books, are also among the modern developments of this art. In the latter the whole carriage and system of type levers move over the book. The Elliott & Hatch book typewriter, Fig. 143, is a well-known example.

[To judge by the Fig. 143 engraving, the Elliott & Hatch clamped onto blank books via a pair of parallel metal rails, set at the book’s spine and page margin. The Elliott & Hatch typed directly onto bound pages.]

“It was estimated that there were in use in the United States in 1896 150,000 typewriters, and that up to that time 450,000 had been made altogether. In the last four years that number has been greatly increased, and a fair estimate of the present output in the United States is between 75,000 and 100,000 yearly. “The typewriter saves time, labor, postage and paper; it reduces the liability to mistakes, brings system into official correspondence, and delights the heart of the printer. It furnishes profitable amusement to the young, and satisfactory aid to the nervous and paralytic. All over the world it has already travelled, from the counting house of the merchant to the Imperial Courts of Europe, from the home of the new woman in the Western Hemisphere to the harem of the East, everywhere its familiar click is to be heard, faithfully translating thought into all languages, and for all peoples.”

Source: The Progress of Invention in the 19th Century by Edward W. Byrn Munn and Co., Publishers, Scientific American Office, 361 Broadway, New York 1900

BROWN'S CASH CARRIER

From Bruce Sterling

[Bruce Sterling remarks: I confess myself deeply puzzled by this brief squib in Byrn's book, which seems to refer to a physical transfer system which was common in 1900 and now utterly forgotten.

"Cash carriers?" "Whisking little cars?" The oddest aspect is Byrn's complete offhandedness regarding this technology, which he seems to regard as a commonplace. It can't be a pneumatic tube cash conveyor, as it seems highly unlikely that the capsules in a pneumatic tube system could be described as "little cars." Can anyone offer a suggestion as to what Byrn is talking about?]

"Step into any of the great department stores and the genius of the inventor confronts you in the cash carrier whisking its little cars back and forth from the cashier's desk to the most remote corners of the great building. The first of these mechanical carriers adapted for store service was patented by D. Brown, July 13, 1875, No. 165,473. Not until about 1882, however, was there any noticeable adoption of the system, when practical development was given in Martin's patents, No. 255,525, March 28, 1882; No. 276,441, April 24, 1883, and No. 284,456, September 4, 1883."

Source: <i><a href="mailto:deadmedia@deadmedia.org?subject=re: <Dead Media Working Note 21.2>">Add a Comment to this Note (list members only)

BROWN'S CASH CARRIER

From Bill Jacobs

[Bill Jacobs remarks: I have recently visited the Museum of Independent Telephony in Abilene, Kansas, where they have displays regarding the history of telephony, excluding Bell's corporate monster. One display that particularly interested me regarded mechanical telephones. They graciously allowed me to look through their files on the subject, copied for me a variety of information, and gave me permission to forward it to the Dead Media Mailing List. [I will begin with an article on string telephones by Jon Kolger, originally published in the June '86 ATCA Newsletter (which is affiliated with the museum).] "Mechanical or String Telephones" by Jon Kolger "Acoustic telephones or 'string' telephones as they are often called, are misunderstood by many collectors. Since they transmit sound purely by mechanical means, they embody none of the pioneering electrical innovations that many collectors find so interesting. Truthfully though, very early telephones performed poorly; and during these years, the acoustic telephone represented a truly viable alternative for relatively short, private-line telephone systems.

"Since they contained no electrical transmitting or receiving devices, they did not infringe on the Bell patents. Thus they were able to enter the telephone industry during the protected years of the late 1870s and 1880s, carving out a small niche for themselves.

"Acoustic telephones literally work on the 'two tin- cans

on a string' principle. Two (or sometimes more) firmly mounted instruments, each containing a flexible diaphragm, are connected by a taut wire of high tensile strength. Any vibrations acting upon one diaphragm are mechanically transmitted through the line wire to the other diaphragm, making it vibrate in unison. Thus, sound energy is physically transmitted from one point to another.

"The diaphragms themselves were made of many materials, notably wood, metal, animal membrane, fiberboard, and even tightly woven cloth. Those instruments designed for longer lines, perhaps one-half mile or more, would have relatively large diaphragms, up to a foot or so in diameter. Conversely, short-line instruments would have smaller diaphragms, approximately 2 or 3 inches in diameter.

"Although ordinary line wire could be used, it was common for manufacturers to recommend special types of wires. Typically it would possess high tensile strength, to minimize stretching and breaking. Many were galvanized to combat corrosion. Wire for longer lines might have two or three conductors twisted together for maximum strength. The line wire would be strung aerially from point to point, attached to poles with special insulators designed not to dampen the vibrations.

"The line wire itself had to be banjo-string tight in order to transmit vibrations.

"Obviously the straightest and shortest line wire run would perform best. However, the straightest path was

not always practical. To overcome this, special insulators were available which allowed the line wire run to include right and even acute angles.

“Signalling the other party could be as simple as rapping on the diaphragm with a pencil or a small mallet, provided of course that the called party was within earshot.

“Other sets might be found with a small bell attached to a curved wire extending from the instrument. This device was intended to jingle at the slightest signal from the other end. These additions were inventions of the owner, and were not manufactured as such. Still more elaborate sets included magneto signalling, just as with more conventional telephones.

“The line wire itself would be one side of the ring circuit, the other side being an earth return.

“Since the taut line wire was exposed to the elements, acoustic telephones were quite dependent upon fair weather. Acoustic telephones would exhibit unusual behavior during adverse weather conditions. They were known to howl and sing during windy periods, the diaphragm responding to vibrations induced into the wire by the wind. Heavy ice or snow could make the telephones inoperable, and the line would groan under the weight of ice on the wire. Rain was known to produce tapping sounds as raindrops hit the wire. Acoustic telephones were also susceptible to lightning, as there was rarely any type of lightning protection, except with those sets equipped for magneto signalling.

“When conditions were right, however, great claims were made as to the efficiency of acoustic telephones. Testimonials report the ability to carry on a conversation over an acoustic telephone from anywhere in a room, much like the speakerphone of today. It is also said that clocks could be heard ticking over the line.

“Despite the inherently simple principles behind acoustic telephony, well over 300 patents were issued detailing supposed ‘improvements’ in this technology. Many of these dealt with the aforementioned signalling mechanisms, earpieces, methods of construction, diaphragm placement, etc.. In spite of all this innovation, the very heart of acoustic telephony, the diaphragm and the taut line wire, remained unchanged.

“By far, the best known manufacturer of acoustic telephone equipment is J.R. Holcomb & Co. of Cleveland, Ohio. They designed and manufactured many different models of acoustic telephones, some exhibiting patent dates as early as 1878. They also carried a complete line of accessories such as line wire, insulators, magneto call bells, etc. Other manufacturers include, but are not limited to: Watts Telephone Co., Louisville, Ky.; Mechanical Telephone Co., Albion, Ill.; O. Hamblins Mechanical Telephone, Newton, Ill.; Shaver Corporation, New York; and Lord Telephone Mfg. Co., Boston Mass.

“Many, perhaps most, acoustic telephones are unmarked. By the same token, many sets were homemade, as the simplicity of acoustic telephony made home-built telephones practical.

“With the expiration of the Bell patents in 1893 and 1894, the hey-day of acoustic telephony was on the wane. Hundreds of new telephone manufacturers entered the industry, resulting in furious competition and steady technological progress. It was not long before the acoustic telephones’ small niche, that of the short, private telephone system, was challenged by newer, more efficient apparatus.”

Source: Mechanical or String Telephones by Jon Kolger, ATCA Newsletter June 1986, Museum of Independent Telegraphy

SUPER 8 MM FILM

From Bruce Sterling

“The Savior of Super 8: Little Film Night curator campaigns to preserve endangered species of movie making” by Ann Hornaday Austin American Statesman May 30 1997 page E3 “When Super 8 film, so named because its frames are bigger (and thus better) than conventional 8 mm film, was introduced in 1965, it was the perfect medium with which to capture the nuclear family on the move: light, portable and capable of an appropriately bright, eminently American aesthetic.

“But with the advent of home video cameras in the 1980s, Super 8 all but disappeared. Kodak, the film stock’s manufacturer, orphaned their erstwhile wunderkind, concentrating on perfecting the art of the snapshot. Clunky cameras and unwieldy projectors were relegated to the attics and closets with the wooden tennis rackets and other antiques.

“Still, even as it’s been disparaged, discontinued and downsized to within an inch of its life, Super 8 refuses to die. For a select group of purists, also known as cranks, artists and Luddite hold-outs, Super 8 represents not only a distinct aesthetic but a poetics, a political economy, a way of life.

“Their patron saint, and one of the people responsible for the fact that Super 8 hasn’t been wiped out entirely, is Toni Treadway.

“Treadway is one half of Brodsky and Treadway, a

company in Rowley, Mass., that transfers 8mm, Super 8 and 16 mm films to videotape. She runs the International Center for 8 mm Film & Video Inc., a nonprofit advocacy and information center for 8 mm filmmaking. She publishes 'B&T's Little Film Notebook,' a twice-to-thrice yearly newsletter that is an invaluable source of information and inspiration to its 3,000 subscribers.

"In response to the incursion of video on Super 8's turf, in 1996 Kodak discontinued all of its Super 8 sound film (on which sound could be recorded simultaneously with the visual image) as well as an Ektachrome silent stock, but Treadway is stil sanguine about the future.

"Treadway insists that Super 8 is still the best choice for home movie makers. "'The problem with video is that it does not have the preservation life film does,' she says. 'I'm telling people right now, if you have children or grandchildren, whether or not you make home videos, if you have children, grandchildren, family, weddings, births, parades, whatever, take a Super 8 camera and shoot Kodachrome color or black and white, because that's going to last 200 or 300 years. The video's going to last 20. And families have not thought about these issues.'.

"'The 1980s, I'm afraid, is going to be a big hole culturally for moving images,' she says. 'It's a lost decade.'"

Source Austin American Statesman May 30 1997 page E3

HOW TO BUILD A ‘FARMER’S TELEPHONE’

Here are two short contemporary pieces on mechanical telephones.

How to Construct a Farmer’s Telephone.

“A form which may be called the farmer’s telephone for communications less than one thousand feet may be stated for the benefit of agricultural readers, who can easily construct it for themselves.

“Take tape such as is used by the ladies for their dresses, either in long roll or else in pieces sewed together flatwise. Whenever it is necessary to support it, fasten it flatwise to the top of a spiral spring about one and one-half inches long, made by winding close small steel wire round a lead pencil.

“Kerosene lamp chimneys make the best mouth pieces. Over one end stretch a piece of old kid glove or stout paper in the manner of a drum head by winding a string tightly around. Fasten the tape flatwise against the outer surface of the diaphragm of leather or paper thus formed, when conversing keep the tape stretched. The sound vibrations will travel across the supporting points of steel springs without interruption and the flat surface of the tape prevents the musical ring which destroys the distinctiveness in such contrivances made of strings. Such lines of tape can be carried in every direction, round corners, up stairs and down without much affecting the sound except by the distance.

First Telephone Experience

“I was born in Elwood, New Jersey April 23, 1863. My father was a telegrapher, as were several of my uncles. In 1879, when I was sixteen years old, my father and I built a pole line one and one-quarter miles long between the railroad station at Elwood, New Jersey, where he was employed as Agent, and our farm, in order to establish what I believe to be one of the first telephone lines in this section of the country.

“We went into Philadelphia to buy some wire. We didn’t want to use iron wire and the only copper wire available was #50 soft drawn, which we bought. We suspended this wire from the poles with string loops and at each end connected up an acoustic telephone. These telephones were available in Philadelphia as toys. They had no batteries associated with them and no way of signalling over them.

“They operated by direct physical impulse. When my father wanted to call home, he would start calling ‘hello’ into his telephone and when we heard it we would answer.

“The transmision was good and we had no difficulty in hearing. We used to invite the neighbors in to hear vocal and instrumental music from the railroad station one and one-quarter miles away. This was the first telephone experience that I had. The copper wire sagged between poles quite a bit and we frequently had to go out and pull it up and cut out a lot of the slack and, of course, in time its diameter shrunk to such an extent that we had to take

it down.”

Source: the Lancaster, Pennsylvania Agricultural Almanac for the Year 1879, printed by John Bater’s Sons.

CASH CARRIERS

From Larry Schroeder

"Cash Railway. A light aerial railway, erected in stores to carry money or light parcels to and from different parts of the establishment." The 1956 5th Edition ARCHITECTURAL GRAPHIC STANDARDS references only pneumatic conveyor systems, so the cash carrier appears to have been unessential, if not dead, technology by 1956. I was also interested to note a paper- only form of the pneumatic carrier system that employed tubes of rectangular section and no carrier at all. The paper was folded to 5 ½"x2 3/8" with one end folded up to act as a sail. This could be used with either a vacuum or pressure system. Larry Schroeder

Source: Audel's Mechanical Dictionary, 1942 copyright, 1948 reprinting, page 108:

GRAPHIC NOVELS OF 981AD

From Stefan Jones

Spotted this in the Metropolitan Museum of Art, in the wonderful "Glories of Byzantium" exhibit. The brief description on the label seemed to indicate that these were a class of items, rather than one sample. Sorry I don't have any supporting material., Stefan Jones

EXULTENT SCROLL
Southern Italy, 981-987 A.D.
A long, parchment scroll designed for use during the Easter Vigil. The scroll contained passages describing the events leading up to the crucifixion and resurrection of Christ, interspersed with colorful, icon-like illustrations. The scroll was fed over the front of the priest's lectern as it was read. The illustrations appeared "upside down" to someone reading the text, and the passages and illustrations were arranged so that the passage on the top of the lectern corresponded to the illustration currently visible to the audience.

[Bruce Sterling remarks, what we seem to have here is a medieval, spoken-word accompaniment, lectern-mounted, mass-audience, sacred comic book. This Byzantine graphic narrative even pre-dates the Bayeux Tapestry!]

Source: Metropolitan Museum of Art exhibit, Glories of Byzantium, June 1997

DEAD ASCII VARIANTS

From Patrick Lichty

Dead Computer Alphabets Personal computers of the late 70's and early 80's commonly used extended character sets. These ASCII variants rose above the range of 0-127 used by standard ASCII symbols to address symbols in the numerical ranges of 128-255.

These characters were usually inaccessible by conventional keystrokes, and in most cases provided graphic elements for use in screen layouts, or for the direct entry of machine-code subroutines in BASIC programs (Atari, Commodore C64). Although graphic characters were used in later personal computers, such as the IBM PC, certain factors make these early character sets unique, and dead.

The console is no longer in mass production, the supporting software is obsolete, and the character set was specific to the computer.

The Atari 400, 800, 800XL, and 1200 XL computers used an ASCII variant called ATASCII, or, ATari-ASCII. Specific 'control characters' were accessed through control key combinations or via the BASIC CHAR$() command.

The basic symbol mapping schemes and symbol shapes were similar among different machines, but placement in the sequence varied. The Tandy Color Computer even introduced the element of color into these extended sets.

Known personal computers featuring dead computer alphabets, extended character sets, or ASCII variants:

Atari 400, 800, 800XL, 1200XL Commodore PET C64?, 128 VIC-20 Tandy Color Computer I, II, III The Timex Sinclair ZX-80 had control characters printed on the keyboard.

Source: Appendix, ATASCII chart Atari Inc., Sunnyvale, CA Radio Shack Color Computer II User's Manual Tandy Corporation, Fort Worth, TX Personal experience with the Commodore and Timex computers.

DEAD MONEY

“At one time, cows were the medium of exchange in Italy, and the Latin word for cattle, pecus, was the root of another Latin word for money, pecunia, which, of course, survives in our own ‘pecuniary.’

“On the Fiji Islands, whale teeth were used, tea bricks were used in many inner areas of Asia, camels in Arabia; American Indians traded wampum (strings of shells), early Canadian colonists used playing cards, and colonial Virginians made tobacco leaves their legal tender in 1642.

“I’ve read of woodpecker scalps being used as money, though I don’t know where and can’t imagine how.

“In Romania today, [1987] the underground economy for some reason runs on unopened packs of Kent cigarettes (ten pounds of lean beef going for one carton).”

Woodpecker scalps?

In Weschler’s book, a collection of essays centered around some eccentric figures in the art world, there is a chapter on J.S.G. Boggs, the artist who draws currency and then ‘spends’ it. He will, for example, draw a ten dollar bill, go to an arts supply store, and exchange it for a $9 rapidograph pen. He always demands the change in real money, as that is part of the process.

On convincing some clerk or waiter to accept his bill, he will get a receipt and document the entire transaction. The money he receives in change is never spent, it is part of the piece.

After waiting a day or two, he calls a collector from a list of patrons and offers them the receipt, the change, and the location of the original transaction. The collector has to buy the documentation from Boggs, then has to track down the original recipient of the bill and offer to buy it from them. Boggs has done this hundreds of time.

This process, while having little to do with actual dead media, does set the mind to wondering about the origins of money, and the many ways humans have devised to get past the one-on-one barter systems that must have developed in the first agrarian communities.

This is a dead medium, or rather hundreds of dead media, and the line from woodpecker scalps to Federal Reserve-backed notes is clear.

Paper money, credit cards, on-line transactions, whatever agreed-upon method of buying and selling will be used in the future, is as fascinating as studying the development of photography from the salt paper process to the digitally enhanced covers of WIRED magazine.

[Bruce Sterling remarks: Defining money as a “medium” might solve a lot of conceptual difficulties, while creating numerous practical ones for the dead media scholar. Money is certainly a so-called “medium of exchange,” but is money actually media per se? Certainly many dead media have been used to transfer money. Telegraphic mail orders were once vital to commerce. Postal money orders were flown into Paris by pigeons during the Franco-Prussian War. Pneumatic tubes got their start at stock exchanges.

[The Incan quipu was a form of accounting as well as Incan society's only means of symbolic communication. Literacy arose in the Middle East as an accounting process, long before people learned to adapt those financial symbols to express spoken language. Modern cash is the physical process of printing presses, which are certainly "media." Basically, cash is paper covered with symbols and letters.

The American one-dollar bill communicates bald declarations to the end user (THIS NOTE IS LEGAL TENDER FOR ALL DEBTS PUBLIC AND PRIVATE) and trumpets political manifestos (ANNUIT COEPTIS MDCCLXXVI NOVUS ORDO SECLORUM).

Why, exactly, is giving someone a one-dollar bill really different from giving them a postcard or a campaign button? And when a currency is dead and loses its government-backed value—why do people still want to collect it?

[Money may be the conceptual missing link that unites calculators, computers, and electronic funds transfer with more conventional "media." "Money" might even be visualized as a very large, very slow, highly distributed computer that society uses to calculate the value of goods and services. Money might be a form of computation so omnipresent that we have been marinating in it for centuries without really noticing it. This conceptual approach would make dead currencies the dead operating systems for defunct economies.

[And why are "cash carriers" dead media? Because they

are computer media—distributed peripherals for a central calculating “mainframe,” later abolished by individual cash registers in the cash equivalent of the PC revolution.]

Source: ShapinskyUs Karma, BoggsUs Bills, And Other True-Life Tales by Lawrence Weschler, 1987

WHEATSTONE'S TELEGRAPHIC METEROMETER

From Stefan Jones

TELEGRAPHIC METEROMETERS

Prof. Wheatstone has devised a new class of instruments for taking observations in stations which for any cause are not accessible for very long periods. The telegraphic thermometer, a type of this class, consists of essentially two parts; the first is the magnetic motor, constructed on a plan similar to that used by the inventor in his alphabetical magnetic telegraph, and is so arranged that by turning a handle the lever at the other extremity of the line will describe by regular steps a complete circle. The second part consists of a metallic thermometer, in which the unequal expansion of two metals is made to move a lever or pin around a graduated circle which marks the degrees of temperature. The two parts are in such proximity that the telegraphic lever in passing around the circle must, at some point, come in contact with the pin, which is moved by means of the expanding or contracting metals. This contact breaks one circuit and completes another, and thus transmits to the other extremity of the telegraphic line information of the particular degree of heat at the instant indicated by the thermometer. This thermometer is not self-recording, but responds accurately whenever questioned."

Source: Scientific American, December 7, 1867

THE AMATEUR RADIO RELAY LEAGUE RADIOGRAM

From Dan Howland

“A.R.R.L. FORMS FOR THE AMATEUR

“Official A.R.R.L. Message Blanks Most convenient form. Designed by the Communications Department of the A.R.R.L. Well printed on good bond paper. Size 8” x 7”. Put up in pads of 100 sheets. One pad postpaid for 35” or three pads for $1.00. “Message Delivery Cards Neatest, simplest way to deliver a message to a near-by town. On U.S. stamped postals, 2” each. On plain cards (for Canada, etc.) 1” each, postpaid.” [Printed at the the bottom of the Radiogram is the following:]

“THIS MESSAGE WAS TRANSMITTED FREE OF CHARGE BY AMATEUR RADIO STATIONS OF THE AMERICAN RADIO LEAGUE.
ANSWER WILL BE SENT FREE BY FILING AT THIS STATION.”

[It appears that amateur radio enthusiasts received and relayed messages as a point of honor. Was this something people did rather than go to Western Union? Was it cheaper to ask a radio geek to send out your message and hope it would eventually get there? Or was it a service offered by amateurs for people trapped in the boondocks, off exploring forbidden temples or some such? (The Kon Tiki crew, for example, relayed their position to stateside amateur radio hams.)

[Is this still done? Does anyone know anything more

about these radio relay postcards? The articles in this magazine are so filled with radio jargon and 30s slang that it's hard to understand anything but the ads. Sample from page 27: "A Squirt who used too much of what we used to call 'Lake Erie Swing' or sent with a slobbery fist or cluttered up the air with too many CQ's. was called upon by a committee, the chairman of which. exhibited and explained the workings of an instrument known as an Uggerumph."]

[Bruce Sterling remarks: the crystal-set zealots of the Amateur Radio Relay League seem to have been spiritual ancestors of the Internet. How does one classify these ARRL networked postcards in the media spectrum? Are they "mail," "radio," or "person-to-person ham narrowcasting?" Perhaps Radio Relay postcards are best understood as a dead precursor of email.]

Source: QST Magazine (Devoted Entirely to Amateur Radio), February, 1932, Advertisement

THE TELEPLEX MORSE CODE RECORDER

From Dan Howland

[December 1930] [Drawing of an ear] “All You Need to Learn Telegraphy” [Drawing of a hand] “Morse or Continental “With Teleplex “Guaranteed to teach the world’s most fascinating profession, by hearing real messages, sending them “Interesting, simple, you learn quickly, at HOME “Teleplex is the Master Teacher.

“Used by the U S Army, Navy and reading, radio and telegraph schools.

“Write for folder Q-12 “Teleplex Company “76 Cortland Street, New York” [A small drawing shows the Teleplex. It is a box with an open hinged lid. Inside are two reels (paper, I believe, from thumbing through other copies of QST at the bookstore). On one side is a Victrola-type crank. Wires lead out to a set of ear phones and a telegraph key. If I have to venture a guess as to size, judging from the headset and the telegraph key I’d say about 8” high by 10” wide by 8” deep. The reels look to be about an inch or so wide, and maybe three inches in diameter. I assume that winding the crank must have both A) turned the reels and B) generated the electricity to record and play back the signal.] [February, 1932] “The HAND That Encircles The WORLD” [Drawing of hand on telegraph key] “There’s ROMANCE IN TELEGRAPHY “The man who knows the code is in touch with the world. Become an expert operator, make big money. LEARN IN

YOUR OWN HOME, easily, quickly with the TELEPLEX, the Master Teacher.

“Entirely new code course in 12 rolls of tape. During the last ten years, TELEPLEX has trained more operators than all other methods combined.

“Write for folder Q-2 “Teleplex Co. “76 Cortland Street. New York” [Same drawing of Teleplex as above] [February, 1933] “New Way to Learn the Code At Home “Make Your Own Records “Easy to Make and Easy to Read with The NEW MASTER Teleplex [Photo shows innards of Teleplex; just a bunch of levers that don’t tell me much.] “The only instrument ever produced that will record your own sending in visible dots and dashes and then repeat it to you audibly on headphones. Revolutionizes the teaching of code, makes learning easy, fascinating and rapid. No experience required. Designed for U. S. Signal Corps. Marvelous say radio and electrical engineers. Loaned with Complete Code Course without additional cost. Write today for folder Q-14 giving full details.

“Teleplex Co. “76 Cortland Street, New York City” [Notice how the ad copy calls it “New,” while the 1932 ad says it’s been in use for “the last ten years.” Also note that it is “loaned” rather than sold, probably because once you learned code, you wouldn’t need it anymore.]

Source: QST Magazine (Devoted Entirely to Amateur Radio), 1930 to 1933, Advertisements

BI SHENG'S CLAY PRINTING PRESS

From Bruce Sterling

"In the Song Dynasty, there lived in an area where block printing was in its prime a commoner by the name of Bi Sheng who for years engaged in block printing and introduced the world's first block-letter printing. Dispensing with the traditional process of plate engraving and so reducing the time required to print a book, the new method was economical as well as convenient. Revolutionizing the printing press and having far-reaching impact, Bi Sheng's invention is essentially the same as the contemporary block-letter printing with lead type as still widely used in today's world.

"Bi Sheng's feat is described in Meng Xi Bi Tan (Dream Stream Essays) by Shen Kuo, an eminent scientist of the Song Dynasty. In the years 1041-48, according to Shen Kuo, Bi Sheng started making clay types, one for each character. These were fired for hardness.

For typesetting a square sheet of iron was prepared with a layer of resin, wax and paper ashes mixed and spread on it. The mixture was circumscribed with an iron frame. A plate was complete when the frame was full. This was heated over a fire until the mixture melted. The types meanwhile were pressed down to the height of the frame with a wooden board and the plate was ready for printing.

For higher efficiency two iron sheets were used, one for fresh typesetting and the other for printing, so that a new

plate was ready before the specified number of copies had been made from the previous one. Several duplicate types were made for each character, the number depending on the frequency of its use. As for rarely used characters, they were carved and fired when necessary and used on the spot. Bi Sheng's method had great merit, with its notable speed, when hundreds or thousands of copies were made.

"In the reign of the Emperor Dao Guang (1821-1850) of the Qing Dynasty there lived in Jingxian County, Anhuin Province a schoolmaster named Zhai Jinsheng who made over 100,000 clay types after reading Dream Stream Essays. The work took him many years. With these clay types he printed Ni Ban Shi Yin Chu Bian (Initial Notes on Printing with Clay Types) and other books. Additional books printed later by the same method have been located in Beijing Library in recent years, demonstrating the accuracy of the records in Dream Stream Essays concerning Bi Sheng's clay-type printing."

Source: ANCIENT CHINA'S TECHNOLOGY AND SCIENCE, Compiled by the Institute of the History of Natural Sciences, Chinese Academy of Sciences. First Edition 1983. Published by the Foreign Languages Press, 24 Baiwanzhuang Road, Beijing, China. ISBN 0-8351-1001-X.

THE ASTROLABE; CTESIBIUS'S CLEPSYDRA ORRERY

From Richard Kadrey

"Astrolabe History "Origins of Astrolabe Theory "The origins of the astrolabe were in classical Greece. Apollonius (ca. 225 BC), the great codifier of conic sections, probably studied the astrolabe projection.

"The most influential individual on the theory of the astrolabe projection was Hipparchus who was born in Nicaea in Asia Minor (now Iznik in Turkey) about 180 BC, but studied and worked on the island of Rhodes. Hipparchus did not invent the astrolabe but he did refine the projection theory. :The earliest evidence of use of the stereographic projection in a machine is in the writing of the Roman author and architect, Vitruvius (ca. 88 - ca. 26 BC), who in De architectura describes a clock (probably a clepsydra or water clock) made by Ctesibius in Alexandria. Apparently, Ctesibius' clock had a rotating field of stars behind a wire frame indicating the hours of the day.

"The wire framework (the spider) was possibly constructed using the stereographic projection with the eye point at the north celestial pole. Similar constructions dated from the first to third century and have been found in Salzburg and northeastern France, so such mechanisms were apparently fairly widespread among Romans.

"The first major writer on the projection was the famous Claudius Ptolemy (ca. AD 150) who wrote extensively on

it in his work known as the Planisphaerium. There are tantalizing hints in Ptolemy's writing that he may have had an instrument that could justifiably be called an astrolabe. Ptolemy also refined the fundamental geometry of the Earth-Sun system that is used to design astrolabes.

"Early Astrolabes "No one knows exactly when the stereographic projection was actually turned into the instrument we know today as the astrolabe. Theon of Alexandria (ca. 390) wrote a treatise on the astrolabe that was the basis for much that was written on the subject in the Middle Ages.

"Synesius of Cyrene (378-430) apparently had an instrument constructed that was arguably a form of astrolabe. This is plausible since Synesius was a student of Hypatia, Theon's daughter. The earliest descriptions of actual instruments were written by John Philoponos of Alexandria (a.k.a. Joannes Grammaticus) in the sixth century and a century later by Severus Sebokht, Bishop of Kenneserin, Syria, although it is likely that Sebokht's work was derivative of Theon. It is certain that true astrolabes existed by the seventh century."

Source: astrolabes.org [kadrey remarks: This page was constructed and written by James E. Morrison, who teaches an Introduction to Astronomy course at Montgomery College at Tokoma Park in Connecticut. If you're really interested in astrolabes, he sells cool, working models through the site.]

THE ASTROLABE IN ISLAM

From Richard Kadrey

"The Astrolabe in Islam "The astrolabe was introduced to the Islamic world (Istanbul Observatory) in the eighth and ninth centuries through translations of Greek texts. The astrolabe was fully developed during the early centuries of Islam. Arab treatises on the astrolabe were published in the ninth century and indicate a long familiarity with the instrument (the oldest existing instruments are Arabic from the tenth century, and there are nearly 40 instruments from the 11^{th} and 12^{th} centuries).

"The astrolabe was inherently valuable in Islam because of its ability to determine the time of day and, therefore, prayer times and as an aid in finding the direction to Mecca. It must also be noted that astrology was a deeply imbedded element of early Islamic culture and that astrology was one of the principle uses of the astrolabe. .

"Persian astrolabes became quite complex, and some were genuine works of art. There are a number of interesting stylistic differences between astrolabes from the eastern Islamic areas (the Mashriq), Northern Africa (the Maghrib) and Moorish Spain (Andalusia). The astrolabe was also used in Moslem India in a simplified and less artistic form."

Source: astrolabes.org [kadrey remarks: This page was constructed and written by James E. Morrison, who teaches an Introduction to Astronomy course at Montgomery College at Tokoma Park in Connecticut. If you're really interested in astrolabes, he sells cool, working models through the site.]

THE ASTROLABE IN EUROPE

From Richard Kadrey

“The Astrolabe in Europe “The astrolabe moved with Islam through North Africa into Spain (Andalusia) where it was introduced to European culture through Christian monasteries in northern Spain.

“It is likely that information about the astrolabe was available in Europe as early as the 11th century, but European usage was not widespread until the 13th and 14th centuries. The earliest astrolabes used in Europe were imported from Moslem Spain with Latin words engraved alongside the original Arabic. It is likely that European use of Arabic star names was influenced by these imported astrolabes.

“By the end of the 12th century there were at least a half dozen competent astrolabe treatises in Latin, and there were hundreds available only a century later. European makers extended the plate engravings to include astrological information and adapted the various timekeeping variations used in that era. Features related to Islamic ritual prayers were generally discarded in European instruments.

“The astrolabe was widely used in Europe in the late Middle Ages and Renaissance, peaking in popularity in the 15th and 16th centuries, and was one of the basic astronomical education tools. A knowledge of astronomy was considered to be fundamental in education, and skill in the use of the astrolabe was a sign of proper breeding

and education. Their primary use was, however, astrological.

“Geoffrey Chaucer thought it was important for his son to understand how to use an astrolabe, and his 1391 treatise on the astrolabe demonstrates a high level of astronomical knowledge.

“Astrolabe manufacturing was centered in Augsburg and Nuremberg in Germany in the fifteenth century, with some production in France. In the sixteenth century, the best instruments came from Louvain in Belgium.

“By the middle of the seventeenth century astrolabes were made all over Europe. A particularly interesting workshop was founded by Georg Hartmann in Nuremberg in about 1525. It is clear that Hartmann used an early form of mass production to produce his high quality instruments. It is very likely that most workshops acquired parts of finished instruments from specialists, or other shops were employed for services such as gilding.

“Brass astrolabes were quite expensive, and only the wealthy could afford a good one. Paper astrolabes became available as printing developed, and many were surely made, although few survive.

“Several interesting astrolabe variations to make a single instrument usable in all latitudes were invented in the 15th and 16th centuries, but due to their high cost and complex operation, never gained the popularity of the planispheric type.”

Source: astrolabes.org [kadrey remarks: This page was constructed and written by James E. Morrison, who teaches an Introduction to Astronomy

course at Montgomery College at Tokoma Park in Connecticut. If you're really interested in astrolabes, he sells cool, working models through the site.]

CHAUCER'S ASTROLABE MANUAL

From Richard Kadrey

[Bruce Sterling remarks: It's a pleasure to welcome noted poet and diplomat Geoffrey Chaucer (appr. 1340-1400) back to the Dead Media Project. The following contains selected highlights from Chaucer's treatise on the astrolabe, originally some 14,811 Middle-English words. This document is said to be the earliest known "technical manual" in the English language. It was originally written for a child of ten, "lyte Lowes" or 'little Lewis,' who is thought to have been the son of a friend of Chaucer's. Sadly, the boy succumbed to the high child- mortality rates of the plague-ridden 14th century, and Chaucer's tech manual was never completed. Personally, I find this document well-nigh unreadable. Keep in mind, however, that this is probably a "Big Dummies' Guide to the Astrolabe," since it was once considered proper reading for a child of ten. This may be as close as we can get to imagining what a Windows 95 software manual might look like to people six hundred years from today]

A TREATISE ON THE ASTROLABE
by Geoffrey Chaucer, appr. 1391
"Lyte Lowys my sone, I aperceyve wel by certeyne evydences thyn abilite to lerne sciences touching nombres and proporciouns; and as wel considre I thy besy praier in special to lerne the tretys of the Astrelabie. by mediacioun of this litel tretys, I purpose to teche the a certein nombre of conclusions aperteynyng to the same instrument.

“I seie a certein of conclusions, for thre causes. The first cause is this: truste wel that alle the conclusions that han be founde, or ellys possibly might be founde in so noble an instrument as is an Astrelabie ben unknowe parfitly to eny mortal man in this regioun, as I suppose. An-other cause is this, that sothly in any tretis of the Astrelabie that I have seyn there be somme conclusions that wol not in alle thinges parformen her bihestes; and somme of hem ben to harde to thy tendir age of ten yeer to conceyve.

“This tretis, divided in 5 parties, wol I shewe the under full light reules and naked wordes in Englissh, for Latyn ne canst thou yit but small, my litel sone. “Now wol I preie mekely every discret persone that redith or herith this litel tretys to have my rude endityng for excusid, and my superfluite of wordes, for two causes. The first cause is for that curious endityng and hard sentence is ful hevy at onys for such a child to lerne. And the secunde cause is this, that sothly me semith better to writen unto a child twyes a god sentence, than he forgete it onys.

“And Lowys, yf so be that I shewe the in my light Englissh as trewe conclusions touching this mater, and not oonly as trewe but as many and as subtile conclusiouns, as ben shewid in Latyn in eny commune tretys of the Astrelabie, konne me the more thank. And preie God save the king, that is lord of this langage, and alle that him feith berith and obeieth, everich in his degre, the more and the lasse. But considre wel that I ne usurpe not to have founden this werk of my labour or of myn engyn. I n’am but a lewd compilator of the labour of olde astrologiens, and have it translatid in myn Englissh oonly for thy doctrine. And

with this swerd shal I sleen envie. “PART I “Here begynneth the descripcioun of thin Astralabie.

“1. Thyn Astrolabie hath a ring to putten on the thombe of thi right hond in taking the height of thinges. And tak kep, for from henes forthward I wol clepen the heighte of any thing that is taken by the rewle “the altitude,” withoute moo wordes.

“2. This ryng renneth in a maner toret fast to the moder of thyn Astrelabie in so rowm a space that it distourbith not the instrument to hangen after his right centre.

“3. The moder of thin Astrelabye is thikkest plate, perced with a large hool, that resceiveth in hir wombe the thynne plates compowned for diverse clymates, and thy reet shapen in manere of a nett or of a webbe of a loppe.”. “6. Tlle est syde of thyn Astrolabie is clepid the right syde, and the west syde is clepid the left syde. Forget not thys, litel Lowys.”. PART II “1. To fynde the degre in which the sonne is day byday, after his cours aboute.

“Rekne and knowe which is the day of thy month, and ley thy rewle up that same day, and than wol the verrey poynt of thy rewle sitten in the bordure upon the degre of thy sonne.

“Ensample as thus: -The yeer of oure Lord 1391, the 12 day of March at midday, I wolde knowe the degre of the sonne. I soughte in the bakhalf of myn Astrelabie and fond the cercle of the daies, lo the whiche I knowe by the names of the monthes writen under the same cercle. Tho leyde I my reule over this forseide day, and fond the point of my reule in the bordure upon the firste degre of Aries, a

litel within the degre. And thus knowe I this conclusioun.”.

VISIDEP 3-D TELEVISION

From Stefan Jones

“3-D TV is here
“Scientists generally believe that our ability to perceive depth is the result of our binocular vision. Now, challenging this concept, three University of Southern Carolina scientists have developed a technique that makes 3-D television, movies and slides a reality for everyone, even those with poor vision or vision in only one eye.

“No special glasses, cameras, projectors or television sets are needed. And unlike traditional 3-D, the Visual Image Depth Enhancement Process (VISIDEP) produces images which have realistic depth and fullness, rather than exaggerated images which seem to leap outward.

“Drs. Edwin Jones, LeConte Cathey and Porter McLaurin, experts in optics, electronics and media production, respectively, developed their novel approach by observing how a visually impaired person perceives depth. ‘We discovered that a one-eyed person perceives depth by moving his head and comparing a sequence of visual ‘frames’ from different angles,’ Dr. Cathey told PM. This concept was once considered impossible by physiologists.

“VISIDEP simulates the optics of a one-eyed person by using conventional video equipment, plus a special encoding device which produces a time-sequence display of images captured from two different points of view on a

single channel.

[The “shuttered glasses” 3-D technique also uses alternating frames; the shutters alternately black out the right and left lenses, limiting vision in a particular eye to the appropriate frames. VISIDEP seems to rely on the human eye’s ability to fuse rapidly presented images. although how this produces a 3-D effect is not explained.]

“Variations on the technique allow the South Carolina team to create 3-D images from slides, motion pictures, and computers. [The article at this point includes a photographic stereo pair depicting the three researchers. The caption implies (“You can simulate the new 3-D effect.”) that it is produced by the VISIDEP effect, but it seems to simply be a high-quality stereo pair.]

[Description of the “red - green” 3-D technique, and its drawbacks, deleted.] “VISIDEP has none of these restrictions. Once encoded, the image may be reproduced by any single conventional video camera [sic], movie, or slide projector. [I believe the author meant to write ‘video monitor.’] The depth moves into the screen rather than out toward the audience, making the image more lifelike.

“Since VISIDEP can be applied to images generated by virtually any means, including X-rays, sonar, infrared or visible light, as well as from fiber optics, potential applications range from undersea and satellite transmission [?!!? -- SEJ] to medical and computer sciences.

“Once particularly exciting application involves VISIDEP’s

ability to produce three-dimensional computer- aided design and manufacturing [sic]. With VISIDEP it's possible to display these images in three dimensions.

"For nontechnical applications, the most immediate use of VISIDEP probably will be for televising commercials and sports events.

"VISIDEP may also have an effect on some long- standing theories of perception.

"As Jones stresses, 'Our development will force people to take another look at standard theories of how people perceive depth, and, thus, how all of us learn.'" [Whither VISIDEP? Like the dinosaurs, or the strange critters of the Cambrian epoch, the system may have failed to catch on through no fault of its own. Lost research grants, patent problems, a lack of investors, or inept marketing could have scuttled the system at any of the stages necessary to make a clever idea into a product. Of course, the system may have simply failed to impress, or even worse, caused headaches and eye strain, like so many other 3-D systems.]

Source POPULAR MECHANICS Technology Update, March 1983, Page 129

COINS AS MEDIA

From Joel Altman

"Coins have been a major force in helping to advance civilization.. In ancient times, they spread the news of major construction projects, changes in political leadership, and other important events. They have served as mini-newspapers, objects of art, and even sources of propaganda." Commemorative coins informed the world of significant events, accessions, or conquests. Ancient rulers, like today's, wanted to be in the news much as possible, so they put their names and images on their coinage. The person who first decided to put news on coinage was a genius of the first water, for he solved the problems of news creation, distribution, and archiving in one fell swoop.

Source Coins as Living History by Ted Schwarz ARCO Publishing Co., New York, 1976.

INTERACTIVE CABLE TELEVISION: CABLESHOP

From Stefan Jones

“While major cable TV interests are entering what experts believe is a shakeout period, small-scale experiments in ‘interactive’ cable are demonstrating what the future may bring.

“In Peabody, Mass., a collaboration between the local cable distributor and J. Walter Thompson, the large advertising agency, has produced something called Cableshop. From a ‘menu channel,’ subscribers select from a number of short subjects of special interest. Almost all of them are supplied or underwritten by companies with related products. For instance, food companies might support recipe shows or Kodak might sponsor a picture- taking clinic.

“The subscriber dials an access number, identifies himself to the Cableshop computer with his individual code, and dials the number of the presentation he wants to see. Then, a message guide channel indicates the time his message is scheduled and the channel on which it can be seen. If a program is already scheduled to do another request, that information is relayed as well.

“According to Peabody lore, a man waiting for his wife to finish dressing for dinner dialed up a Ford Escort film recently and was so impressed that he went out and bought one.” [I pity this man’s wife come the advent of the Home Shopping Channel.] “Meanwhile, in the high-

income community of Ridgewood, N.J., an interactive test will supply 500 families with free computer keyboards.”

Source: POPULAR MECHANICS January 1983 Technology Update column

A PERSONAL RECOLLECTION OF VISIDEP 3-D TELEVISION

From Rick Gregory

I knew Porter McLaurin very well while the troika were developing VisiDep. He was chairman of the Media Arts Department at USC (University of South Carolina) and my graduate advisor when I was a grad student there. I crewed on several VisiDep shoots. I was kind of surprised when Popular Mechanics picked up the news release in 1983 and repeated it almost verbatim. McLaurin, Cathey and Jones always saw more in VisiDep than anyone else. What I saw was an unstable, switched video image that was more disorienting than anything else. The video rig used to shoot it looked like a deformed moose with two cameras on a jerry rigged quadra pod. I thought then, and still believe, that the PM reporter had to make a deadline and never came close to actually seeing the VisiDep reality. He jazzed up a university Public Information Department news release and never looked at the technology. Kinda makes me wonder how much we can trust some other reports of technology from the popular/scientific media.

Source: Personal Experience

ANSCHUTZ'S ARCADE PEEPSHOW

From Stephen Herbert

The full role of Ottomar Anschutz in the story of the first moving pictures is not well known. In 1892, two years before Edison's peepshow Kinetoscope was first shown in public, Ottomar Anschutz' acclaimed moving photographs were being exhibited in arcade machines, the 'Electrical Wonder', in Europe and America.

By 1894 his 'Projecting Electrotachyscope' was projecting moving sequences of animals and human figures, very brief but of fine quality, onto large screens in Germany; the world's first publicly projected photographic (unposed) motion pictures.

Anschutz was a well-known photographer who specialized in fast exposures, taken with a shutter of his own design. By 1883 his ability to capture natural movement was being compared favourably with the work of Muybridge and Marey, but at that time he was taking individual photographs.

By late 1884 he was shooting chronophotographs of the finest quality with a battery of twelve cameras; taking twelve photos in half a second.

By 1886 his equipment consisted of a battery of 24 cameras with electrically linked shutters operated by an electrical metronome. Subjects included horses trotting, galloping, and jumping.

His viewing machines, all of the seven or eight models bearing the name Schnellseher, were developed from

1886. The first had a wooden disc with 20 or 24 glass positives fixed onto it; a Geissler tube fashioned into a spiral form (and powered by a Ruhmhorff induction coil fed from batteries) was the light source. This flashed briefly as each picture passed the viewing aperture. A later model was a coin-operated automatic machine made in Germany by Siemens & Halske, and exhibited publicly in 1892/3 in London, and at Koster & Bial's Music Hall and the Eden Musee in New York City. Celluloid transparencies were set into metal discs. The number of images varied, depending on the nature of the subject.

In November 1894, a Projecting Electrotachyscope ('Life-Sized Moving Pictures') was exhibited in Berlin, and later in Hamburg. This consisted of two large picture discs, each holding twelve images, and moved intermittently by a twelve-arm maltese cross. Anschutz also developed a number of interesting zoetropes (Tachyscopes) that made use of his sequence pictures.

Source: 'Ottomar Anschutz and his Electrical Wonder', by Deac Rossell (The Projection Box, 1997)

THE DEATH OF NAVAL MORSE CODE

From Bill Burns

“After 130 years, the Royal Navy is turning out the lights on visual Morse code. Masthead signalling lanterns, used by warships to communicate with each other through some of the most famous naval battles in history, have been declared redundant by Admiralty chiefs in an era of secure communications. Recruits will no longer be trained to operate the Morse buttons by which messages could be flashed to other ships, and the lights themselves will be gradually decommissioned.

“The idea of flashing dots and dashes from a lantern was first put in to practice by Captain, later Vice Admiral, Philip Colomb in 1867. His original code, which the Navy used for seven years, was not identical with Morse, but Morse was eventually adopted with the addition of several special signals. Flashing lights were the second generation of signalling in the Royal Navy, after the flag signals most famously used to spread Nelson’s rallying-cry before the Battle of Trafalgar. Ships will still retain Aldis lamps either side of the bridge, however, but signalling with these is complicated, involving transmitting signals in relays.

Paul Elmer, of Naval Support Command, said: ‘Morse is just not used operationally any more. We have got much better, cleverer and more sexy stuff.’ “The move, announced in a Defence Council Instruction, recognises that the lights have not been widely used at sea ‘for some considerable time.’

But a combination of inertia and respect for tradition means that nearly all large Naval ships are still equipped with them. Mr Elmer said: 'Their heyday was the two world wars when they were used a lot for close convoy work. They were quite small and you could flash to other ships in the group without the enemy seeing.'

"The lamps, which were omni-directional, were used to give commands to every ship in the group at once. The lamps' advantage, and one of the reasons why they have survived so long, was that, unlike radio communications, they could not be intercepted by enemy vessels. 'They were at their best during radio silence. You had to be quite close to see them,' said Mr Elmer.

"Now, however, the Navy has several secure communications systems that can send vast quantities of information between ships without risk of interception, and at infinitely higher speed than a man flicking a light on and off in dots and dashes. New-generation warships are increasingly equipped with computers that continuously share information with others nearby, and with shore bases, along invisible data highways."

Source: Daily Telegraph

ARTIFICIAL CHURCH BELLS

From Trevor Blake

The Schulmerich Magnabell is just a BIG tape player. But its purpose was to serve as an electric carillon and play bells in church. Use of tower bells as medium of communication has been relegated to a largely ceremonial role, and here, the ceremony is moved one step further from its source by no actual bells being present, only tape recordings of bells. While tape players are living media, I believe the Magnabell qualifies as dead media because of its function and history.

The mechanical bells brought to Europe from China in the 12th Century inspired miniature versions of the same, including music boxes and musical clocks. These clockwork devices, often programmed by card or disc, led to mechanical looms, leading to the first gear and card calculation devices, leading to a need for calculation that gave rise to the modern computer.

The Schulmerich Magnabell Instrument was produced by Schulmerich Carillons, Inc. of Carillon Hills, Selleresville PA, some time in the 1960s. The model I saw was bought at government auction and the following is based on observation, not documentation.

The Magnabell is a large brown metal box approx. 5’ 7” with three locking windows. Behind the windows are the controls for the Magnabell. The upper window houses the programming instruments; on the left, a day/time/program dial. On the right are master on/off

and routing switches. The center window houses the tapes and play/pause/stop controls. The lower window houses a phonograph with the speeds 16, 33 and 45.

The Magnabell has internal speakers as well as line outs. The model I saw has two cartridges, one of Christmas music and one of general bell music. The upper left dial controls which of six programs are played and when. Switches on the upper right control the volume for the internal speakers and line outs, as well as an on/off switch for “TOWER.” The cart player has four automatic and one manual setting, a pause switch and curious play / release lever.

The phonograph has an on button and an off button, each acting independent of the other, and a “PHONO” light. I was given the chance to turn it on and play a cartridge by the current owner, Habromania in Portland, OR. It took about 5 seconds to get up to speed, but once playing, it sounded just fine. This object was built to last and was well cared for.

Source: personal experience

EXCHEQUER TALLIES

From George Dyson

[George Dyson remarks: Some media are dead, as in dead-end, while others represent extinct ancestors of species thriving as vigorously as ever today. Exchequer tallies fall into the latter category; the recent proliferation of digital currency and public-key cryptography having brought the principle of the tally-stick back to life. The disappearance of the Exchequer tally is also of interest, rarely has the decision to put an end to an archaic medium back-fired as spectacularly as when the bonfire intended to extinguish the remaining Exchequer tallies engulfed the British Parliament buildings instead.

In 1682, in the brief but precise Quantulumcunque Concerning Money, Sir William Petty posed the question: "What remedy is there if we have too little Money?"

His answer, amplified by the founding of the Bank of England in 1694, would resonate throughout the world: "We must erect a Bank, which well computed; doth almost double the Effect of our coined Money: And we have in England Materials for a Bank which shall furnish Stock enough to drive the Trade of the whole Commercial World."

Petty showed that wealth is a function not only of how much money is accumulated, but of the velocity with which the money is moved around. This led to the realization that money, like information but unlike material objects, can, by assuming different forms, be

made to exist in more than one place at a single time.

An early embodiment of this principle, preceding the Bank of England by more than five hundred years, was the ancient institution known as ‘tallies’, notched wooden sticks issued as receipts for money deposited with the Exchequer for the use of the king.

“As a financial instrument and evidence it was at once adaptable, light in weight and small in size, easy to understand and practically incapable of fraud,” wrote Hilary Jenkinson in 1911.

“By the middle of the twelfth century, there was a well-organized and well-understood system of tally cutting at the Exchequer. . . and the conventions remained unaltered and in continuous use from that time down to the nineteenth century.”

A precise description was given in 1850 by Alfred Smee [a remarkable, and remarkably-neglected, artificial intelligence and neural network pioneer]. As resident surgeon to the Bank of England and the son of the accountant general, Smee was able to state with authority concerning some tallies preserved as relics that “curiously enough, I have ascertained that no gentleman in the Bank of England recollects the mode of reading them.”

“The tally-sticks were made of hazel, willow, or alder wood, differing in length according to the sum required to be expressed upon them,” reported Smee.

“They were roughly squared, and one end was pointed;

and on two sides of that extremity, the proper notches, showing the sum for which the tally was a receipt, were cut across the wood. All these operations were performed by the officer called ‘the maker of the tallies.’ “On the other two sides of the instrument were written, also in duplicate, the name of the party paying the money, the account for which it was paid, the part of the United Kingdom to which it referred, and the date of payment; recorded with ink upon the wood, by an officer called ‘the writer of the tallies.’

“When the tally was complete, the stick was cleft lengthwise by the maker of the tallies, nearly throughout the whole extent, in such a manner that both pieces retained a copy of the inscription, and one half of every notch cut at the pointed end.

“One piece was then given to the party who had paid the money, for which it was a sufficient discharge; and the other was preserved in the Exchequer. Rude and simple as was this very ancient method of keeping accounts, it appears to have been completely effectual in preventing both fraud and forgery for a space of seven hundred years. No two sticks could be found so exactly similar, as to admit of being identically matched with each other, when split in the coarse manner of cutting tallies; and certainly no alteration of the particulars expressed by the notches and inscription could remain undiscovered when the two parts were again brought together.

“And, as if it had been further to prove the superiority of these instruments over writing, two attempts at forgery

were reported to have been made on the Exchequer, soon after the disuse of the ancient wooden tallies in 1834." [3] Exchequer tallies were ordered replaced in 1782 by an "indented cheque receipt," but the Act of Parliament (23 Geo. 3, c. 82) thereby abolishing "several useless, expensive and unnecessary offices" was to take effect only on the death of the incumbent who, being "vigorous," continued to cut tallies until 1826.

"After the further statute of 4 and 5 William IV the destruction of the official collection of old tallies was ordered," noted Hilary Jenkinson.

"The imprudent zeal with which this order was carried out caused the fire which destroyed the Houses of Parliament in 1834." [4] The notches were of various sizes and shapes corresponding to the tallied amount: a 1.5-inch notch for 1000 pounds, a 1-inch notch for 100 pounds, a half-inch notch for 20 pounds, with smaller notches indicating pounds, shillings, and pence, down to a halfpenny, indicated by a pierced dot.

"The code was similar to the notches still used to identify the emulsion speed of sheets of photographic film in the dark. The self-authentication achieved by distributing the message across two halves of a uniquely- split piece of wood is analogous to the way large numbers, uniquely split into two prime factors, are used to authenticate digital financial instruments today.

Source: (Addison-Wesley, 1997) pages 162-163 Quantulumcunque Concerning Money by Sir William Petty (London: A. and J. Churchill, 1695), page 165. "Exchequer Tallies," by Hilary C. Jenkinson Archaeologia, second series, vol. 12 (1911) page 368. Instinct and Reason: Deduced from Electro-

biology by Alfred Smee (London: Reeve, Benham and Reeve, 1850), pp. xxix-xxxii

AFTERLIFE OF THE EDISON ELECTRIC PEN

From Stefan Jones

“It was a time when the modern form first flourished, in the city where mechanized tattooing was invented, by a Bowery tinkerer named Samuel O’Reilly, who modified Edison’s electric engraving pen in the 1890’s to make the first tattoo machine.” [Bruce Sterling remarks: Edison’s electric pen was not an :”engraving pen.” It used a darting needle to repeatedly puncture a sheet of stiff paper, which was then used as a stencil template for inking multiple copies of the document. The Electric Pen was patented in 1875, so it took some twenty years to discover this pen’s useful ability to repeatedly pierce human skin.]

Source: New York Times, July 27, 1997, page 31 article Cappucino With Your Tattoo? Try That on a Sailor by Randy Kennedy

POSTER STAMPS

From Trevor Blake

“A new format in graphics and advertising caught the eye of the world at the turn of the century. Miniscule in size, universal in appeal, and blazing with all the varied colors of the rainbow, this was the poster stamp, an esoteric rarity among collectibles. As the name suggests, it is a poster in stamp form. Always gummed and a little larger than the regular postage variety, these stamps normally were printed up in perforated sheets so they could easily be torn apart and stuck to invoices, envelopes, and correspondence, or simply collected as sheets into albums. In the name of art, commerce, and even propaganda, the poster stamp presented diminutively all that the largest billboard displayed, accomplishing everything that is required of an efficient poster. Although not issued for revenue, this ‘currency of commerce’ presented immense opportunities both for the vision of the graphic artist and the keen businessman.

“Germany created poster stamps or ‘REKLAME MARKEN’ (literally ‘advertising stamps’) around 1907, just as that country had previously pioneered the fancy post card. Munich, Nuremberg, and Cologne all claimed the honor of having originated this new medium. Its sole reason for existence was to advertise and promote a product or event. Up until that time, the only stamps produced were revenue or postage, and those usually were intricate, single-color etchings or line engravings. Exhibition seals issued in the late 1800s were considered the forerunners

of the colorful poster stamp, as were the earlier chromolithographic trade cards. The new poster stamp, with its vivid splash of brilliant colors, was a bold contrast to the drab black-and-white graphic landscape that was permissible at the time among most distinguished lines of business."

"The year 1915 seems to have been a high-water mark for the hobby. Poster stamps were displayed at a merchandise show in Madison Square Garden, and THE POSTER STAMP BULLETIN was published in Yonkers, New York, for a growing number of enthusiasts in that area. The Society of Modern Art, catering mainly to the graphic artist, printed THE POSTER STAMP ART SUPPLEMENT, which contained many examples of art posters in stamp form. The market was flooded with millions of flakes of brightly hued paper as clubs and societies formed to collect and preserve the humble poster stamp.

"The poster stamp made possible the novel use of brilliant color in advertising to attract the stoic eye. Every known process was employed in producing them, lithography, three- and four-color process, zinc and copper-plate etching, steel engraving, and photogravure. While European varieties from the Belle Epoque and the Secessionists eras were even embossed, lithography and the printing of broad, flat areas of color were responsible for the most striking graphic examples.

"Increasing business through advertising simplicity was the main intent of poster stamps, but they also brought

high art to the masses on a level that could never have been achieved otherwise. Poster stamps were the common man's art gallery. Adults as well as children were charmed by the stamps from the very beginning, collecting and pasting them into books specially made for that purpose. It was possible for the layman, with a minimum amount of effort and practically no expense, to accumulate a much finer collection of posters than he could buy in any larger format. They were widely considered handsome works of art even then and truly worthy of being sought after for permanent possession." [.] page 16 "As national subscription magazines entered homes throughout America and elsewhere in the 1920s and '30s, business sought a larger piece of the advertising pie. Effective advertising meant reaching the largest possible market. Although poster stamps had made incredible inroads, it began to be felt that the advertising dollars were better spent on full-page, full-color ads in high- circulation publications that offered plenty of room for information copy rather than on the minimalist, small-scale poster stamps. Even though there were exposition stamps and seals for the various world fairs and events of the 1930s, as well as propaganda stamps issued in the early 1940s to boost patriotism at the beginning of World War II, the days of poster stamps were clearly numbered.

[Trevor Blake remarks: LICK 'EM, STICK 'EM is full of reproductions of poster stamps and even includes a sheet of sixteen poster stamps for the book and the publisher. The book includes chapters on poster stamp themes such as transportation, world's fairs, fashion, advertising and

political propaganda. Poster stamps were an engaging medium: imagine all the beauty and power of turn-of-the-century poster art done for those tiny ads in the back of old comic books. While poster stamps were yet another medium that in its day everyone took for granted, the only large-scale living descendants of poster stamps in the United States are Easter Seals.]

Source: LICK ‘EM, STICK ‘EM / THE LOST ART OF POSTER STAMPS by H. Thomas Steele. New York: Abbeville Press 1989

THE REGINA MUSIC BOX

From Stefan Jones

The 1897 Sears catalogue contained many pages offering musical instruments, sheet music, accessories and lesson books.

“Do it yourself” seemed to be the way to go back then. However, automation was making some inroads even in 1897. Besides a single phonograph (actually, a “graphophone”) and a few dozen cylinders, Sears offered music boxes. Page 524 depicts seventeen music boxes, ranging from a tiny cylinder a few inches across to “roller organs” which played paper music rolls. The catalog offers to send lists of available rolls where appropriate, but does not provide even a sample of the selections. On Page 523 is a music box of another order: The Regina.

“The Queen of Automatic Musical Instruments. The first of the kind ever manufactured in America, and it surpasses anything of similar nature manufactured by anyone anywhere. The mechanism of these music boxes is entirely different from any other. Interchangeable music sheets are used instead of the round cylinder found in the old style music box. In the case of the latter, only one to a dozen tunes could be played without the great expense of an extra cylinder. [Reality check: Extra music rolls for the “roller organs” on the next page cost 23 cents.] “With the Regina, however, the expense of extra tune sheets is only about that of ordinary piano and organ music and they can be obtained in any quantity. The latest airs on the market can be secured almost simultaneously with their

publication in paper form. This one fact is sufficient to render the Regina the most popular instruments of the kind on the market.

“The motive force in the Regina consists of an extremely solid, and yet in its unique combination, an extremely simple clockwork. One valuable feature of this clockwork lies in the fact that all the parts are interchangeable and we are able to supply duplicates of any part they may be broken by accident or otherwise.” [”Otherwise”? Did the Regina’s melodies inspire thoughts of sabotage in some users?]. “The Regina is the only music box having duplex combs. The two combs face each other; the steel tongues are tuned and actuated in pairs, by corresponding star-wheels. An extraordinary volume and sweetness of tone is the result, and makes it possible to have as many as 156 keys in a small space, a range far exceeding that of the piano.”

[The above will be clearer if you’ve ever dissected a music box. Each flat tongue of the metal comb corresponds to a different note. In traditional boxes, the comb lightly brushes the surface of a cylinder studded with small metal posts; as the cylinder turns the posts “twang” the tongues, causing the note to play.].

“The list of tunes increases every day, and is already large and varied enough to meet the taste of every purchaser. The metallic tune sheets are easily interchanged, thus making it possible for each individual box to play an unlimited variety of airs. The sale of these tune-sheets at a very reasonable price will continue for years after the

boxes are sold. A guide for operating, oiling and repairing the Regina music box goes free with each instrument."

[The ad copy anticipates fears that the boxes and sheets will go out of production. Were people aware of media obsolescence even then?]

Three different Regina music boxes are described next. Surprise: they look astonishingly like a disc record player. They consist of a wooden box with a hinged lid. The disc is mounted on a spindle, and a drive rod snapped on top. The rod, which runs from the spindle to the perimeter, has three or four small wheels. The tune 'sheets' are actually discs. They are depicted as white in color, with a printed (?) logo and graphic flourishes, and what appear to be hundreds of small slots. Are these simple punch holes, or does a tongue of metal protrude from the lower surface?

One of the machines is shown without a disc. Underneath the drive arm is a small rectangular platform that has what look like eight small buttons. or are they bolts? What might be a cylinder is mounted directly under the drive rod as well. The exact method by which the notes are struck is not apparent. [What might be the metal tone-comb is visible underneath this mechanism. The tongues run the full width (21") of the case.

The three Reginas each use differently sized tune sheets, and have 41, 56 and 156 tongues respectively. Most have a clockwork drive; a cheap ($8.70) variant of the first model is hand cranked. Here is the description of the largest Regina:

“No. 7305. Regina music box. Case is made either of mahogany, maple or oak beautifully polished. Size is 21 inches long, 18 ½ inches wide by 9 ½ inches high. Working part contains 156 tongues, while the tune sheets are 15 ½” in diameter, rendering possible the rendition of the most difficult and classical music with perfect precision and charming execution. With this magnificent instrument, you can have rendered in your home, such music as the most brilliant pianist is capable of and that without the slightest musical talent or the expenditure of the hundreds of dollars necessary to secure a musical education. The extra music costs little more than would the same were it in paper form. Weight boxed, about 40 lbs. Our special price, complete with all attachments and one tune sheet . . . . . $78.95”

“Extra tune sheets 76 cents each. List of over 300 musical selections free on application.” [By contrast, Sears sold pianos for $125 - $169, and organs for $38.95 - $56.00. The best violin cost $46.95; the toniest autoharps and accordions cost $18.50 and $11.25 repectively. Folios of sheet music (120 - 200 pages) cost $.30 - $.45.

[Who did the Regina appeal to? Did it sell well? Did people sing to it, or was it used as “muzak?” We will probably never learn the answer to these questions. I would be willing to bet that the poor thing didn’t last long once Berliner’s disc gramophone was introduced. I imagine the Regina sounding like my Creative Labs 8-Bit Sound Blaster playing a MIDI file of harpsichord music: Perfect, precise, pure and soulless. Even indifferently recorded music from live musicians would beat it hands-

down. And, or course, the Regina could not reproduce the human voice.]

Source: The 1897 Sears Roebuck Catalogue (Chelsea House Publishers, New York, 1968)

3D PHOTOGRAPHY IN 1903

From Stephen Herbert

Re: 3-D without glasses - VISIDEP and similar systems. Vision III Imaging Inc. developed a 3-D system described in the SMPTE Journal, Vol.100 No.6, June 1991. I saw a test reel at the time. Only effective while the camera was moving, and then had only a limited effect. It was carefully thought out, but basically, it wasn't impressive enough to be worth the trouble of shooting with the necessary special two-camera rig. The article also includes information on related experiments in the 1980s. Dead Media fans will be pleased to know that the origins of this system go back much, much further. It was first proposed by an English experimenter Theodore Brown, in 1903 (following experiments and observations dating back to the 1890s).

"Brown's Method of Relief Projection" is described by the inventor in THE BOOK OF PHOTOGRAPHY edited by Paul N. Hasluck (Cassell & Co.Ltd,1905). Brown called his system, variously, Oscillatory Projection, Motional Perspective, and Direct Stereoscopic Projection. He worked on it, with occasional demonstrations, until at least 1930. An attempt was made to market a short film, DANCING, in 1912. (It was advertised in the Kinematograph and Lantern Weekly).

Source: SMPTE Journal Vol. 100 No. 6, June 1991 The Book of Photography ed. Paul N. Hasluck, 1905 Theodore Brown's Magic Pictures, the Art and Inventions of a Multi-Media Pioneer by Stephen Herbert

MOBILE CAVALRY TELEPHONE

From Greg Riker

“Wired Horses “The cavalry announced plans to equip its scouts with a new type of mobile telephone. Like earlier horse-phones, it had a cord. Wire stored on a 5-mile reel played out as a scout rode. The improved model let a rider make calls without having to first dismount and then drive a spike into the ground to complete the electrical connection. Instead, the grounding wire was attached to the horse’s skin. The mild electrical current would pass through its body to its hoofs, one of which was almost always touching the ground.” [Bruce Sterling remarks: How many “earlier horse-phones” could there have been? It’s not hard to see why this bizarre telephony experiment failed to prosper; how can a surreptitious, fast-moving cavalry scout deploy a five- mile long telephone reel? Still, this medium may have been developed for some time. The fact that the horse itself became an integral part of the network: this cumulative improvement conveys a real sense of design elegance.]

Source: Popular Mechanics, Sept 1997 page 16: 90 Years Ago: September 1907 (includes photo)

CAMRAS'S WIRE RECORDER

From Patrick Lichty

Marvin Camras's Model 500 Wire Recorder Recently, I had the good fortune to have a meeting at the Inventors' Hall of Fame in Akron, Ohio. While walking through the exhibits, I happened upon Marvin Camras' Model 500 wire recording system. It was invented independently of its German wire-recording predecessors. The Camras recorder used spools of rapidly-moving wire which moved through a transducer assembly, creating the necessary impulses for amplification. The model measures approximately 10" deep x 16" high x 18" wide. The spools of wire are externally mounted on a sloping front panel, and the emblem reads, "Armour Research Foundation", which was Camras' own institution. About 100,000 of these units were sold to the U.S. Navy, and the recorders were popular with hobbyists until around 1955. -From the Hall of Fame card next to the machine: "In the 1930s Camras developed a successful wire recorder. Before and during World War II his early wire recorders were used by the military to train pilots. Battle sounds were recorded and equipment was developed to amplify it by thousands of watts. The recordings were placed where the invasion of D-Day was not to take place, giving false information to the Germans. The public first heard of Camras' work after the war had ended."

Source: National Inventors' Hall of Fame (Akron, Ohio, USA) Illinois Institute of Technology Archives

MINITEL R.I.P

From Bruce Sterling

“Number’s Up for Minitel.” “The French prime minister, Lionel Jospin, has admitted that a marvel of local electronic technology, the unique Minitel system, is putting a brake on France’s access to global communications, writes Paul Webster in Paris.

“While the Minitel, a small table-top telephone-linked terminal, gives low-tech access to thousands of services, 15 years of trying to convince the rest of the world of its usefulness have left foreigners cold.

“There are 14.5 million businesses and home users of the Minitel in France compared with one million plugged into the Internet. Furthermore French Telecom earned nearly $1 billion a year with the system. But government policy will be aimed at weaning the public off the French system and onto the global web.

“Only mass Internet use can fulfil government hopes that schools will be fully on-line by the end of the century and that access to main state research centres will be free for everyone.”

Source: Manchester Guardian Weekly, Vol 157 No. 10. Week ending September 7, 1997.International News article by Paul Webster, page 9

THE BURROUGHS MOON-HOPKINS TYPEWRITER AND CALCULATOR

From Bruce Sterling

Flipping through ANTIQUE TYPEWRITERS at random floods the mind with insight. The sheer scale of production for the once ubiquitous typewriter is astonishing in itself. This work is an instant Dead Media classic. Many, many Working Notes might be derived from this comprehensive tome, but serious students of the typewriter and its history should not rest content without owning the book. An excerpt from page 34, describing a particularly freakish 1920s mechanical precursor of the PC, should be proof of this. page 34 "Burroughs is a name mostly associated with adding machines rather than typewriters. In the 1920s, however, the company marketed its Burroughs Moon-Hopkins, a remarkable combination typewriter and calculator.

"This monstrous machine originally consisted of a caps-only (double-case was offered later) upstrike typewriter with a huge, glass-sided calculating machine mounted on the back. Later sold as the 'Burroughs General Accounting Machine,' is is obvious that this device was intended as a do-all for any office needing to do billing or use figures in its correspondence.

"The calculating module of the machine could be equipped with multiple registers, so that numbers could be calculated and stored for later use, a kind of primitive memory akin to today's computers. The Burroughs Moon-

Hopkins was one of a very few direct multiplying machines, meaning it did not multiply by doing successive additions as on most calculators of the kind. It also automated a number of other tasks, including rounding off fractions of a penny to the next highest whole cent.

“The Burroughs machine was successor to the earlier Moon-Hopkins apparently produced by the Moon-Hopkins Billing Machine Co., which was founded in St. Louis in 1911. Burroughs acquired rights to the machine in 1921.” [Bruce Sterling remarks: The accompanying photo on page 34 shows an enormous glass-sided office machine with no fewer than six rows of keys. Black, somber, weirdly elongated, and obviously very heavy, the Burroughs Moon-Hopkins resembles a typewriter crossed with a hearse. One can only wonder if family scion William S. Burroughs ever saw or used this device.]

Source: Antique Typewriters & Office Collectibles: Identification and Value Guide by Darryl Rehr Collector Books 1997 $19 plus $2 postage available from Darryl Rehr P. O. Box 641824 Los Angeles CA 90064 ISBN 0-89145-757-7

TELEGRAPHIC LANGUAGE: CABLESE, WIRESPEAK, PHILLIPS CODE, MORSE CODE

From Bill Burns

“News Code Words Vanishing” By Mike Feinsilber Associated Press Writer Wednesday, September 17, 1997; 1:27 p.m. EDT “WASHINGTON (AP), It is the 1950s and in Tokyo and New York two guys in white shirts, ties undone, are communicating electronically with the latest technology.

“’SOS ETWIFE HEADS TOKYOWARD SMORNING SANSTOP,’ New York tells Tokyo. ‘MUCHLY APC EYEBALL ARRIVAL. URGENTEST NEED THUMBSUCKER CUM ART.’

“These were marching orders for the fellow in Tokyo. Put into English, the message said, ‘The secretary of state and his wife will fly nonstop to Tokyo this morning. We need you to be on hand for their arrival, but first we urgently need a news analysis and pictures to go with it.’

“Tokyo sighs and replies with a word: ‘ONWORKING.’ “Years ago, this imaginary exchange might have been plausible among journalists (a fancy word that they’d probably shun). It is written in vanishing languages, partly ‘cablese,’ partly the Phillips Code, itself a shorthand version of the Morse Code, and partly in ‘wirespeak,’ the jargon that The Associated Press and its erstwhile strongest competitor, the United Press, devised for internal communication, and to save money.

“Now, quickly, before they vanish from memory the way they’ve pretty well vanished from use, Richard Harnett has compiled the catchwords that the wire services once used and put them into a self-published book, “Wirespeak: Codes and Jargons of the News Business.” He printed 500 copies and figures he’ll be lucky to sell half of them.

“Harnett, 71, is retired from 36 years at United Press and its successor, United Press International. He started as a wire filer, someone who decided which stories reached Western papers, and wound up San Francisco bureau chief, and until recently was the energy behind ‘Ninety-Five’ a newsletter for UPI veterans that is crowded with nostalgia and obituaries.

“In an interview, Harnett, son of a traveling dry goods salesman in North Dakota, said these codes were used as much for esprit as for saving words.

“’If you could use them, it meant you were in the know,’ he said.

“One chapter is on the Morse Code, devised by Samuel Finley Breeze Morse, who invented a way of interrupting an electric current in a controlled manner to send short or long pulses.

“Cablese, subject of another chapter, was a money- saving code employed when it cost as much as 50 cents a word to send a message abroad by undersea cable. Cable companies permitted the combining of words, as long as they didn’t go beyond 15 letters, to save money. Thus ‘Tokyoward.’ Thus ‘antiauthorities’ for ‘against the

authorities.'

"Giving away secrets no longer kept, Harnett reprints samples of the codes both AP and UP employed for confidential messages. The codes were printed in codebooks, kept locked and available only to top brass.

"In AP's code, 'levit,' 'liban' or 'liber' stood for the competition, UP. And UP's names for AP were 'castor,' 'henagar' and 'wingate,' all terms the origins of which are lost.

"The rank and file had their own nicknames for the competition. AP used 'opsn,' standing for 'opposition;' UP used 'Rox,' said to be a play on the last name of Melville E. Stone, who for over two decades was AP's general manager.

"Harnett's longest discussion, four pages, concerns '30,' the symbol some writers still put at the end of their stories to mean 'the end.' "Its origins have long been the subject of after- hours discussion among news people, but Harnett leans to the most accepted theory, that '30' was borrowed from a telegraphers' code adopted by Western Union in 1859. In that code, many numbers were assigned a term. '73' meant best regards; '95' preceded an urgent message; and '1' meant very important.

"Now, of course, computers and satellites allow the virtually instantaneous transmission of stories and pictures. Harnett had to hurry to capture a chunk of journalistic lore, probably just before it reached '30.

Source: Associated Press article by Mike Feinsilber, Sept 17 1997; Wirespeak by Richard Harnett

WHISTLING NETWORKS OF THE CANARY ISLANDS

From David Casacuberta

Spanish whistling networks; a fascinating subject, but seldom studied by linguists is speech surrogates. They are communication systems that replace the use of speech by other sounds, sometimes made with musical instruments, like drums or, in this case, by means of whistles. Whistle language has been observed between some ancient Central and South American tribes and also in some of the South Pacific Islands (I don't know much about these other surrogates, so any further information is welcome).

However, it was also a living system of communication in the Island of la Gomera, in the Canary Islands (Spain). This island is almost covered with ravines and cliffs, so movements and communication through the island can be very complicated.

Nevertheless the inhabitants developed a whistled speech system, that helped them to avoid ravines. The idea is very simple: they simmulate the patterns of tone and rythm in spoken language, so, with some practice, they can have long conversations about almost any topic.

Therefore, it is not a simple system of signals to say "here, danger" or something like that, but a real surrogate language: Spanish spoken with whistles instead of phonetic sounds. The name of this surrogate is "silbo canario" (zeel- bo ka-na-reeo) or just "silbo", which in Spanish is the name to designate a very high whistle.

Unfortunately, this old language may disappear soon: the local government tries to save it, as it is a very interesting cultural phenomenon unique in the island, but it is not an easy task, when one considers strong competitors, like cellular phones.

Also, it is not considered “fashionable” between young people.

Source: Crystal, D (1992) An Encyclopedic Dictionary of Language and Languages, London, Blackwell; and personal communications.

TALKING GREETING CARD; MANUALLY-POWERED SOUND TAPE

From Dan Howland

“Talking Card Says ‘Happy Birthday’ “A talking birthday card is an ingenious novelty now on the market. Extending from the mouth of a picture of Charlie McCarthy, famous ventriloquist’s dummy, printed on the card, is a notched sound tape. When a person pulls his thumb nail along the tape, as shown above, the words ‘Happy Birthday’ are clearly reproduced.”

[Dan Howland remarks: Photograph shows card, about 3” x 5” with strip of tape about 18” long extending from Charlie’s mouth. Tape is maybe 1/8” wide.]

Source: Popular Science magazine, April 1939

MONASTIC SIGN LANGUAGE

From Richard Kadrey

“The Monasteriales Indicia is one of very few texts which let us see how life was really lived in monasteries in the early Middle Ages. Written in Old English and preserved in a manuscript of the mid-eleventh century, it consists of 127 signs used by Anglo-Saxon monks during the times when the Benedictine Rule forbade them to speak. These indicate the foods the monks ate, the clothes they wore, and the books they used in church and chapter, as well as the tools they used in their daily life, and persons they might meet both in the monastery and outside.

“The text is printed here with a parallel translation. The introduction gives a summary of the background, both historical and textual, as well as a brief look at the later evidence for monastic sign language in England. Extensive notes provide the reader with details of textual relationships, explore problems of interpretation, and set out the historical implications of the text.”

Source: Monasteriales Indicia The Anglo-Saxon Monastic Sign Language Edited with notes and translation by Debby Banham ISBN 0-9516209-4-0 96 pages

CARDBOARD ARTIFICIAL INTELLIGENCE

From Derek Robinson

The Logoscope (or the "Grouped Symbol Associator") was invented by an English surgeon, Dr. F. A. Nash, in 1953. It was, in his words, "an apparatus to assist the logical faculties" in performing clinical diagnosis. It could be considered the first medical (or any other type of) expert system. Dr. Nash was awarded a British patent on his invention in 1953, and published a brief note describing the device in The Lancet for April 24, 1954, pp. 874-875. The Logoscope appears to have been offered as a commercial product for at least a few years, though I doubt many were sold, given the paucity of references to the device. In 1958 Dr. Nash demonstrated the Logoscope at the "Mechanisation of Thought Processes" Conference, held at the Teddington National Physical Laboratory, U.K. This was the second conference to be convened on the subject of Artificial Intelligence (the first was the Dartmouth conference of 1956, where the field got its name) and it was well attended by many important early contributors to the fields of cybernetics, information theory and artificial neural nets. However there is no evidence that anyone who saw Nash's demonstration realized that the Logoscope was an instructable associative memory, of the type that W. Grey Walter, A. M. Uttley, Donald MacKay, W. K. Taylor and W. Ross Ashby were then attempting to reproduce by means of analogue electronic "nerve nets". The Logoscope was a graphical or

“panoramic” index, consisting of a set of long thin strips of card, each labelled with a medical symptom and marked with a pattern of bars along its length. The strips were place-coded inverted files, where the positions of the bars corresponded to specific diseases, listed on a separate register card. Dr. Nash prepared the coded diagnostic strips using information abstracted from three or four standard handbooks of differential diagnosis. It was in fact just like a bibliographic index, with symptoms as its “keywords” and diseases as “page numbers” or “documents”, broken apart into individual, binary-coded inverted files, to allow selecting out any subset of keywords (search terms), with their associated inverted files of contexts, on demand. The Logoscope was applied as follows. When a patient presented a set of symptoms, the examining clinician would select the corresponding strips from a cardboard sleeve, then would align the selected group of strips with the register card. The most probable candidate would show up immediately as an unbroken or nearly unbroken line running across the coded strips, with the weaker candidates similarly apparent as correspondingly less solid lines. The diagnostic logic of the Logoscope was rediscovered by Marsden Blois, who in the early 1980s implemented a computer-based medical expert system, RECONSIDER, using information derived, again, from standard differential diagnostic texts. Apparently it performed as well as or better than expert systems constructed at the cost of many programmer-years of effort in the AI labs. Blois described the system in his book, “Information and

Medicine" (U. California Press, 1984). The Significance of the Logoscope: By demonstrating that diagnosis can be construed formally and procedurally as multi-key look-up using inverted files, Nash showed that any cognitive process that can be regarded as diagnostic can be realized, procedurally, as an index. But having gone this far, dignifying the Logoscope as a prototypical "neural net", a "cardboard brain", we might as well elect the 13th Century Dominican friar Hugo De Santo Caro as the honorary godfather of AI, for having compiled the first Concordance (a.k.a. inverted index) of the Bible, in the year 1247.

Source: The Lancet, April 24, 1954, pages 874-875; Information and Medicine by Marsden Blois (U. California Press, 1984)

SPOOK SHOWS

From Bill Wallace

From the late 1920s through the 1970s, theaters across America were haunted by performers with names like Dr. Evil, Dr. Silkini, Chan Loo and His Horrors of the Orient, and Ray-Mond's Zombie Jamboree. Descended from spiritualistic entertainers like the Davenport Brothers, Midnight Spook Shows are an obscure footnote to film history.

In his book Ghostmasters (Cool Hand Communications, ISBN 1-56790-146-8), Mark Walker traces the colorful history of this vanished entertainment form. Beginning with the ghost shows of El-Wyn in the early 1930s, through spectacular traveling productions in the late 40s and 50s, to the last practitioners of the art levitating teeny boppers atop drive-in concession stands, dozens of spook-showmen worked the heartland.

Besides one or two horror films, the typical spook- show performance featured a stage magic show, sometimes including gore effects borrowed from the Grand Guignol, interlaced with comedy, hypnosis routines, and costumed ghosts and monsters. The actual contents changed with the decades.

With spiritualism still fresh in the American consciousness, the earliest shows featured ghosts, slates, cabinets, and other mediumistic effects. Voodoo and zombies were popular themes of the 1930s, following the publication of William Seabrook's The Magic Island.

By the 1940s, most of the shows had become Monster Shows, with “live” appearances by Hollywood creatures like the Frankenstein monster and Count Dracula, sometimes played by real actors like Bela Lugosi and Glenn Strange. At least one of the torture shows of the late 1940s purported to show what happened in a Soviet prison.

Materializations of James Dean were common in the late fifties. While most of the mechanisms were those of the stage magician, the highlight of all these events was the “blackout,” when the theater would be plunged into absolute darkness, usually after the audience was warned monsters or ghosts would walk among them.

With the lights out, luminous shapes filled the theater: ghosts, bats, UFOs in the 50s, sometimes huge eight and 10-foot tall monsters, accompanied by shrieks, gunshots, and total pandemonium. The blackout usually ended as the feature film began. Blackout effects were achieved with phosphorescent figures on extended poles, projectors, and confederates hidden among the audience. Wilson’s book is filled with great anecdotes of crazed audiences and drunken magicians and illustrated with demented ads and mementos of the age.

There was a trade publication, “The Ghost,” and a supply house, run by Bob Nelson, who also ran a radio psychic scam on Mexican super station XEPN under the name of Dr. Korda Ramayne.

One of the later showmen, Joe Karston, produced two horror films, “Monsters Crash the Pajama Party” and

“Teenage Psycho Meets Bloody Mary”, that featured “HorrorVision,” a technique that apparently allowed monsters from the film to emerge from the screen, snatch a girl from the audience, and re-enter the film. Spook Shows fell victim to the usual suspects, dangerously rowdy audiences, growing liability insurance rates, and a populace with burgeoning home entertainment.

Their descendants include Halloween “haunted houses,” Rocky Horror midnighters, and maybe the S&M stage shows that are becoming more common at music clubs.

At a matinee in 1962, I had the privilege of seeing one of the greatest late masters of the field, Philip Morris, Dr. Evil himself, at an old theater in Sulfur Springs, Texas. The show offered magic, live appearances by the Mummy and King Kong, and a twist contest, with a “real dead body” as a prize.

The lucky winner was blindfolded and presented with her prize, a chicken carcass. The blackout was brief but spectacular, with an explosion of ghosts and skeletons, like something from a Dave Fleischer cartoon. It was one of the coolest things I’ve ever seen.

Source: Ghostmasters by Mark Walker Cool Hand Communications ISBN 1-56790-146-8

VINYL MULTIMEDIA

From Dave Morton

“British record companies have released records, both 45s and LPs, with one side recorded with music and the other side recorded with a computer program. The flip side can be run on the specified computers (such as a Sinclair, Apple, or BBC Micro) to display graphics accompanying the music. Loading the program directly from the record is difficult, and errors can be caused by wear or dirt in the grooves, but the program can be recorded onto a cassette tape and loaded into the computer through a cassette recorder.”

Source: IEEE Spectrum March 1984, page 24 New Flip Side for British Pop Records

BASQUE TALKING DRUM

From David Casacuberta

I just got from a friend detailed information about another surrogate language system, this one from Euskalerria (the Basque Country). It is extinct as media, but still used as musical instrument.

Not so long ago, in Euskalerria, the Basque Country (a nation that now is part of the Spanish State), the Txalaparta was used a communication medium. The Txalaparta (the “tx” is pronnounced like a “sh”, but stronger, with the tip of the tongue in the upper teeth) is a percussion instrument, made with a set of big wooden planks, usualy leaning over logs.

The txalaparta is then hit with 50 cm. sticks called “makilak”. Like a xylophone, according to where you hit, you get a different tone and sound. Like the Canary silbo, this is also a surrogate language, that uses tones to codify sentences. It was developed for the same reasons: the existence of ravines and cliffs that are so common in the Atlantic part of the Basque Country.

People living in “caserios” (the typical country houses in the basque country, usually quite far one from the other) used the drums to communicate with the neighbours, by means of txalapartas put on the top of some hills. However, let us mention that the possible meanings that could be sent with the txalaparta are more limited than the ones aviable in the Canary silbo.

Now, due to the advancing of telephones and other media,

txalaparta is extinct as a medium, but is still used as a musical instrument. It is normally played by two people, but sometimes they can be even four. The sound is really beautiful and impressive, and you can hear a txalaparta in almost every traditional “fiesta” in Euskalerria.

If you have a good record store around and are interested to hear a txapalarta, there are some UNESCO records of it, and there is also a rock band from Euskalerria that recorded a txalaparta in one of their songs.

The band is called “Hertzainak,” the LP “Onena” and the song, “564.” However, the common lore says that the best txapalarta players (in Euskera they are called txalapartak) in the Basque Country are the Artza brothers. If you have the luck to find a record by them, go for it!

Source: personal communication Hi Bruce.

PEEK-A-BOO INDEX CARDS: OPTICAL PARALLEL COMPUTERS OF THE 1950S

From Derek Robinson

“Peek-a-Boo” indexing cards were introduced commercially in the mid-1950s by a number of American, British and European vendors (some of whom also supplied mechanical sorting, punching and viewing equipment for the cards). Systems and cards were sold under the names Keydex, Termatrex, Minimatrex, Omnidex, Findex, Selecto, Sphinxo, Sichtlochkarten, Ekaha, Vicref, Find-It, Brisch- Vistem and Trio Cards.

Generically they were called Peek-a-Boo cards, a term chosen by Wildhack and Stern of the U.S. National Bureau of Standards c. 1954, as being “non-commital as to origin, and descriptive of the operating principle, which appears to have a rather long history”.

They were also known as aspect cards, optical coincidence cards, and Batten cards (after W. E. Batten, who in 1947 described the use of “interior-punched” index cards to carry out rapid manual searches of chemical patents). The basic principle of Peek-a-Boo card systems is that key-words (subject terms, distinctive properties, taxonomic characters or attributes) had their own index cards. The cards were divided up into a grid, where individual grid locations corresponded to specific documents, species or data records. The grid assignments remained fixed across the entire deck.

To identify the subset of records satisfying multiple

search terms, the subject term cards were removed from the card deck, aligned, and held up to a light. Items having all the subject terms (i.e., set- intersection, the Boolean "AND") would show up as illuminated spots at their respective grid locations. Conventional punched cards and tabulating equipment made individual cases the basic "unit of information storage". Punched cards like the IBM (Hollerith) cards used coded fields for recording different descriptive terms or numerical data. Each card corresponded to an individual database record.

Peek-a-Boo cards reversed the standard procedures by using conceptual categories rather than documents as the unit of information storage. Logically, this "reversed" system corresponds to an (inverted) index, the basis of book indexes, text retrieval systems, library catalogs, and Internet search engines. Commercial cards were available in capacities ranging from 400 to 40,000 items or grid locations.

For handling databases of greater size, the Omnidex system used cards with 540 locations, 500 for individual data records and the remaining 40 locations reserved for a system of sub- files, to allow multi-level searches of databases of any size. One advantage of Peek-a-Boo index cards is that researchers could readily prepare their own decks using mimeographed sheets or stencils at very little cost, presenting an attractive alternative to "batch processing" in the days before PCs.

A literature search could be performed in minutes, using equipment that could easily fit into a jacket pocket, rather

than waiting overnight for a central mainframe to process a deck of IBM cards. At least one manufacturer produced Peek-a-Boo cards made from translucent plastic. This created a ranking of search results from the best, most relevant items (brightest spots) to the least relevant (dim spots).

This system was an optical analog of the Logoscope's graphical best-matching or set-superposition search method.

One of the earliest applications of the Peek-a-Boo principle seems to have been a system for bird identification, for which a patent was issued in 1915. (Taylor, H., "Selective device", US Patent 1,165,465.)

In 1916, the French recreational mathematics journal Sphinx-Oedipe published a description of a number guessing game which exploited the optical coincidence principle. (This window system is described in "Mathematical Recreations", Maurice Kraitchik, Dover Books, 1953, pp. 63-65.)

An optical coincidence card system for identifying mineral specimens was developed by C. J. Gray, and described in the Transactions of the South African Geological Society, 1920.

Also in 1920, a coincidence card system for compiling tabular and statistical data was patented by H. Soper. The system interspersed fully perforated reading columns between the columns of punched data, to allow selection and search without removing cards from the deck.

An automated photo-electric system for searching personnel records was described in a French patent issued to Henri Lieber, 1923. Electro-mechanical systems based on optical index cards and photo-electric read-out, intended for telephony applications, received patents in 1951 and 1954. (I have been unable to determine if index cards were ever actually used in telephone switching systems.)

Colin Burke, in “Information and Secrecy: Vannevar Bush, Ultra, and the Other Memex” (Scarecrow Press, 1994, p. 262) describes techniques developed by Polish cryptanalysts in the 1930s to crack the German Enigma codes.

These Polish cards made use of punched overlay sheets and a light source: “It was much like the system later used by the British and American cryptanalysts and was similar to what postwar information scientists called the Peek-a-Boo system.”

The Polish method substituted “parallel” optical search for the spinning rotors, plugboards, and statistical computations of the British codebreaking computers. (Apparently, American cryptanalysts had been using optical methods to apprehend statistical “coincidences” since the 1920s.)

In 1940 an American mathematician, H. Robinson, published a set of prepared stencils using the Peek-a-Boo principle, as an aid in the solution of equations having the form “x^2 = 2(mod m)”.

The Microcite system, developed at the U.S. National

Bureau of Standards (1954), was a clever marriage of Peek- a-Boo cards and microform technology. Peek-a-Boo index cards were overlaid on a sheet of microfiche containing document abstracts. Abstracts that matched the query terms could be read directly with a microfiche reader.

The Minimatrex system (from Jonkers Business Machines) used microfilm and a special viewing system to store micro-film strips ("termstrips"), each containing 5 or 10 frames. Each frame was a photographic reduction of the standard 10,000 item Jonkers Termatrex index card. Up to 12 termstrips could be superimposed in a single search.

Peek-a-Boo card indexes were part of the vanished "documentarian" tradition of manual coding and indexing schemes, pushed aside in the rush to computerized databases and information retrieval systems.

High-speed digital computers can now accomplish the same ends using grids of ten million "cells" and hundreds of thousands of "cards". However, there is still no better way to demonstrate how a search engine works (or how machine pattern recognition or AI expert systems or associative memories work) than by means of this long-forgotten manual indexing technology.

Source: Wildhack, W. A., J. Stern. The Peek-a-Boo System: Optical Coincidence Subject Cards in Information Searching; in, Punched Cards, Their Applications to Science and Industry, 2nd edition; R. S. Casey et al., Rheinhold, NY, 1958. Bourne, Charles P. "Methods of Information Handling", Wiley, NY, 1963. Jahoda, Gerald. "Information Storage and Retrieval Systems for Individual Researchers", Wiley, NY, 1970. Burke, Colin. "Information and Secrecy: Vannevar Bush, Ultra, and the Other Memex", Scarecrow Press,

Metuchen N.J., 1994.

US AIR FORCE 'CLONES' OBSOLETE ELECTRONICS

From Bruce Sterling

[Bruce Sterling remarks: The US military has discovered that the eighteen-month lifespan of state-of-the-art chips is seriously interfering with their ability to keep war machines armed and ready. One answer, alluded to in this article, is to step outside the process of obsolescence and simulate "legacy electronics" by "cloning" them with "VDELE." (It is not explained what is supposed to happen when the VDELE "design environment" itself becomes obsolete.) This development is of interest to dead media studies because the rapid obsolescence of electronic components has always been a Mark of Cain for electronic media. The simulation and emulation of dead hardware will increase in importance as the graveyard of dead multimedia becomes more and more crowded with the victims of Moore's Law.]

"The first F-22 production unit was unveiled last April amid great fanfare. Its first flight, originally slated for late May, was re-scheduled several times as a result of brake malfunctions, flight-software problems, and a fuel leak...

"(Lockheed Martin corporation) recently announced that it had achieved a technical breakthrough that will help the Air Force cope with a problem that is affecting other military aircraft programs, the unavailability of parts. Pentagon officials refer to this conundrum as 'diminishing manufacturing sources.' "The parts shortfall stems largely

from the short commercial life-span of digital electronic components versus the long service life of weapons systems. A digital component, for example, may have a life of 18 months while the weapon system using that component often lasts for decades. Industry officials believe this 'parts obsolescence' problem drives up the coses of a weapons system's operation and support, which amount to about two- thirds of the entire life cycle investment.

"Lockheed Martin's innovation involves the 'first prototype clone replacement for an obsolete airborne printed circuit assembly,' says a company spokesman. The savings will result, he says, from the use of collaborative tools and electronic specifications."

"The process used to develop the prototype is based on a VHSIC hardware description language (VHDL) model for an obsolete printed circuit assembly. Once developed, the model is then tested for compliance against the original obsolete printed circuit board in a virtual development, using commercially available software and hardware tools.

"In this simulation environment, says the company spokesman, the design of the obsolete hardware can be re- targeted into modern component technology. Since the design is re-captured in an electronic specification, the cost of re-engineering is 'greatly reduced.' "(James A. Houston, a Lockheed Martin engineering project manager) says the benefit of cloning is that the embedded software and support equipment of the re- engineered

electronics can be kept intact. Money is saved because there is no need to re-develop software and support equipment.

“The Air Force awarded Lockheed Martin a contract for a VHDL design environment for legacy electronics (VDELE). ‘VDELE. overcomes the parts obsolescence problem using current technology,’ says Houston.”

Source National Defense magazine (ISSN 0092-1491) October 1997 Volume LXXXII Number 531 Modelling and Simulation Techniques Aid Air Force Effort to Cut F-22 Costs pages 32-33

PARIS PNEUMATIC MAIL

From Alan Wexelblat

Sherry Turkle's most recent book, Life on the Screen contains something of a report on a dead medium which has been mentioned before on this list: the French (Parisian) system of pneumatic tubes for letter delivery. What I find interesting about this is (a) the recency of the report, Turkle lived in Paris in the early 60s; and (b) the specific use for which this medium retained its relevance: "I stayed with a family [in Paris] who avoided the telephone for everything but emergency communications. An intimate communication would go by pneumatique. One brought (or had delivered) a handwritten message to the local post office. There, it was placed in a cannister and sent through a series of underground tubes to another post office. It would then be hand delivered to its destination.

"I was taught that the pneumatique was the favored medium for love letters, significant apologies, or requests for an important meeting. Although mediated by significant amounts of technology, the handwritten pneumatique bore the trace of the physical body of the person who sent it; it was physically taken from that person's hand and put into the hand of the person to whom it was sent. The pneumatique's insistence on physical presence may have ill-prepared me for the lessons of postmodernism, but it has made e-mail seem oddly natural." As we delve into the reasons for a medium's death or disappearance, it would be wise to

keep in mind those media which deliver this sense of physical presence and see if that (or something like it) is a factor in media Darwinism.

Source: Life on the Screen: Identity in the Age of the Internet by Sherry Turkle Touchstone Books 1997 ISBN 0684833484

RCA SELECTAVISION HOLOGRAPHIC VIDEOFILM

From David Morton

[David Morton remarks: The following article describes one of the several different technologies that RCA considered or actually marketed under the name "SelectaVision." Other technologies included the SelectaVision capacitive videodisk and the SelectaVision VHS videotape system. The film-based system described below, which never went into production, coincided with but was significantly different than the film-based "Electronic Video Recording" technology developed at the same time by CBS, which was also a commercial failure.]

"A laboratory model of a low-cost television color tape player built around lasers and holography and destined for home use in the early 1970s was exhibited recently by RCA. In commercial form, the SelectaVision player, which will be designed to attach to any standard color television set, will play full-color programs recorded on tapes made of the same clear, inexpensive plastic materials used in super-markets to wrap meats.

"These tapes will be scratch proof, rustproof, and bb virtually indestructible under normal use. The conversion process is described as follows: a color program originating from a color television camera or color videotape player is recorded on conventional film by means of an electron beam recorder. This film, known as the color encoded master, is then developed and

convened by a laser to a series of holograms recorded on a plastic tape recorded with photoresist, a material that hardens to varying degrees depending upon the intensity of the light striking it.

“Next, the tape is developed in a chemical solution that eats away the portions of the photoresist not hardened by the laser beam. The result is a relief map of photoresist whose hills and valleys, and the spacing between, represent the original color television program in coded form. This is called the hologram master.

“The hologram master is plated with a thick coating of nickel and stripped away, leaving a nickel tape with the holograms impressed on it like a series of engravings. This is the nickel master.

“Finally, by feeding the nickel master through a set of pressure rollers along with a transparent vinyl tape of similar dimensions, the holographic engravings on the master are impressed on the smooth surface of the vinyl as holographic reliefs. The result is a SelectaVision program tape ready for home use.

“Playback of such a tape requires only that the beam from a very-low-power laser pass through it into a simple, low-cost television camera that sees the images reconstructed by the laser directly, and their colors as coded variations in those images. The playback mechanism, the laser, and the television camera are all housed in the SelectaVision player, which is attached to the antenna terminals of a standard color television set for actual viewing.”

Source: Color TV tape player employs lasers and holography IEEE Spectrum

6 (Dec 1969): page 28

HUMMEL'S TELEDIAGRAPH; THE FAX MACHINE OF 1898

From Marcus L. Rowland

The Telediagraph was one of several early fax-like devices sending pictures via telegraph lines. It was invented circa 1895 by Ernest A. Hummel, a watchmaker of St. Paul, Minnesota.

The first machines were installed in the office of the New York Herald in 1898. By 1899, Hummel had improved the machine and the newspaper had machines in the offices of the Chicago Times Herald, the St. Louis Republic, the Boston Herald, and the Philadelphia Inquirer. The system used synchronised rotating 8-inch drums, with a platinum stylus used as an electrode in the transmitter.

The original image was drawn on 8x6" tin-foil using a non-conducting ink made from shellac mixed with alcohol.

The image was received on carbon paper wrapped between two sheets of blank paper. When the electrode touched the tin-foil in the transmitter the circuit was closed; when it touched the shellac the circuit was open. The signal controlled a moving stylus in the receiver, making it touch or move back from the paper. At the end of each rotation a synchronising signal was sent, and the styluses in both machines moved 1/56" to the left before scanning the next line.

The first picture sent was "an accurate picture of the first gun fired at Manila." The machine took 20-30 minutes to

send the picture.

Near-copies of this and similar mechanisms were in use until the 1970s, although transmission speeds were improved and photocells allowed plain paper originals and photographs to be transmitted. The basic principle was also applied to stencil-cutting machines for ink duplicators.

Source: Pictures by Telegraph by Charles Emerson Cook Pearson's magazine, April 1900, page 405 in the bound volume (Jan-June 1900)

THE ORGANETTA

From Paul Di Filippo, Bill Burns

“A Marvelous Musical Instrument THAT PLAYS ANY TUNE.

“The Organette has gained such a world-wide reputation, that a lengthy description of it is not necessary. It will be sufficient to say that it is a PERFECT ORGAN that plays mechanically all the latest popular music, songs, dances, waltzes, jigs, etc. etc., as well as the best sacred airs. It consists of three strong bellows and a set of reeds with EXPRESSION box and SWELL. A strip of perforated paper represents the tune, and it is only necessary to place the paper tune in the instrument, as shown in the picture, and turn the handle, which both operates the bellows and propels the paper tune.

“The perforations in the paper allow the right reeds to sound and a perfect tune is the result, perfect in time, execution, and effect, without the least knowledge of music being required of the performer; even a little child can operate it as is shown in the picture, a little girl is playing a waltz, and her little friends are dancing; they are better pleased than if Strauss himself were playing for them, and older people enjoy it equally as well. It is also tuned in the key best suited for the human voice to sing by.

“The Organetta is perfectly represented by the picture. It is made of solid black walnut, decorated in gilt, and is both handsome and ornamental. The price of similar

instruments has hitherto been $8, and the demand has been constantly increased until now there are over 75,000 in use. We are encouraged to place the Organetta on the market at this greatly reduced price, believing that the sales will warrant the reduction. The Organetta though similar in construction is an improvement upon our well-known Organette, which sells for $8 and $10. It contains the same number of reeds and plays the same tunes. Our offer is this: on receipt of $8 we will send the Organetta by express to any address, and include FREE $4.25 worth of music, or on receipt of $6 we will send with in $2 worth of music FREE, or for $4 we will send it with a small selection of music FREE. The price includes boxing and packing. These are agent's prices, and we will appoint the first purchaser from any town our agent, if he so desires. Address, THE MASSACHUSETTS ORGAN CO., 57 Washington St., Boston, Mass."

[Bruce Sterling remarks: The crude half-page woodcut of waltzing 1880s children has a pronounced Edward Gorey atmosphere. The Organetta itself stands on four sturdy mass-produced legs and appears to be about two feet long, a foot wide and a few inches high. It resembles a small wooden trouser press. A hand-turned crank at the rear of the device entrains a long foolscap sheet of perforated music, drawing it entirely through the body of the Organetta, while a locomotive-like connecting-rod off the crank's driving wheel puffs a hinged bellows up and down at the instrument's base. The bellows apparently blows air directly through the punched holes in the sheet music, and up through a tuned rack of harmonica reeds.

The “expression box” and “swell” seem to be two bladderlike boxes on the top of the Organetta. Pressing on them may have affected the quality of the sound.]

“The bellows apparently blows air directly through the punched holes in the sheet music, and up through a tuned rack of harmonica reeds.” On almost all of the organette-type instruments the bellows sucks air through the punched holes and down through the reeds; a few did use pressure rather than vacuum, but these were the exception. The Massachusetts Organ Company was the leader of a thriving mail-order business in the 1880’s, Bowers’ Encyclopedia of Automatic Musical Instruments calls them “a master of ballyhoo.” All of the companies used the same sales techniques - if you became an “agent,” you qualified for the lower price. Of course, every customer was considered an “agent.” If you bought sufficient quantity, they’d even private-label them for you.

Cool thing: the cuts in the roll paper are large and the encoding obvious, so repairing old rolls and making new rolls is very easy. So with a little work with a ruler and a xacto knife, and you could have the organette playing “Louie, Louie” or “Tom’s Diner” or something.

Source: Peterson’s Magazine, May 1883, page 435. Advertisements. Encyclopedia of Automatic Musical Instruments by David Q. Bowers Vestal Press Ltd 1997 ISBN: 0911572082

COMPUTER GAME EMULATORS

From Bruce Sterling

[Bruce Sterling remarks: the advent of computer-game "emulators" on the Internet may be of historic significance. This would appear to be a spontaneous (if questionably legal) international revolt against planned obsolescence in the computer gaming industry. Game fans and programmers all over the world are digitally disemboweling the arcade and home games of their youth, and re-writing them to run on contemporary home computers. Then they distribute the emulator software, source code, game drivers, ROM images and such, for free download.]

M.A.M.E. Frequently Asked Questions V0.27 (6th of September, 1997) "0.0 Introduction "Welcome to the Multi Arcade Machine Emulator (MAME) Frequently Asked Questions (FAQ). I hope this will give you some help needed to get MAME to play your favourite games from the nostalgic past.

"1.0 What is MAME? "MAME is a program that emulates arcade gaming machines on your PC using the original ROM images from those same games, so that it looks, feels and plays like the original.

1.1 What does MAME mean? "MAME stands for Multiple Arcade Machine Emulator.

1.2 Who made MAME? "The project was started months ago by Nicola Salmoria who made a lot of standalone emulators for various games. After doing

those emulators, he started on the Multi-Pacman-Emulator, which emulated all the various Pacman clones. M.A.M.E. came after that, incorporating all the different emulators Nicola made into one single emulator itself and started adding support for a lot of other (new) games as well. Currently the project is being towed by Mirko Buffoni, and is being supported by various talented coders (including Nicola Salmoria himself as well) who submit game drivers for the project.

1.4 What is needed to run MAME? “MAME originated on the PC as a DOS emulator. However, since the MAME development team makes their sourcecode available to the public, it’s ported to nearly every suitable system around.

“I personally use a P90/16MB/WIN95 and the DOS version runs like a dream really on nearly all the games. Nicola developed MAME on a 486/DX100 so my guess is that it runs well enough on that as some sort of a minimum configuration.

1.6 Is the sourcecode available? “MAME always had its source code released right from the beginning, giving other people to take a look on how it’s made, contribute or how they could make their own emulator. Get the source code at the Official MAME page.

2.0 What are ROM images? “ROM images are the actual software packets stored on ROM (Read Only Memory) chips placed on a circuit board inside an arcade game cabinet. People having access to both the original PCBs and a (EP)ROM reader can read the images and transform

them into chunks of code. MAME emulates various CPU's and by using game specific drivers to address the ROM images, the software (ie. the ROMs) actually think they are working with the real thing. MAME emulates the real thing, and performs the tasks that were programmed into the ROMs.

3.1 What are the correct gamenames?

1942 3STOOGES AMIDAR AMIDARJP ANTEATER ARABIAN ASTDELUX ASTEROI2 ASTEROID ATLANTIS BAGMAN BLASTER BLUEPRNT BOBLBOBL BOMBJACK BOSCO BTIME BTIMEA BUBBLES BUBLBOBL BWIDOW BZONE BZONE2 CARNIVAL CAVENGER CCASTLES CCBOOT CCJAP CCLIMBER CENTIPED CKONG CKONGA CKONGJEU CKONGS COMMANDO CONGO CRUSH DEFENDER DESTERTH DIAMOND DIGDUG2 DIGDUGAT DIGDUGNM DKONG DKONG3 DKONGJP DKONGJR DOCASTLE DORUNRUN DOUNI DOWILD EARTHINV EGGS ELEVATOB ELEVATOR ELIM2 EXEDEXES FANTASY FANTAZIA FROGGER FROGGERS FROGSEGA FRONTLIN GALAGA GALAGABL GALAGANM GALAP1 GALAP4 GALAPX GALAXIAN GALLAG GALMIDW GALNAMCO GALTURBO GALXWARS GBERET GNG GNGCROSS GORF GRAVITAR GYRUSS HANGLY HUNCHY INVADERS INVDELUX INVRVNGE JAPIREM JBUGSEGA JHUNT JOUST JRPACMAN JUMPBUG JUNGLEK KANGAROO KICKRIDR KRULL KUNGFUB KUNGFUM LADYBUG LLANDER LOCOMOTN LOSTTOMB LRESCUE MAPPY MARIO MILLIPED MISSILE MOONCRSB MOONCRST MOONQSR MPATROL MPLANETS MRANGER MRDO MRDOT MRLO MSPACATK MSPACMAN MTRAP MYSTSTON NAMCOPAC

NAUGHTYB NIBBLER PACMAN PACMANJP PACMOD PACNPAL PACPLUS PANIC PANICA PENGO PENGOA PENTA PEPPER2 PHOENIX PHOENIX3 PHOENIXA PHOENIXT PIRANHA PISCES PLEIADS POOYAN POPEYEBL PUCKMAN QBERT QBERTJP QBERTQUB QIX RALLYX REACTOR REDBARON RESCUE ROBBY ROBOTRON RUSHATCK SBAGMAN SCOBRA SCOBRAB SCOBRAK SCRAMBLE SEAWOLF2 SEICROSS SINISTAR SNAPJACK SONSON SPACDUEL SPACEATT SPACEFB SPACEPLT SPACEZAP SPACFURY SPLAT STARFORC STARGATE STARTREK STARWARS SUPERG SUPERPAC SXEVIOUS TACSCAN TEMPEST THEEND TIMEPLT TURPIN TURTLES TUTANKHM UNIWARS VANGUARD VENTURE VULGUS WARLORD WAROFBUG WARPWARP WOW WWESTERN XEVIOUS XEVIOUSN YARD YIEAR ZAXXON ZEKTOR

[2015 note: I thought this list was too good to leave out]

Source: Multi Arcade Machine Emulator FAQ

A BRIEF HISTORY OF THE MATTEL INTELLIVISION

From Bruce Sterling

“At the end of 1979, Mattel Electronics (a division of Mattel Toys) released a video game system known as Intellivision along with 12 video game cartridges. Poised as a competitor to the then king of the hill Atari 2600, Mattel Electronics called their new product ‘Intelligent Television,’ stemming largely from their marketing plans to release a compatible computer keyboard for their video games console. Mattel’s marketing was anything but intelligent and almost destroyed the company by 1984. In one sense the system was very successful, with over 3 million units sold and 125 games released before the system was discontinued by INTV Corp. in 1990.

“The original Master Component was test marketed in Fresno, California in late 1979. The response was excellent, and Mattel went national with their new game system in late 1980. The first year’s production run of 200,000 units was completely sold out! To help enhance its marketability, Mattel also marketed the system in Sears stores as the Super Video Arcade, and at Radio Shack as the Tandyvision One in the early 1980’s.

“1980 was a turbulent year for the Intellivision. Mattel announced that an ‘inexpensive’ keyboard expansion would be available in 1981 for the master component to be dropped into. This was to turn the system into a powerful 64K home computer that could do everything

from play games to balance your checkbook. There was a great deal of marketing money and press coverage devoted to this unit; a third of the box for the GTE/Sylvania Intellivision describes the features of this proposed expansion. Many people bought an Intellivision with plans to turn it into a computer when the expansion module was released.

“Months, then years passed and the original expansion keyboard was released only in a few test areas in late 1981. With the price too high and the initial reaction poor, the product was scrapped in 1982 before being released nationwide.

“1982 saw many changes in both the videogame industry and the Intellivision product line. A voice-synthesis module called Intellivoice made sound and speech and integral part of gameplay, through the use of special voice-enhanced cartridges. The Intellivision II was also released this year, which one company spokesperson described as ‘smaller and lighter than the original, yet with the same powerful 16-bit microprocessor.’ The new console was more compact than the first, and its grayish body made it look more like a sophisticated electronic device than the original design.

“1983 brought more promises from the folks at Mattel, the most significant of which being the Intellivision III. This was shown off at the January 1983 CES show, and lauded in the videogame mags for many months afterwards. In June of 1983 at the Summer CES show, Mattel announced it was killing the Intellivision III and

including most of its high-profile features into their long-awaited computer expansion, the Entertainment Computer System.

“Probably the most ambitious effort the Intellivision team had undertaken, the Entertainment Computer System was comprised of a computer keyboard add-on, a 49-key music synthesizer, RAM expansion for the keyboard add-on to expand it to a full 64K RAM and 24K ROM, a data recorder to store programs, a 40-column thermal printer, and an adapter which would allow you to play Atari 2600 games on your Intellivision.

“The RAM expansion modules, data recorder, and thermal printer never made it past the drawing board, and the music synthesizer had but one software title to take advantage of its capabilities. While the 2600 adapter greatly expanded the library of available games, much of the steam this generated had already been stolen by Coleco’s own expansion module.

1984 would spell the end of the original Intellivision as the world knew it. T.E. Valeski, Senior Vice President of Marketing and Sales at Mattel Electronics, along with a group of investors, purchased the assets, trademarks, patents, and right to the Intellivision in January of 1984 for $16.5 million dollars. The purchase was backed by financing from Tangible Industries, a division of Revco Drug Stores. The newly formed company was originally called Intellivision, Inc., and later renamed INTV, Inc., after Valeski negotiated all rights from Revco in November of 1984. During the next two years, the new

company would lie dormant while plans were being made for a re-emergence.

“In the fall of 1985, the INTV System III (also called the Super Pro System) appeared at Toys ‘R Us, Kiddie City, and in a mail order catalog sent to owners of the original Intellivision direct from INTV. The new console was of the same general design as the original master component, except it sported a fresh black plastic shell with brushed aluminum trim. Several new games accompanied the release of the new system, and 1985 would register over $6 million dollars in sales worldwide, indicating that INTV Corp. had indeed revived the Intellivision. INTV continued to market games and repair services through the mail with great success. Between 1985 and 1990 over 35 new games were released, bringing the Intellivision’s game library to a total of 125 titles.

“Many more changes were to come during the final six years of Intellivision’s useful life. In 1987, an improved master component called the INTV System IV was shown at the January CES, which sported detachable controllers and a timing device. Unfortunately, this never saw the light either. In the fall of 1988, INTV re- introduced the computer keyboard adapter through their mail order catalog on a limited quantity basis.

“In 1990, INTV discontinued retail sales of their games and equipment and sold them only through the mail channels. The change in marketing was due to agreements with Nintendo and Sega to become a software vendor for the NES, Game Boy and Genesis. In 1991, INTV

sold out its stock of Intellivision games and consoles, and the company, along with the Intellivision, gradually faded into black."

Source: Mattel Intellivision Frequently Asked Questions (FAQ) by Larry Anderson Version 3.0, June 27th, 1995 "Copyright © 1995 Larry Anderson

GHOST SITES ON THE WEB

From Morbus

[Bruce Sterling remarks: Steve Baldwin has an interesting hobby. He not only hunts down dead websites (as the following indicates) but he has entertaining and highly caustic things to say about them in his own website.]

[Morbus remarks: "Ghost Sites is a zine that guides you to the rotting corpses on the Internet. All those sites that haven't been updated in years, or proclaim movies long dead, forgotten to the sands of time."]

[The following text is by Steve Baldwin.] "Layoffs at Hotwired. A bloodbath rumored at CNet. Cool Site of the Day on the rocks. A cruel, winnowing ice storm is blowing through the Net, and many of yesterday's once unassailable Web sites are fighting for their lives.

"Many say that the age of experimentalism is over, that it's time for the Web to grow up and start earning a living, that the world won't shed a tear for the legions of half-baked and half-cocked sites now lying in ruins.

"At Ghost Sites, we try to avoid long-winded discussions of how we got ourselves into this awful mess. We're not here to speechify, we're here to wield a shovel and play Taps for dead web sites. Someday, perhaps when the Web becomes civilized enough to bury its own dead, we'll move on to happier pursuits.

"But not now. There's too much digging to do.

"If you're interested in this Ghost Sites thing, it is a project

that I began in the summer of 1996 while I was working for Time-Warner's Pathfinder. Late in the evening of July 4th, while piloting a small craft across Long Island Sound, I had what only can be described as an epiphany.

"From out of the depths came a cruel vision of the World Wide Web. It wasn't a friendly place, an innocent place of community, commerce and chat. It was a great and utterly pitiless electronic ocean that swallowed up sites, careers, and venture capital like a ravenous killer whale. Great sites, sites like Mecklerweb and iGuide, were going down with all hands. Great fortunes were collapsing and proud content sites lay wrecked on the bottom. No one seemed to care. The future was a vast abyss, who would record these days of New Media folly, disaster and despair?
"Back on shore, but still haunted by this vision, I launched Ghost Sites as a modest attempt to document the great disappearing fleet of web sites sinking beneath the waves. This project briefly made me spectacularly famous, and then I was quickly, and completely forgotten.

"By March of 1997, Ghost Sites had succumbed to the same deadly entropy that had settled over the Internet, and became a crewless wreck itself. For six cruel months, it drifted like a despised garbage barge, broke its keel in a summer squall, and finally washed up on Geocities.

"On an icy November morning, Morbus boarded the wreck, inspected the damage, and offered the captain a safe harbor. The bilge pump was started, and the squealing, rusty hull lifted off the sands again. It soon arrived here, in the dark, unquiet waters of Disobey.Com.

“If you want to see the article that made me briefly famous, check out ‘Ghosts in the Machine.’ I became so famous because of this article that there were women lining up to see me, I felt like Elvis! But then. the fall from grace.

Source: www.disobey.com/ghostsites/ [2015 note: Still alive, ish]

DE MOURA'S WAVE EMITTER

From Roberto de Sousa Causo

[Bruce Sterling remarks: One might feel a bit of skepticism for these nationalist claims of pre-eminence in radio, but I have to give this Brazilian journalist a lot of credit for his assertive title.]

"Marconi my Ass! Brazilian Radio Inventor Arrived Ahead" by Geraldo Nunes

"Brazilian Catholic priest Landell de Moura tested positively a radio device in Sao Paulo, in 1893, two years ahead of Marconi.

"This is a story of individual vision and collective shortsightness. Back in 19th century Brazil, the only way you could become a scientist was by first becoming a member of the Catholic Church. That was what Landell de Moura (born in January 21, 1861, dead July 30 1928) did in 1879, in order to be accepted at the Gregorian University in Italy. There he met Guglielmo Marconi, who was then studying the telegraph, while Moura went to researching radio transmission.

"Back in Brazil he was met with indifference by local Church officials. After insisting on his projects for some time and suffering a lot of transferral from one town to another, he ended up in Sao Paulo, capital of a State with the same name, a city in which he found means to build his 'emissor de ondas' or wave emitter.

"In 1893, in the Paulista Avenue, he tested his emissor de ondas, contacting a receiver installed at Alto de Santana, a

place 8 kilometers from the emitter site. This was two years ahead of Marconi, and while Marconi's device could work only with morse code, Moura's emissor de ondas could really transmit the human voice.

"Moura proceeded to get a patent registered in Sao Paulo, and other three in the US, among them were a hertzian wave transmitter, a wireless telephone and telegraph.

"Yet his discoveries and inventions were badly received by the Church intelligentsia in Brazil, which claimed talking from place to place without a wire could only be a 'Devil's deed.' When looking for government support Landell de Moura was treated as a crazy dumb idiot, and in 1904 his patents expired.

"Eventually, in the 20s, the radio was introduced in Brazil and become a major cultural feature, and everybody of course honored Marconi for that."

Source: Marconi uma Ova!, an article by Geraldo Nunes in the weekly magazine of the newspaper Diario Popular Number 48, October 5, 1997. The article was based in Reynaldo C. Tavare's book, Historias que o Radio Nao Contou.

NIXIE INDICATOR TUBE DISPLAYS

From Tom Jennings

Nixie indicators (aka “Nixie tubes”) were an all- electronic display device developed by Burroughs Corp in 1954 from a design by the Haydu brothers a year earlier. Nixies were a novel use of tried-and-true technologies, vacuum tube packaging of gaseous-discharge lamps (“neon lamps”) shaped into alphanumeric symbols. Until the late ‘60’s when supplanted by LEDs (then LCDs), Nixies were the premier display technology for low-bandwidth information. A Nixie contained up to 12 symbols; most commonly digits 0 through 9, others with sign (+, -), decimal point or even alphas. Characters were cursive, discrete, fully formed, and a bright orange color.

Nixies were nicely synergistic, bridging the pre- computer world with the post. For the first time, instrumentation could display numbers as people drew them, nicely formed digits in a linear left-to-right string, with leading sign and decimal point.

They were a monolithic electronic device rather than a mechanical assembly or array of lamps. Texas Instruments and others made TTL integrated-circuit interfaces for them, the 7440 and 7441.

Nixies are related to another dead computing/display technology, decimal counting tubes, inherently-computational devices tried in the crazy days of early computing, (about 1935-1955).

Decimal tubes performed functions otherwise requiring a

chassis full of tubes and discrete components. A decimal tube “effectively replac[es] 18 transistors (10 high voltage ones) and forty diodes”, a Good Thing in 1954.

The design life of decimal counting tubes was fairly long, late 40’s through early 60’s. Gaseous decimal counting tubes were also a medium unto themselves. They directly displayed their internal state via visibly-glowing electrodes, which commercial equipment used to advantage, mainly in counters and scalers.

KOREAN HORSE POST

From Gary Gach

“The Horse Relay Station (Pabal) “Horse relay stations were a communication system established to deliver emergency military secret documents promptly from the central government to the border.

“Relaying information about an enemy’s position using beacon or smoke was limited when it was cloudy or foggy. Thus the horse relay station system supplemented the beacon and fire system. It originated as a military secret service, established by the Sung dynasty in order to attack the Jurchen dynasty.

“There were three types of delivery. The poch’e and kopgakch’e were a type of communication in which a man delivers a message by running, and mach’e was a type of communication in which a horse was used. This system was further developed during Yuan and Ming dynasties of China.

“During the Japanese Invasion, the Ming China’s military dispatched messages to the Choson dynasty using the relay station. Kim Ung-nam, a consular representative, and Han Chun-gyom, the royal secretary, suggested in adopting a similar system. It was then adopted and 194 stations were established. Three main sectors, West, North, and South were established. They were further subdivided into regions. There was a stop station every twenty or thirty ri for jockeys.

“Important aspects of operating horse relay stations were

security of horses and soldiers. Soldiers were organized by paljang and palgun. The palgun was composed of cavalry and infantry which was composed of militia. Their main duty was the transmission of official secret documents. Those who delayed transmission, damaged documents or stole them were strictly punished. There were case in which secrets were leaked.

“Methods of beacon and fire were further developed after the seventeenth to eighteenth century with the horse relay station system as part of the Choson military communications system, but the horse relay stations were abolished with the advent of telephone and telegraph in 1894.”

Source: ENCYCLOPEDIA KOREANA, to be published 1998 by the Korean Ministry of Culture, Seoul, Korea (Warning: Korean financial difficulties may make the publication date problematic)

NAVAL SOS BECOMES OBSOLETE

From Bill Burns

Thursday, January 1 12:43 PM EST “SOS distress signal era ends “LONDON, Jan. 1 (UPI), The Morse code distress signal SOS is now officially history, but not before a 13,000 ton Bahamas-registered ship used it to call for help 790 miles west of Ireland.

“The SOS signal and official use of Morse Code was formally scrapped worldwide at midnight.

“The ship MV Oak was headed from Canada to Liverpool with a crew of 26 when its cargo of wood shifted in storm- force winds and it lost all engine power Wednesday.

“The ship tapped out Morse code’s final SOS and the signals were picked up in Britain and passed to the Falmouth coastguard. The Coast Guard initially considered the message a joke signaling the end of an era.

“Guard spokesman Gerry Wood said, ‘We haven’t had a Morse distress message for years. It was almost too perfect.’ “But he said they reacted knowing ‘someone was in distress. as nobody ever sends an SOS signal as an exercise.’ “Ship signals are now dispatched by modern satellite voice and computer communication.

“The Morse code system dates back to 1908 when British and German radio operators agreed to use the SOS message.

“The letters were chosen because they are simple to tap

out in Morse code: dot-dot-dot-dash-dash-dash-dot-dot-dot.

“Wednesday’s message from the Oak said only ‘SOS. SOS. This is Oak. Position 53 16 N, 24 59 W. Stop engine. We need assistance.’ “British Coast Guard officials report the ship has been abandoned and the nearest ship is some 400 miles away. But the Oak’s crew and captain are reportedly aboard lifeboats.”

Source United Press International 1/1/1998; the telegraph collectors list

DEAD PUBLIC SIRENS AND HORNS

From Tom Jennings

Once a very important medium, they are now obsolete pretty much everywhere. The noontime horn, “air raid” and Civil Defense alerts, fire-whistle tests, they are definitely in a mode of the past.

These systems all assumed a large number of people within hearing distance of the local government building that hosted the siren. Fire alarms (e.g., a “two alarm” fire) are the last function of public sirens used in urban/suburban areas that I am aware of. I wonder how many functions that once had, that are now forgotten?

At least as of 1996 in San Francisco, there was a Tuesday noontime whistle; presumably at a fire station, but I don’t really know. Los Angeles streets are covered with Civil Defense sirens. They sit on top of their own poles, approx. 15-20 feet, and look like birdhouses. They were pointed out to me by a local artist who once wanted to work them into a coordinated performance, but the local authorities were stumped as to jurisdiction of the relics and skeptical of the project anyway. They’re one of those odd things. effectively nonexistent, but once spotted, they appear everywhere.

My project load is such that I will never pursue this subject, but I thought it should be recorded. I assume their origin dates back to ringing alarm bells in church towers of ages old, but I don’t really know.

[Bruce Sterling remarks: Telecommunication alarm

systems pre- date Christianity. Swift warning of disaster or enemy attack is one of the primary reasons for building such a system in the first place. Smoke signals, tribal drum- beats, Gaullic stentor shouting, fire signals in Roman imperial forts, alarm fires on the Great Wall of China, in the optical telegraphy towers of revolutionary France. not to mention the later vast proliferation of telegraphic fire alarms, burglar alarms, and Distant Early Warning stations. There is little question that dead alarm systems are “dead media.”]

TOWER CLOCKS AND CHIMES; CITY-WIDE PUBLIC ADDRESS SYSTEMS; FACTORY WHISTLES; FOGHORNS

From Trevor Blake

Marginally related were the “tornado drills” I took part in during my first years of schooling in the 1970s. It was not until I was an adult that I thought back on the profound lack of tornados in the Eastern Appalachian part of the United States. while on the other hand, Oak Ridge and Knoxville were ‘ground zero’ cities for their nuclear and other power resources.

We would silently line the hallways, squatting on the floor with books held over our heads. You have to get out of the big cities into the countryside in the mid-west.

Sirens and horns are still fairly common. And there used to be “foghorns” on foggy days and nights, long after ships needed them for navigation, until the cost of maintaining this romantic relic was made known to the bean-counters at City Hall, who axed them from the budget.

Big Ben, of course, is still broadcast live by the BBC; but its notes have become more of a signature tune than a time signal. These systems are dead as media by which people’s time is managed (people use their own watches and clocks), but persist as honoured rituals. It was so loud in my building that all conversation had to stop for the five seconds or so that the whistle blew.

I recall being on the phone several times when the whistle

went off, and having to explain later what had just happened. The whistle, installed in the 20s, was no longer effective by the 1950s, when the campus had grown larger. But it is still used today.

In Marmet West Virginia, where the volunteer fire department covers fires and mine accidents, the eerie two- toned wail of the call-in siren echoes up and down the hollows for up to five minutes. A fair number of people up in the hills either don't have phones or are on party lines, so the telephone isn't a good method of contacting people, thus the siren is still the best way to inform volunteers they're needed. Heard it today (paying a little more attention than I would normally!) at its usual 11:58. Not sure where it comes from but believe it's a single location somewhere downtown. You probably should re-label them as 'doddering' rather than totally dead.

TELEGRAPHY

From Bill Burns

"Telegraph Served AP for 8 Decades" By Libby Quaid Associated Press Writer Thursday, January 22, 1998; 2:57 a.m. "WASHINGTON (AP), The Associated Press once had an army of 1,500 telegraphers who spread the news to the world in staccato bursts.

"'There's only four of us left,' says Aubrey Keel, whose career spanned bureaus from coast to coast and whose world was the 46 combinations of dots and dashes that made up Morse Code.

"For the eight decades the news cooperative depended upon the telegraph, a good fist was in demand. His own could tap out up to 45 words a minute, the 96-year-old Keel boasted as he demonstrated his trade Wednesday as part of the AP's 150th anniversary observation at The Freedom Forum's Newseum, a museum in the Washington suburb of Arlington, Va.

"From his home in Kansas City, Mo., Keel brought the tools that once ruled the business, a vintage green Western Union telegraph like the machine he started on, and a Vibroplex 'lightning bug' that is still made today.

"Smoothly, swiftly, he flicked his wrist, and the 'dahditditdidahdahdididit' became verse received by a retired Illinois railroad telegrapher, George Nixon, seated with his own machine in the back of the room: "'Along the smooth and slender wires, the sleepless heralds run.

"'Fast as the clear and living rays go streaming from the

sun.

“’No peals or flashes, heard or seen, their wondrous flight betray.

“’And yet their words are quickly caught, in cities far away.’. “(Telegraphers) had to know three ‘languages’ of Morse Code; American, International, and Continental (created because the space letters C, O, R, Y and Z and the long L couldn’t transmit along submarine cables) as well as Phillips Code, a shorthand version of Morse.

“First recruited by the railroads during a telegrapher shortage in World War I, Keel took years to develop the skill that now comes so easily.

“’I don’t know how else to explain it. After you do it for a while, it’s like music,’ Keel said. ‘It’s like riding a bicycle or playing the piano. You get rusty at it, but you don’t forget it.’. “But the newspaper telegraphers ‘had it made,’ Keel said. When he was hired by the AP in Lubbock, Texas, Keel made $32.60 a week for 48 hours of work. The average railroad salary was about $25, he said.

“Older operators had a reputation for hard living, but Keel had learned his lesson as a novice in an earlier job. It was Prohibition, and he decided to drink a bottle of home brew with his more experienced colleagues.

“’I came back, and the wire started up, I could hear it, but I couldn’t get it down,’ Keel said. ‘You never saw a man sober up as fast as I did.’ “He remembers when the Texas AP phased in the Teletype printer in 1928, letting 30 operators go in one day. ‘Someone said, ‘Those Teletypes

will never work, they'll have us back in a week,' Keel recalled.

"But they didn't. Keel weathered the storm, eventually becoming communications chief in the Milwaukee, Des Moines and Los Angeles bureaus. He retired in 1966.

"Today, he often 'talks' to retired telegraphers transmitting via ham radio, unless he's busy using email from a home command center that includes two computers, radio gear and a digital camera and scanner. His old employer now transmits news at 9,000 words a minute.

"He glanced down at his old 'green key,' adjusting the Prince Albert tobacco can that changes the telegraph's pitch.

"'It's hard to think that AP started and for 80 years, that was their means of communication. And look at what they are today,' he said."

Source Museum recalls when news moved in dots, dashes by Libby Quaid, Associated Press, January 22, 1998

DEAD DIGITAL DOCUMENTS

From Bruce Sterling

“The Jan. 12 Federal Page article on the Defense Department’s year-2000 problem discusses serious issues affecting our computer-dependent government. But the nation also faces a second digitally based crisis that might, in time, do great harm.”

“We run the risk that digital information will disappear. Indeed, portions of it already have become inaccessible. Either the media on which the information is stored are disintegrating, or the computer hardware and software needed to retrieve it from obsolete digital formats no longer exist.”

“The extent of the problem will emerge as more and more records are requested for retrieval and cannot be read. There are already documented examples of this, and government and industry representatives are concerned about the potential large-scale consequences.”

“Given the problems now surfacing as existing digital files are retrieved, the prospect of major losses to come grows increasingly likely.”

“Military files, including POW and MIA data from the Vietnam War, were nearly lost forever because of errors and omissions contained in the original digital records. Ten to 20 percent of vital data tapes from the Viking Mars mission have significant errors because magnetic tape is too susceptible to degradation to serve as an archival storage medium.”

“Research conducted by the National Media Lab, part of the National Technology Alliance, a consortium of government, industry and educational institutions that seeks to leverage commercial information technology for government users, has shown that magnetic tapes, disks and optical CD-ROMs have relatively short lives and, therefore, questionable value as preservation media.”

“The findings reveal that, at room temperature, top-quality data VHS tape becomes unreliable after 10 years, and average-quality CD-ROMs are unreliable after only five years.”

“Compare those figures with a life of more than 100 years for archival-quality microfilm and paper. Current digital media are plainly unacceptable for long-term preservation.”

“Finding a late-model computer to read a 5.25-inch floppy disk, a format common only a few years ago, or the software to translate WordPerfect 4.0 is practically impossible. On government and industry levels, the problem is magnified: old Dectape and UNIVAC drives, which recorded vast amounts of government data, are long retired, and programs like FORTRAN II are historical curiousities.”

“The data stored by these machines in now-obsolete formats are virtually inaccessible. The year-2000 problem concerns only obsolete formats for storing dates. It is merely a snapshot of the greater digital crisis that puts future access to important government, business, and cultural data in such jeopardy.”

“Librarians and archivists have long worried that hardware and software manufacturers show more interest in discovering new technology than in preserving today’s data. It is important for federal, state and local governments to set digital storage standards that will ensure future access. If private industries hope to sell their wares to governments, they will need to comply with those standards. And all of us will benefit.”

Source: Washington Post, 1998

THE PHILIPS-MILLER AUDIO RECORDING SYSTEM

From David Morton

[David Morton remarks: The Philips-Miller audio recording system was invented by an American, J.A. Miller, and licensed to the Philips company of Eindhoven. Philips marketed this system to radio broadcasters beginning in the mid 1930s, but apparently did not revive it after World War II. The system was in use at Radio Luxembourg and the BBC for several years, and the Norwegian broadcasting authority also installed a Philips-Miller recorder in 1936 and used it until it was replaced by tape recorders in 1950. In the U.S., station WQXR in New York briefly experimented with a Philips-Miller recording around 1938.)

“In the Philips-Miller method, as in the photographic sound-film processes, a sound-track is recorded on a strip of film. However, this is not done by optical means as hitherto, but by mechanical means. The film material, the ‘Philimil’ tape, consists of a celluloid base, which in place of the usual photographic emulsion is coated with an ordinary translucent layer of gelatine about 60 microns in thickness, on which a very thin opaque surface layer about 3 microns in thickness is affixed.

“Perpendicular to the tape, a cutter or stylus shaped like an obtuse wedge moves in synchronism with the sound vibrations to be recorded. This cutter removes a shaving from the gelatine layer which is displaced below it at a

uniform speed. “Now if the cutter moves up and down in synchronism with the sound vibrations to be recorded (perpendicular to the tape), a transparent track on an opaque background will be produced on the moving tape whose width will vary in synchronism with the sound vibrations.

“The recorded sound is reproduced by the usual method employed in optical sound-film technology. The film carrying the sound-track is moved between a photo-electric cell and a small, brightly illuminated slit (transversal to the direction of the motion of the film). The intensity of the light falling on the photo-electric cell thus varies with the variable width of the sound-track, and the resulting current fluctuations in the photo-electric cell are amplified and passed to a loudspeaker.

“The Philips-Miller system is thus a combination of a mechanical recording method with an optical method of reproduction. This unique association offers distinct advantages over the methods hitherto in use. ”

[The article claims a frequency response of 25-8000 cycles for the apparatus, +-2 decibels.]

Source: Philips Technical Review, Volume 1, April 1935, pages 107-104
Transmission by Tape: N.Y. Station Uses Innovation for the First Time in America, Newsweek (September 26, 1938): page 27.

TRAIL BLAZING BY APES

From Bruce Sterling

“PHILADELPHIA, Researchers studying apes in the wild have found that African bonobos use complex trail markers to silently communicate in the dense tropical forests where they live along the Congo River.

“The discovery is contrary to the belief of many scientists that apes lack the brain structure for the use of symbolic language in complex communications, said E. Sue Savage-Rumbaugh of Georgia State University. . “Bonobos, apes that closely resemble chimpanzees, live in very dense forest with only faint trails. They live in bands of more than 100 and each night rest together in trees.

“During the day, the apes separate into small groups and forage for food, often travelling for miles and moving silently to avoid predators.

“And yet, when the day ends, members of the band find their way back together at a new resting place.

“Savage-Rumbaugh said this behavior shows that the animals communicate. She noticed that whenever a trail crossed another trail, the lead group would stamp down vegetation or rip off large leaves and place them carefully.

“’What they are doing is leaving little notes in the vegetation,’ she said. ‘Those notes are signals about where they are going to go.’ “Savage-Rumbaugh said the plants were disturbed only at the junctions of trails and it was clear that the lead group was leaving markers for those who followed. Sometimes, she said, intersections

would be marked by large leaves pointing in the direction of travel. "To prove her discovery, Savage-Rumbaugh said she twice followed the trail signs far behind groups of the apes. At the end of each day she found her way to the reassembled band's new resting trees." [Bruce Sterling remarks: It seems hard to describe bonobo trail blazing as anything less than a "medium." While bonobos are not extinct, it seems quite plausible that our extinct protohuman ancestors also left "little notes in the vegetation." While paleolithic notched bones are demonstrably 100,000 years old, the medium of trail blazing may well be several million years old and quite possibly pre-dates the human race.]

Source Apes Mark Trails in Jungle With Leaves by Paul Recer, Associated Press Austin American Statesman, Sunday February 15, 1998 page A20

NOTCHED BONES

From Bruce Sterling

“Although humans were present in Southwest Asia starting in the lower Paleolithic period as early as 600,000 years ago, no symbols have been preserved from those remote times. The first archaeological material attesting the use of symbols in the Near East belongs to the epoch of Neanderthal man, the Mousterian period, as late as 60,000 to 25,000 BC.

“The data are threefold. [Bruce Sterling remarks: the three varieties of these earliest known “symbols” were (1) red ochre (and other colored pigments) sometimes used to paint dead and possibly living human bodies; (2) Neanderthal funeral paraphernalia such as decorative flowers, teeth, pebbles and other knicknacks buried with corpses; and (3) etched bones, the world’s earliest dead medium.

“The third category of artifacts bears graphic symbols, bone fragments engraved with a series of notches usually arranged in parallel fashion.”

“Notched bones continued to be used in the Upper Paleolithic. Five deeply incised gazelle scapulae were discovered in an Aurignacian layer at Hayonin in Israel that date about 28,000 BC. The cave of Ksar Akil in Lebanon produced one bone awl about 10 cm long bearing some 170 incisions grouped along the shaft in four different columns. The markings consist of mostly straight strokes with some instances of overlapping into V

and X shapes. The rock shelter of Jiita, also in Lebanon, also yielded an incised bone used as an awl that bears three irregular rows of markings arranged in a zig-zag pattern. The artifacts from Ksar Akil and Jiita are dated to the late Kebaran period, about 15,000 to 12,000 BC.

“Notched bones are also present in Europe during most of the Upper Paleolithic period, between 29,000 and 11,000 BC. Incised bones were recovered... at the two Natufian sites of Hayonim and Ain Mahalla, Palestine, about 10,000 BC, whereas two other Natufian settlements in the Negev, Rosh Zin and Wadi al-Hammeh in Jordan, as well as Zawi Chemi, a contemporaneous site in northern Iraq, produced pebbles and various limestone and bone implements engraved with parallel lines. page 160 “In the Near East, as in Europe, the function of the Paleolithic and Mesolithic incised bones... can only be hypothesized. From the earliest days of archaeology, the notched bones have been interpreted as tallies, each notch representing one item. According to a recent theory by Alexander Marshack, the artifacts were lunar calendars, each incised line recording one appearance of the moon. This interpretation cannot be proven nor disproven nor can it be ignored.” [Bruce Sterling remarks: Whatever people were up to with these notched counting bones, it must have been of considerable relevance and urgency to them, because this medium persisted around our planet for a record ninety- thousand years.]

Source Before Writing Volume 1: From Counting to Cuneiform by Denise Schmandt-Besserat University of Texas Press, Austin, 1992 ISBN 0-292-70783-5

THE VORTEX EXPERIMENTAL THEATER

From Carl Guderian

[Carl Guderian remarks: At a local used bookstore I found a Folkways record describing and featuring performances from the VORTEX, an experimental theater in San Francisco in 1957.]

"VORTEX: Entertainment for the Space Age "'Amazing!' said a member of the capacity audience. 'It's hypnotic,' said another. 'Especially magnificent was the sense of space, limitless, incomprehensively vast, and awe-inspiring in its implications,' wrote Alfred Frankenstein in the San Francisco Chronicle.

"They were talking about Vortex, a new type of theater, theater without actors, script or musicians, as presented at San Francisco's Morrison Planetarium.

"The heart of Vortex is the dome, an entire 'sky' upon which can be projected patterns, colors, moving shapes of all kinds, and the acoustical system, forty high-fidelity loudspeakers which can direct sound at the audience from any one point of the compass, or from all points at once, or can rotate around the audience in a kind of 'whirlpool' of sound. This latter effect is what gave Vortex its name. "Each composition is accompanied by visual effects projected on the dome by the elaborate planetarium lighting system and a battery of special Vortex projectors. These effects range from the small and humorous, as when a tiny planet and its moon do a

‘dance’ across the sky, to the grandiose spectacle of a whole sky filled with flashing patterns and colors.” [Carl Guderian remarks: “Folkways?” Of nerdy, SF-based experimental musicians? Not exactly a vanishing culture. Hey, maybe we need an oral history.

“Ya know, when Laurie Anderson first came to our little town.”. [The album features a diagram showing a top view of the VORTEX speaker layout. At each of 12 evenly-spaced stations along the inside wall are a woofer and two tweeters. At the center are two woofers, facing at 3 and 9 o’clock. There are also two more woofers, one at 12:30 and one at 6:30. The audience sits in two semicircles, presumably facing their respective sides of the wall. The sound can be switched to any or all of the speakers or rotated through all of them in sequence.

[According to the literature, the first performance of the Vortex was in May, 1957, sponsored by KPFA and the California Academy of Sciences. The music is your basic dry, but kinda interesting, compositions of blewps and bleeps you get when four white guys get synthesizers to play with. The musicians are:

Henry Jacobs, composer/engineer and organizer of the Vortex project. He had done weekly “Ethnic Music” broadcasts at KPFA for 5 years before this.

Gordon Longfellow, comes to us courtesy of Ampex Corporation of Redwood City, CA, and has worked with tape- recorded electronic music.

David Talcott, 6 years at KPFA and a huge Musique Concrete fan.

William Loughborough, worked with Harry Partch and helped design and build many of Partch's instruments. He invented the popular commercial drum, the Boo Bam, and other highly complex percussion instruments.

[I guess I'm smirking a little, but this sounds like it would have been pretty cool in 1957, and these guys sound like they had a good time doing it. These musicians are probably still alive and there may even be some Dead Media readers who went to a performance, or know someone who did. Performances ran at least into the fall of 1957. There's no mention of how much longer this lasted, though the record's copyright date is 1959. The literature also says they've received inquiries from as far away as Japan, about reproducing this "theater of the future." They mention Cinerama, too. So the technology died out, but not the concept.]

Source: Folkways album Vortex, Folkways Records FSS6301, 1959

MINIFON POCKET-SIZE WIRE RECORDER

From Richard Kadrey

“The Minifon P55 pocket-size magnetic-wire recorder (manufactured in Germany and marketed in the United Kingdom by EMI) is a notable example of miniaturization in the recording field. The recorder provides up to 5 hours continuous recording/playback; a choice of two recording speeds (9.1 in. and 4.55 in./second) is provided and the ratio of forward to re-wind speed is 1:6. The motor operates from 6-12 volt D.C. sources, and the layer-built 12-volt dry battery has an approximate life of 10-15 hours; alternatively, the Minifon P55 may be operated from a miniature accumulator (capacity 12-15 hours), or a transformer-rectifier (110/220 volts A.C.). The dimensions of the recorder are 1 9/16 in. x 3 15/16 in. x 6 11/16 in.; the weight, including batteries, is 2 lb.”

Source: E. Molloy, general editor, Radio and Television Engineers’ Reference Book, 1954, George Newnes Ltd. (pages 46-65, 46-66)

TRAIL BLAZING IN ANCIENT AUSTRALIA

From Melissa Dennison

Here is what I know about Australian Aboriginal boundary trees and scarred trees. Boundary trees were created by tying gum tree branches (or in the case of very young trees, entire trunks) together with kangaroo sinews. With time the branches or trunks would knit together to form a very distinctive shape, undoubtedly man-made.

Such trees signified the boundaries between various tribes and clans. Sometimes they were also marked by carving various symbols into the bark. Scarred trees (usually just called “scar trees”) were created by cutting a piece of bark off a gum tree to use as a shield or other tool, or even a canoe. Usually an oblong-shaped piece of bark would be cut.

As the tree grows the scar grows, sometimes as much as 10 to 12 feet in length. The bark would be cut so that if you stood against the tree with your back to the scar, you would be looking in the direction of something significant, such as a water hole, burial ground, boundary tree, river, mountain, “women’s business” or “men’s business” site (sacred stuff, this).

Boundary trees and scar trees formed a system of signage throughout the Australian landscape. Aborigines would read the trees just as we read street signs and traffic lights. Unfortunately, European settlers cut down many of

these trees and so there are now big gaps in the system.

I’m sure this information is well documented in various texts in Australia, but I got it from some young Aborigines who were generous enough to share it with me when I travelled down under.

[Bruce Sterling remarks: One can only speculate about the extreme age of this practice of using vegetation as media. It may pre-date humanity.]

PAPER MAGNETIC-RECORDING TAPE

From Richard Kadrey

“A low-price magnetic-recording tape has been introduced by the General Electric Co. It is manufactured by Salford Electrical Instruments Ltd. and sold under the trade name of ‘Puretone.’ It is a paper-based material with an output frequency response which compares favorably with those of plastic tapes costing almost twice as much.

“The new tape is wound on specially designed plastic spools slotted to facilitate rapid threading. The 1,200- ft. reels gives 32 minutes playing time at 7 ½ in./second. Twin-track recording is also possible. Highest-grade oxide with a particle size from 0.5 to 1.5 m is used in the magnetic coating. The base consists of a high-quality super-calendered Kraft paper.

“The coating has a high-gloss finish, which, coupled with the addition of a lubricant, greatly reduces the friction and wear on the recorder heads. On a typical recorder the response curve us substantially flat within plus-or-minus 1db over a range of frequencies from 50 c/s to kc/s. The tensile strength is about 6 lb. breaking strain, with a coercive force and remanence of 220 oersteds and 700 gauss respectively.”

Source: E. Molloy, general editor, Radio and Television Engineers’ Reference Book, 1954, George Newnes Ltd. (pages 46-65, 46-66)

AT&T TELEPHOTOGRAPHY; AT&T PICTUREPHONE

From Richard Kadrey

Telephotography

In 1918 H. Nyquist began investigating ways to adapt telephone circuits for picture transmission. By 1924 this research bore fruit in 'telephotography', AT&T's fax machine.

"The principles used in 1924 were the same as those used today, though the technology was comparatively crude. A photographic transparency was mounted on a spinning drum and scanned. This data, transformed into electrical signals that were proportional in intensity to the shades and tones of the image, were transmitted over phone lines and deposited onto a similarly spinning sheet of photographic negative film, which was then developed in a darkroom. The first fax images were 5x7 photographs sent to Manhattan from Chicago and Cleveland and took seven minutes each to transmit."

Picturephone

"The first Picturephone test system, built in 1956, was crude, it transmitted an image only once every two seconds. But by 1964 a complete experimental system, the 'Mod 1,' had been developed. To test it, the public was invited to place calls between special exhibits at Disneyland and the New York World's Fair. In both locations, visitors were carefully interviewed afterward by a market research agency.

“People, it turned out, didn’t like Picturephone. The equipment was too bulky, the controls too unfriendly, and the picture too small. But the Bell System was convinced that Picturephone was viable. Trials went on for six more years. In 1970, commercial Picturephone service debuted in downtown Pittsburgh and AT&T executives confidently predicted that a million Picturephone sets would be in use by 1980.

“What happened? Despite its improvements, Picturephone was still big, expensive, and uncomfortably intrusive. It was only two decades later, with improvements in speed, resolution, miniaturization, and the incorporation of Picturephone into another piece of desktop equipment, the computer, that the promise of a personal video communication system was realized.”

Source: AT&T Labs Research site; <a href=”http://akpublic.research.att.com/history/24fax.html”>http://akpublic.

MECHANICAL SIRENS AND FOGHORNS

From Ron Bean

A siren is a noisemaking device producing a piercing sound of definite pitch. Used as a warning signal, it was invented in the late 18th century by the Scottish natural philosopher John Robinson. The name was given it by the French engineer Charles Cagniard de LaTour, who devised an acoustical instrument of the type in 1819.

“A disk with evenly spaced holes around its edge is rotated at high speed, interrupting at regular intervals a jet of air directed at the holes. The resulting regular pulsations cause a sound wave in the surrounding air. The siren is thus classified as a free aerophone.

“The sound-wave frequency of its pitch equals the number of air puffs (or holes times the number of revolutions) per second. The strident sound results from the high number of overtones (harmonics) present.”

“About the turn of the 20th century, compressed-air fog signals, which sounded a series of blasts, were developed. The most widely used were the siren and the diaphone. The siren consisted of a slotted rotor revolving inside a slotted stator that was located at the throat of a horn. The diaphone worked on the same principle but used a slotted piston reciprocating in a cylinder with matching ports.

“The largest diaphones could be heard under good conditions up to eight nautical miles away. Operating pressures were at 2 to 3 bars (200 to 300 kilopascals), and a large diaphone could consume more than 50 cubic

feet (approximately 1.5 cubic meters) of air per second. This required a large and powerful compressing plant, 50 horsepower or more, with associated air-storage tanks.

“A later compressed-air signal was the tyfon. Employing a metal diaphragm vibrated by differential air pressure, it was more compact and efficient than its predecessors.

“Electricity. Modern fog signals are almost invariably electric. Like the tyfon, they employ a metal diaphragm, but in the electric signal they vibrate between the poles of an electromagnet that is energized by alternating current from an electronic power unit. Powers range from 25 watts to 4 kilowatts, with ranges from half a nautical mile to five nautical miles. Note frequencies lie between 300 and 400 hertz. Emitters can be stacked vertically, half a wavelength apart, in order to enhance the sound horizontally and reduce wasteful vertical dispersion.”

Source: Encyclopaedia Brittanica, 15th edition

QUADRAPHONICS

From David Morton

Multi-channel audio systems were used experimentally as early as the 1930s. Early proposals for stereo tape systems in the late 1940s included several three-channel types, but two-channel stereo was more easily implemented on long playing disks and 45-rpm records. Early pre-recorded stereo tapes also followed the two-channel model. But multi-channel experiments continued with the aim of enhancing the realism of recorded music.

An abortive quad system appeared in the 1950s for use in conjunction with FM broadcasting, but the FCC declined to approve it for commercial use. Quadraphonic home systems began to look more economically feasible after transistors and integrated circuits began to be more widely used in consumer audio equipment in the 1960s, bringing costs down. In 1970, JVC pushed forward with a new 4-channel technology, demonstrating its CD-4 quadraphonic disk (not to be confused with the current Compact Disk).

Between 1970 and 1972, several other 4-channel systems appeared under various names and spellings, including Quadraphonic, Quadriphonic, Quadrophonic, Quadrisonic, Quadrasonic, and Tetrasonic.

Just plain Quad, though widely used to describe these devices, was actually trademarked in 1962 by an obscure British company (which in fact did not make 4-channel audio equipment!)

Besides the CD-4 system, the most popular quad formats were the Electro-Voice system (later called RM or Regular Matrix) the CBS SQ(Stereo-Quadraphonic) system and the Sansui QS system (apparently nearly indistinguishable from RM). Record and electronics companies had to decide for themselves which system to adopt, with some such as Sony choosing SQ and others, such as RCA, choosing CD-4.

By 1973, two more formats had been added, this time on tape. RCA in that year began to offer its first Mark 8 quad 8- track systems, and several record companies offered discrete four-channel recordings on reel-to-reel tape. Additionally, the matrixed systems could be broadcast over existing FM stations, and by late 1974 there were over 200 U.S stations experimentally using the Sansui system.

The FCC launched a study to compare quad broadcasting standards, although it didn't announce its findings until late 1977. As more and more companies became interested in quad, the catalog of available recordings expanded and the prices of equipment came down.

By 1974, there were approximately 400 titles available on quad disks or 8- track tapes, and 75 on open-reel tapes. Equipment prices began to drop significantly after Motorola Corporation introduced a single-chip decoder suitable for several of the matrixed disk formats.

However, the electronics press claimed that record manufacturers, record retailers, and electronics dealers

never fully supported these products. Record companies and retailers complained about the dual inventory problem related to carrying the same titles in multiple formats, particularly since they were already compelled to stock LP, 8-track, and, increasingly, cassette versions of popular releases. More enthusiastic were the quad record clubs that began to spring up to cater to four channel fans.

By 1975, A&M and EMI records had stopped issuing new releases in multiple formats, with the former choosing to stick with CD-4 and the latter SQ. That year, High Fidelity's editor complained that electronics dealers represented the least enthusiastic group in the country where quad is concerned, reflecting the declining sales of equipment.

By the end of 1975 most large electronics chains began discounting quad equipment by up to 50 per cent in order to clear it out. Harman Kardon, Sherwood and other companies declared that they would stop quad production, and Radio Shack closed out its brand of quad equipment to make way for the next big fad, the Citizen's Band radio.

The fact that sales of quad reel-to-reel decks never quite fulfilled expectations was an unanticipated boon for musicians, the lines of high-end recorders designed by TEAC and other companies for quad fans were hastily repackaged as multi track home studio equipment, resulting in one of the first relatively affordable multi track recorders with separate inputs, preamplifiers, and level controls for four channels.

By August of 1977, quad had run its course. Apparently the only manufacturer to offer a new product that year was Sansui, which had two quad receiver models in its catalog. Ironically, the FCC completed its tests of matrixed FM broadcasting and submitted its findings to the public for comment.

In 1978, it issued standards for quad broadcasts, but by that time public interest had waned.

As late as 1979, the audiophile press was still hyping quad, with well-known audio journalist Len Feldman claiming that 4-channel broadcasting was still very much alive. In fact, four-channel audio was not to be heard from again until the current fad for surround sound television.

PRECIOUS METAL AS A NETWORK PROTOCOL

From Julian Dibbell

James Buchan, on page 18 of his remarkable Frozen Desire: The Meaning of Money writes this:

“From our vantage, we can see that money is of no particular substance and may be of no substance at all; that whatever money is, it may be embodied in coins or shells, knives, salt, axes, skins, iron, rice, mahogany, tobacco, cases of gin; in persons; in a word or gesture, paper, plastic, electronic impulses or the silver ingots raced through the streets on trays at sundown to make up accounts between the foreign banks in my mother’s father’s days in Hangkow.”

Two things about this passage interest me. The first is its suggestive implication that money has both a “hardware” component (i.e., the coins, paper, knives, mahogany, etc., that embody it) and a “software” component (i.e., among other things perhaps, the value thus embodied).

The second is the wonderfully nostalgic closing tidbit about the shuttling trays of silver in the streets of old Hangkow (this I assume is the former city Hankou, China, now a subdistrict of the megalopolis Wuhan), which provides a vivid, high-Cahill-number image of the essentially abstract dead medium I’m proposing for consideration here: metallic monetary standards, the antiquated practice of backing every piece of circulating currency with a fixed amount of precious metal. Some

preliminary taxonomizing is in order.

Bruce Sterling suggested that money might be thought of as a distributed calculating system, and that seems about right. But there's another suggestion built into that one: that we think of money as a network.

Strictly speaking, too, we'd want to think of it as an internetwork, globally distributed and capable of transmitting value from one end of the net to the other, so long as the proper network gateways are traversed. Money, we might even say, throwing precision to the wind, is the original Internet. But let's just call it an analogy, and see where it leads us.

One implication, I think, is that if coins and banknotes and so on are to be thought of as the hardware of the network, then we must also look for some underlying technical system we could call the network protocols. I am not enough of a finance wonk to identify the "protocols" of the contemporary world money system, a frighteningly live medium, in any case, but I think it's safe to say that in the terms of our analogy, "protocols" is exactly what we would have to call the metallic standards that governed monetary exchange during the first great age of global capitalism (i.e., from Waterloo till the First World War).

In particular, we would mean the gold standard, which died a slow death between 1931, when Great Britain abandoned it, and 1971, when Britain's successor at the helm of world finance, the U.S., finally chucked it too.

If I understand the Hangkow ingot exchange Buchan alludes to, that system might properly be considered a

kind of monetary intranet, operating locally on the same principles as the global network.

Globally, a physical transfer of precious metal was also used to settle accounts at the end of the day, though at that level the metal was gold rather than silver, and the transfers were between nations as well as banks, and the end of the day was really the end of the quarter or the year.

It was a very different regime than what we have now, with very different effects. The money supply was tighter, often painfully so, and the drift of economies was (according to Buchan) deflationary rather than inflationary.

In the U.S. at least, bitter and arcane controversy sometimes surrounded the subject of metallic standards, with the Populists of the late 1800s, for instance, supporting a move to a "bimetallist" gold-and- silver standard that would somehow loosen the money supply and make things easier for the little people.

According to Jack Weatherford's The History of Money: The Struggle Over Money from Sandstone to Cyberspace, it was apparently well-understood at the time that L. Frank Baum's The Wizard of Oz, published in 1900, was a Populist allegory inveighing against the gold standard (the seductive "yellow brick road" to the sham- world of Oz being merely one of the more obvious clues).

Metal-based money was strange stuff. It's difficult, at this late stage in the world-financial game, to imagine what could possibly bring the metallic standards back.

Profound inflationary trauma perhaps; or maybe a global dictatorship. For the time being, at any rate, they remain very much dead.

Source: Frozen Desire: The Meaning of Money by James Buchan (Farrar Straus Giroux, New York, 1977) The History of Money: The Struggle Over Money from Sandstone to Cyberspace by Jack Weatherford (Crown: New York, 1997)

DEAD CHINESE COINAGE

From Matt Hall

The currency that defines an economic period in a society is most definitely a medium. Perhaps not a medium for expressing ideas or concepts, but a medium for expressing value and worth. Early economies are sometimes incorrectly thought of as limited to primitive, person-to-person, bartering of goods. However, the Chinese seem to have had systems of currency as early as 1122 B.C.

The cowry shell satisfied the dual criteria of portability and limited availability necessary for it to become a tool of trade. Later, cowry imitations were crafted in stone, and in different metals, so that the fragile shells themselves did not have to be used.

Other, later forms of Chinese currency included inscribed replicas of a farmer's spade and a type of curved knife. Both "spades" and "knives" had a denomination and a place of minting inscribed on them. Finally, the more contemporary Chinese coinage appeared, with its circular form and a square piece removed from the center.

These knife and spade currencies became defunct for some pressing reason. Perhaps trends changed in what the populace perceived as a valuable shape or material. Maybe the common citizen somehow became comfortable with the idea of a unit of value no longer resembling the objects it could buy. What then is going to happen to our own society, with money replaced by digital

representations?

The cowry shell was imitated in stone to improve its longevity and transportability. Likewise, we replace the paper dollar with digital information to improve durability and the speed of transaction. Does this mean that our economies are getting more efficient? If so, what are we getting more efficient at?

Source: Early Chinese Coinage, Wang Yu-Chuan, 1951, American Numismatic Society (HG 1223 W36)

TIMEX MAGNETIC DISK RECORDER

From Bill Burns

“New TIMEX Magnetic Recorder “Less than 9 lbs. Complete, 9 ½” x 11 ½” x 4 7/8” high overall.

“Unit, complete with microphone, radio-phono cord, eraser magnet and one recording disc $59.95. Dealer cost $39.96 “Extra Attachments Available “NOW, for the first time, a recorder with all of these features: “Low cost “Simple to operate “Small size “Plays 45 RPM records “Discs can be folded and mailed “Discs compact for storage

“This unique new magnetic disc recorder is especially suited to home and family use. It will record ‘sound albums’ of anniversaries, engagements, children’s first words, birthday parties, correspondence in sound from distant friends and relatives. It will record direct from radio, phonograph and TV; and can be used for business recordings.

“The unit is as simple to operate as a standard record player; nothing to thread, no tape to break or tangle, no needles to wear out, no complicated controls, no accidental erasures.

“The recording discs, iron oxide on a plastic base, are extremely smooth, lightweight and flexible. They can be folded and mailed without damage, only first class postage required. Over 100 discs can be stored in the space required for one standard record album.

Source: National Jeweler, October 1954

THE PIGEON POST, ALIVE IN 1998

From Trevor Blake

[Bruce Sterling remarks: Fossil media, alive and on the wing! This is exciting news. I for one would love to see the official seals and badges of the Orissa Police Pigeon Service.] “Pigeons to carry election messages “NEW DELHI (Reuters), Election officials in the eastern province of Orissa kept carrier pigeons ready to take urgent messages as India held the second phase of general elections on Sunday.

“Wireless services and telephones have still not reached some remote areas, where pigeons are used, the Press Trust of India (PTI) said.

“The trained birds of the Orissa Police Pigeon Service, the only one of its kind in the country, might carry election messages and information regarding law and order,” it said.

“The news agency said the pigeon service was launched in 1946 with birds taken from the army after World War Two.”

Source: Reuters New Media, Monday, February 23, 1998, 10:33 AM EST

ANTIQUE CHIP FABRICATOR

From Joel Altman

[Joel Altman remarks: We deal with a company called 'The Trailing Edge of Technology.']

"Philosophy "From its beginning, Lansdale Semiconductor, Inc., has specialized in 'Aftermarket Technology.' Lansdale has the technical expertise to support the aftermarket and has dedicated itself to that goal, assuring its customer base that older technology products will continue to be available.

"The U.S. Military and Department of Defense contractors make a large portion of Lansdale's clientele. Lansdale helps maintain the integrity of a number of military programs by supplying essential parts which are the equivalent to the originals, avoiding costly redesigns and emulations.

"As technology advances, Lansdale is also keeping an eye on the future. As product life cycles become shorter, more programs are placed at risk by obsolete parts. Lansdale serves two vital functions by purchasing discontinued product lines. It allows the original manufacturer to divest itself of a product it can no longer support. It also offers users of that product the opportunity to keep their programs intact without costly redesign.

"As long as customers need to maintain older systems, Lansdale will be there to supply the technology critical to their success.

"History "Lansdale was founded in 1964 when Edward

Pincus purchased Philco-Ford's small signal transistor line. In 1976, Lansdale acquired Motorola's Germanium transistor line. The company moved from Lansdale, Pennsylvania, to Arizona that same year.

"Through the following years, the company purchased additional product lines, including the first bipolar digital integrated circuit line from Raytheon, and SUHL, DTL, and TTL lines from Motorola and Signetics. A bipolar wafer fabrication facility in Santa Monica, California, was added in 1984, allowing the company to expand its manufacturing capability in standard and custom integrated circuits. In 1986, the Germanium transistor lines were sold, and Lansdale dedicated itself to producing integrated circuits.

"In 1987, Lansdale was purchased by then-company president R. Dale Lillard. Since then, Lansdale has added product from AMD, Fairchild, Harris, and Intel to the lines it supports. The company expanded its support of Motorola products by acquiring DTL, HTL, Linear, RTL, and more TTL lines in 1991. It has also increased its Signetics offerings by acquiring over 600 new parts, including both military and commercial product in 1992. The new sole-sourced commercial product facilitated Lansdale's expansion into plastic packaging and the commercial marketplace.

"To improve its ability to support its customers, Lansdale built a new wafer fabrication facility in Tempe, Arizona, in 1994, became a QPL manufacturer, then transitioned to QML in 1996. The QML plan was modified to allow

Lansdale to list all its products, whether the die was fabricated by Lansdale or the original manufacturer." [Joel Altman remarks: Looking through the Lansdale catalog is a trip down Memory Lane for this correspondent. It is interesting to see which circuits Lansdale considers "important." They live up to their mission statement: To manufacture "important" integrated circuits forever.]

Source: Catalog from Lansdale Semiconductor, Inc. 2502 W. Huntington Drive, Tempe, Arizona 85282 USA

THE TOY ARTIST DRAWING AUTOMATON

From Dan Howland

[Dan Howland remarks: In a nutshell, this toy was capable of storing simple line drawings as replacable dual cams. The engraving shows a seated doll in a clown suit, with his right arm holding a pencil lead to an easel. Behind him, on the base, is a crank.]

“The mechanical toy shown in the accompanying illustration is one of the most original and ingenious things of its kind that have recently appeared. Within the base upon which the ‘artist’ and his easel are placed, and immediately below the figure, is a small pinion which is operated by a worm at the end of the crankshaft which is seen projecting through the side of the base. The pinion, which rotates in a horizontal plane, is provided with a couple of pins upon which is placed one of the sets of removable cams which accompany the toy.

“The cams are double, being provided with two separate peripheral edges, and each edge is engaged by the short arm of a pair of levers, as shown in the engraving. [To picture the double cam, imagine an Oreo with small chunks broken at irregular intervals from the cookie’s edges.] The upper lever attaches at the end of its long arm to a vertical shaft, which passes up through the body of the figure, and is pivotally attached to its right arm at the shoulder.

“By this means the rotation of the cam causes a vertical

up and down movement of the arm and the drawing pencil which it carries. The lower cam operates a system of levers by which the arm is given a series of right and left movements. It is evident that by giving the proper relative contours to the two edges of the cam, the arm, with the pencil which it carries, may be made to trace any desired line upon the paper, either vertical or horizontal, by the action of the first or second cam, or diagonal or curved, by the joint operation of the two. Each of the double cams which are provided with the toy will cause the figure to draw some well-known object...

“The model from which our engraving was made produced an easily recognized likeness of the Emperor William of Germany [the device is made in Germany] and a drawing which bore a strong resemblance to a familiar barndoor fowl.”

Source: Scientific American, October 17, 1896

SOUND BITES MUSICAL CANDY

From Trevor Blake

HASBRO SOUND BITES, YOU HAVE TO TRY IT TO BELIEVE IT
Revolutionary Lollipop Lets You Hear Music Inside Your Head
“Toy Fair is filled each year with innovative products that entertain children and families, but never before has the world experienced a toy that delivers sounds ‘inside your head.’ “Sound Bites™ is being unveiled at the 1998 Toy Fair in New York City, and the early reaction is music to Hasbro’s ears.

“Based on proprietary technology developed by Sound Bites, LLC., the new toy-candy sensation sends safe sound vibrations through a standard lollipop. When a person bites on a lollipop that has been inserted in a Sound Bites, the sound vibrations travel through the teeth to the inner ear, where they are heard just like normal sounds. Audible primarily to the eater, the effect is the magic of hearing sounds inside your head.

“’It’s rare to find a truly original product that is a sure winner,’ said senior toy industry analyst Sean McGowan of New York-based Gerard Klauer Mattison. ‘The possibilities for line extensions are practically limitless.’ “The Sounds Bites has four buttons that, when pushed, mix and match the sound selection. The holder is compatible with most standard lollipops. The first Sound Bites will be available nationwide at specialty and national retailers in May, with more extensive, global

distribution later in 1998. Sound Bites will retail for approximately $9.99 in the U.S.

“’We began showing Sound Bites to our retail trade last week, and the response is phenomenal,’ said Dan D. Owen, President of Hasbro’s Emerging Business Group, which includes Hasbro’s OddzOn subsidiary. OddzOn will distribute and market Sound Bites. ‘You have to experience Sound Bites to believe it,’ Mr. Owen said.

“There are six different versions of Sound Bites. First introductions include three musical themes, guitar, drum and saxophone; and three special effects versions, with cartoon voices, space noises and fun voices.

“Sound Bites’ proprietary technology was co-invented by Andrew Filo, an accomplished Silicon Valley engineer, and David Capper, a veteran toy industry entrepreneur whose track record and experience ranges from He-Man and the Masters of the Universe to the Koosh® brand. Sound Bites, LLC. has filed numerous patent applications to protect its revolutionary new technology.

“’Sound Bites is a collectible candy experience that appeals to boys and girls of all ages,’ said Capper, the President of Sound Bites, LLC. ‘We see enormous potential for Sound Bites, with virtually unlimited line extensions tied to holidays, movies, sports, television and music, to name a few. If it makes a sound, Sound Bites can put it right inside your head.’

Source: softball business press coverage [Bruce Sterling remarks: okay, this music-producing candy isn’t dead media yet, but one really has to wonder if the world is ready for this collectible candy experience.]

PHONOVID VINYL VIDEO

From David Morton

“Westinghouse Putting TV on Phonograph Records” “The Westinghouse Electric Corporation introduced yesterday a new electronics system that plays sound and television pictures from phonograph records. The new system, to be called Phonovid, was displayed before the Edison Electric Institute convention at Miami by Dr. William E. Shoupp, vice president for research at Westinghouse. ‘The record is not just an audio recording that triggers pictures from a slide projector,’ Dr. Shoupp said. ‘Both the audio signal and the video signal are present in the grooves of the record and both are picked up by the phonograph needle.’

“In answer to questions, Dr. Shoupp disclosed that the price of a Phonovid installation was $10,000. He indicated that closed-circuit television in schools would be a prime market and that television stations might find Phonovid useful for news background pictures and reports.

“It was emphasized that the series of still pictures, voice and music came from the same phonograph records. Up to 400 pictures and 40 minutes of voice and music are available from two sides of a 12-inch, 33 1/3 r.p.m. recording, known as the Videodisc. The pictures can be line drawings, charts, printed text, or photographs.

“Dr. Shoupp did not cite a price on Videodiscs but indicated they could conceivably run as low as classical records if the demand warranted it. He explained Phonovid would thus provide ‘a complete 400-page

picture book on a single long-play phonograph record. . . with the accompanying sound equal in quality to that broadcast by an AM radio station.' "In operation, the record would be played on n ordinary turntable and the pictures and sound could appear on any number of television receivers in a classroom or throughout an entire building. Any part of the recording and picture can be held, skipped or repeated by manually lifting the tone arm of the record player.

"The key to the system is a scan converter, a series of electronic circuits that 'scan' the video signals on the recording and convert them into a video image. This is a technique similar to that used for obtaining television pictures from signals broadcast from weather satellites and space probes."

Source: New York Times, May 6, 1965

ANCIENT IRISH FIRE BEACON

From Dave Walsh

[Dave Walsh remarks: Here's a quote concerning methods of signalling in ancient Ireland, gleaned from the pages of Praeger.]

"A little to the west of Westmeath lake region the hill of Usnagh or Uisneach rises gently to 250 feet above the surrounding undulating country, itself attaining some 600 feet above sea level. It has a rather extensive flattish top, which was a place of importance in old days, as witnessed by the number of monuments, mostly of the nature of ring forts and tumuli, which are scattered over it. According to ancient sources, it was the site of a royal palace and a royal cemetary in prehistoric times, and leading place of assembly; later, in early Christian days, it was the seat of the kings of Connaught.

"One point is worthy of note. Though of but small elevation, the Hill of Usnagh, standing in the middle of the Central Plain, commands a singularly extensive view. From its summit, on a clear day, features belonging to no less than twenty out of the thirty-two Irish counties can be identified, and a beacon-fire lit here might be seen over one-fourth of Ireland, whence it could be readily relayed to the furthest corners. Probably this contributed materially to its early importance."

Source: The Way That I Went, Robert Lloyd Praeger, pp. 241, 1937, republished 1997 by The Collins Press ISBN 1-898-256-357

THE PIGEON POST CRIMINALS

From Trevor Blake

CAPE TOWN (Reuters), South Africa has decided to shoot all pigeons in its North-West diamond producing area, because the birds are being used to smuggle gems out of the country.

"'Diamonds are leaving the country in a manner which is extremely worrying,' Manda Msomi, chairman of parliament's public enterprises committee, said Tuesday, reporting after a visit to state diamond mining company Alexkor.

"'Diamonds are being strapped onto the body of pigeons and flown out of the country. The law now is to shoot all pigeons on sight,' Msomi said.

"Msomi said his task team would recommend that Alexkor should not be privatized in the near term because the company's assets had been so run down by diamond theft.

"'There is no way we can allow the sale of Alexkor to be approved without a true valuation,' he said. 'The security of the product is paramount.' "Msomi said it was possible that employees and the local community were implicated in the widespread theft and said Alexkor needed to spend about $8 million to improve security."

[Trevor Blake remarks: I don't think pigeon post is "media." Pigeons are not a "medium," they're just doing what comes naturally, whether it's letters or diamonds tied to their feet. Media requires intent, and pigeons lack

intent to convey information. The intent of those doing the tying is the same as with non-pigeoned mail. When the intent to communicate creates a new artifact, an artifact that can be superceded, then I'd call it "media." Humans didn't create pigeons.]

[Bruce Sterling remarks: I couldn't disagree more strongly. During the Franco-Prussian War, practically the entire information traffic of Paris, the besieged capital of a major industrial power, was carried on the wings of pigeons. This included news, government documents, war orders, personal mail and large sums of money (in the form of microfilmed postal orders). If this isn't "media," then what is?

Pigeons may be a product of nature, but homing pigeons are domesticated animals, carrying specially designed cargo harnesses, rather like horses in the Pony Express. Furthermore, the pigeons themselves are just the aerial part of a larger mail system.

It's pleasant to see this fossil medium not only apparently thriving, but working both sides of the law. But I must say that I consider this tale of diamond-smuggling pigeons to be highly suspect. Maybe there's a mysterious transnational network of feathered contrabandistas, or maybe this government diamond monopoly is trying to evade privatization because its books have been cooked.]

Source: Reuters New Media, March 24 1998 S. Africa to shoot diamond-smuggling pigeons

CAUSES OF MEDIA MORTALITY; ROMAN RELAY RUNNERS, MONGOL HORSE POST, POLYBIUS'S FIRE SIGNALS, BRITISH NAVAL HOWE CODE, PONY EXPRESS, AZTEC SIGNALS

From Alan Wexelblat

I attended a talk given by Randy Katz (Department Chair of EECS at Berkeley) at MIT last week. As the title suggests, it was a fast review of communications technologies. The talk was based on a first-year course Katz teaches at Berkeley. Much of the talk (and the course, presumably) focuses on well-known dead media, such as the Nipkow disk.

Below, I extract some of Katz's more uncommon remarks on other dead media. Some of the most interesting parts of the talk were Katz's suggestions on how to organize study of dead media. Katz suggests a framework based on the role of government.

His argument is that communications technologies have historically been seen as ways to extend the power of the existing power structure (kings, nation- states, business cartels) to remote locations, and to that end, funding has been selectively given or withheld based on perceived power circumstances. One well-known example, of course, is the granting of a state monopoly to the entity that became AT&T.

Katz argues that we see in the history of many media a

recurring pattern of invention (most often by tinkerers, not scientists/researchers) leading to efforts to get state sponsorship for R&D.

Many media die at this point, if the state refuses support. If the state grants support then the medium lives, at least for a time. This approach also speaks to the question of why/when/how media die.

Katz identifies three methods:

(1) "creative destruction" (in which a new medium destroys an old one, as the telegraph destroyed the pony express)
(2) "withdrawal of state favor" (as when Minitel finally died after the French government withdrew its support)
(3) "market-driven death" (Betamax videotape).

Specific dead media mentioned in Katz's talk:

MUSCLE-POWERED MESSENGERS (FOOT AND HORSE): 490 BC, Phidippides runs from Marathon to Athens with news of a battle. By 14 AD, the Romans have set up a network of relay runners.

The Roman Relay is the first known example of express mail. Normal messages were carried at the approximate rate of 50 miles/day, but express mail was marked differently and carried approximately twice as far. This is the source of the phrase "post haste" which was the marking carried on the express messages.

By 1280 AD, Kublai Khan had set up the first network of horse-using message relays. This medium finally dies

about 400 years later when the Pony Express is retired (1860s). Pony Express riders covered 150-200 mi/day. The longest ride was by 14-year-old “Buffalo Bill” Cody, who managed 384 miles in one day (ouch!). The Pony Express record time for a message was 7 days, 17 hours. The message was Lincoln’s Inaugural address (March 4, 1861).

VISUAL MESSAGING MEDIA

Visual messages began with various heliographic systems before recorded history (the Aztecs apparently had such a system, as did many nomadic tribes).

[Bruce Sterling remarks: “Aztec Heliography??” We must know more!]

The first regularized visual signalling system was the Howe code, which was commissioned by the British Royal Navy in 1790. Howe’s system used 10 colored flags and a code book containing 260 entries.

The goal, of course, was to be able to signal friends without giving away the orders to watching foes. Howe revived work which was apparently originated by the fire beacons in Greece. This system was first written down in 150BC by an historian named Polybius. This is the first documented system for relaying messages reliably.

The Polybius system consisted of five torches on each of two towers. These were interpreted as the rows and columns of a matrix which had 25 elements; the Greek alphabet had 24 letters. Polybius’ writings include the first known instances of flow control, handshaking protocols and error correction. These procedures were

learned by operators through an apprenticeship program. If there were written manuals they have not survived to modern days.

OPTICAL TELEGRAPHY

The French optical telegraph consisted of a tower surmounted by a large three-segmented wooden armature. The inventor, Claude Chappe, was funded by the French military and developed a code whereby arm positions every 45 degrees were defined and mapped to characters. Thus, users could make shapes such as +----+----+ and + | | [ASCII graphics don't really do it justice.]

Initially, the system operated inside Paris only. Napoleon extended it as he conquered territory. By 1814, the system was contiguous from Belgium through France to Italy. By 1853, there were 556 stations covering a diameter of almost 3000 miles.

The system depended on the operator seeing that other towers had successfully copied his tower's position. Then he would change his armature. Thus, messages rippled through the network in a one-character-at-a-time relay fashion. The effective data rate was 1 character every 30 seconds over a visible distance of approximately 10 miles between towers. The optical telegraph lasted until about the 1850s, when it was supplanted by the electrical telegraph.

Source: speech at MIT by Professor Randy Katz Report on Dead Media Talk: From Smoke Signals to the Internet

PUBLIC FIRE ALARMS IN COLONIAL SHANGHAI

From Bruce Sterling

“While the wealthier residents enjoyed spacious accommodation, the majority of the population lived in crowded structures. Since most of the houses were built of wood, fire became a serious problem. Alarms were sounded by the ringing of church bells.

Then, guns from the largest warship in port would respond with three volleys, followed by all other ships blowing their whistles. This system of warning, dramatic but not necessarily pin-pointing the exact location of the fire accurately, was used until 1880, when a more efficient system was devised.”

[Bruce Sterling remarks: the firefighters of 19th-century Shanghai were unpaid volunteer brigades using hand-cranked pumps. Alerting and assembling them posed a serious challenge. There was a considerable language barrier between the German, Japanese, British, French and American emigre contingents and the Chinese locals. But fire was a general threat to all parties in Shanghai. Given these circumstances, we can see that a media solution evolved: everyone with the capacity to make public noise pitched in, with an almighty racket. However, they conveyed the alarm in order and with protocol: first the religious community, then the military, and finally, a general steam-powered shriek from private enterprise.]

Source SHANGHAI: CRUCIBLE OF MODERN CHINA by Betty Peh-T’i Wei

Oxford University Press, 1987 ISBN 0-19-583831-9

THE CHIU-MOU-TI HSING-WU-T'AI

From Bruce Sterling

"After 1911, theatres became known as wu'tai (stage), when raised platforms were introduced. In addition to traditional operas, there were acrobatic performances, magicians from China and abroad, puppets and, in time, Western-style plays. It was difficult to take away from the audience their considered birthright of talking, eating, and blowing whistles during the performance.

"In the 1920s, an enterprising impressario built the Chiu-mou-ti Hsing-wu-t'ai (New Theatre on Nine Mou of Land), offering a combination of live actors and motion pictures. Complicated scenery such as mountains, rivers, moving trains, and steamships were shown on a screen, sometimes with actors performing in front of it. Indoor scenery, such as tables and chairs, would be placed on stage as props.

Each play would consist of five or six scenes, alternating screen and stage actions.

The format was quite popular until it was discovered that once an actor's face was shown on the screen, the audience would not accept a different actor in the same role on stage. As a result, the format was not copied by other theatres in Shanghai."

[Bruce Sterling remarks: this is a charming example of cross- cultural multimedia hybridization. The Chiu-mou-ti Hsing-wu-t'ai is just one particularly exotic version of many, many efforts to somehow turn plays into films

("photoplays") or to use projected screen techniques as theatrical special effects (Pepper's Ghost, Riviere's Theatre d'Ombres, the Prague Laterna Magika, etc.]

Source: SHANGHAI: CRUCIBLE OF MODERN CHINA by Betty Peh-T'i Wei
Oxford University Press, 1987 ISBN 0-19-583831-9

CRANDALL'S ELECTRIC SIGN

From Dan Howland

Crandall's Electric Sign was an early changeable electric sign. It consisted of one or more frames holding an array of electric light bulbs, arranged in patterns similar to modern LCD characters. However, there is a charming Victorian twist, Crandall's sign displayed a serif alphabet.

With several of these frames linked together, the sign strongly resembles a baseball scoreboard. The switching device looks like a typewriter keyboard attached to an Autoharp, with electrical contacts replacing the felt pads, and current-carrying wires replacing the zither strings.

By pressing the key for a letter, contact was made with the wires, lighting the required segments of the letter. According to Scientific American, the "government" (Federal? State?) tested the system in New York Bay on the night of April 2, 1898. A single frame, three feet by five feet, sat on top of a hotel. A boat withdrew to a mile offshore, where the sign was legible to the naked eye. At three and a half miles, the sign was visible through the spyglass.

The front cover shows a Times Square-style headline: "CERVEARA'S FLEET IS AT SANTIAGO DE CUBA". (The apostrophe appears in the same frame as the letter A, but how it would work elsewhere is a mystery.)

Apparently, the system was in regular use displaying the headlines of a newspaper which Scientific American only identifies as "well known". Also shown is the control

room for this sign. Each letter (and space!) has its own separate keyboard, 38 in all.

Source: Scientific American magazine, July 4, 1898

DEAD DIGITAL DOCUMENTS

From Steven Black

[Steven Black remarks: The more we think we save, the more is actually lost!]

[Bruce Sterling remarks: here's yet another set of colorful, horrific anecdotes on the fragility of digital storage media, this time appearing in the mainstream business press. It seems very likely that this once-arcane problem will slowly intensify into open scandal.]

"DATA STORAGE: FROM DIGITS TO DUST: Surprise, computerized data can decay before you know it
"Up to 20% of the information carefully collected on Jet Propulsion Laboratory computers during NASA's 1976 Viking mission to Mars has been lost. Some POW and MIA records and casualty counts from the Vietnam War, stored on Defense Dept. computers, can no longer be read.

And at Pennsylvania State University, all but 14 of some 3,000 computer files containing student records and school history are no longer accessible because of missing or outmoded software. "The Information Age is creating a digital dilemma.

For years, computer scientists told us that digital 1s and 0s could last forever. But now, we're discovering that the media we're using to carry our precious information on into the future are turning out to be far from eternal, so fragile, in fact, that some might not last through the decade.

More is at risk than government and corporate records. The danger extends to cultural legacies: new music, early drafts of literature, and academic works originate in digital form, without hard copies.

‘Digital information lasts forever, or five years, whichever comes first,’ says Jeff Rothenberg, senior computer scientist at RAND Corp.

“Forget forever. Under less-than-optimal storage conditions, digital tapes and disks, including CD-ROMs and optical drives, might deteriorate about as fast as newsprint, in 5 to 10 years. Tests by the National Media Lab, a St. Paul (Minn.)-based government and industry consortium, show that tapes might preserve data for a decade, depending on storage conditions. Disks, whether CD-ROMs used for games or the type used by some companies to store pension plans, may become unreadable in five years.

“For consumers, the biggest worry is CD-ROMs. Unlike paper records, CD-ROMs often don’t show decay until it’s too late. Experts are just beginning to realize that stray magnetic fields, oxidation, humidity, and material decay can quickly erase the information stored on them.

“Says Robert Stein, founder of New York-based Voyager Co., which makes commercial CD-ROM books and games: ‘CDs have a tendency to degrade much faster than anybody, at least in the companies that make them, is willing to predict.’ Stein doesn’t expect the CD-ROMs Voyager sells to last more than 5 or 10 years, and neither, he says, should customers.

“There’s another problem: the unrelenting pace of technology. Chances are good that the software needed to get at much of today’s data might not be readily available in 10 years. Anyone who has tried wrestling information from a 5 ¼-inch floppy disk knows that. Just ask scientists conducting rain forest research. Satellite photos of the Amazon Basin taken in the 1970s, data critical to establishing deforestation trends, are trapped on indecipherable magnetic tapes no longer on the market.

“But even keeping a step ahead of data decay and software obsolescence is no guarantee of escaping the problem. Companies spending heavily on sophisticated new computers and software to beat the technology reaper say they’re beginning to run into a whole new problem. All too often, when they transfer information from one aging media or computer system to a newer one, not all bits make the migration.

“Sometimes, just a footnote or spreadsheet is lost. Other times, whole categories of data evaporate. Says Rothenberg: ‘It’s like playing the child’s game of Telephone. It doesn’t take many translations from one media to another before you have lost significant aspects of the original data.’

“The Food & Drug Administration reports that some pharmaceutical companies are discovering errors as they copy drug-testing data that back up claims of long-term product safety and effectiveness. In several recent cases involving data transfers from Unix computers to systems running Microsoft’s Windows NT operating system,

blood- pressure numbers were randomly off by up to eight digits from those in original records, FDA and company data specialists report.

“Sophisticated software can catch most of the errors, but ‘not all the time,’ says Rone Lewis, vice-president of business development of Surety Technologies, a data recovery and migration firm.

“Some companies fear the problem could expose them to lawsuits. ‘In our litigation-prone age, it’s harder to defend yourself if you’re losing parts of your records when you migrate them,’ says Henry Perritt, dean of Chicago Kent College of Law. “Ray Paddock, a director for Storage Technology Corp., says the problem is so bad for some of his clients that they’re creating new databases just to decipher the data they have on tape and disks. Others, he says, are simply keeping the old version of the software used to create documents.

“Meanwhile, the government is looking into establishing durability standards for digital media. A task force, including representatives of Eastman Kodak, IBM, and archivists at leading museums and universities, has agreed on a digital longevity test ultimately aimed at increasing the life span of CD-ROMs and other types of digital media. The only problem: So far, no manufacturer has tested its products using the age-test created by the task force. And the group is still working on a standard for magnetic tape.

“Others are at work on new technologies to solve the problem. NORSAM Technologies in Los Alamos, N.M., for

example, is promoting its HD-Rosetta project, which permanently stores historical documents, but only if they are converted from digital back to analog recording formats.

“But at least one remedy being offered by researchers sounds a lot more like the distant past than the future: Cobblestone Software Inc. in Lexington, Mass., is promoting PaperDisk, which uses paper to print out complex patterns of dots and dashes representing digitized files. Cobblestone President Tom Antognini claims it should last for centuries, or about as long as old-fashioned, high- quality paper.”

Source: Business Week magazine, April 20, 1998

WINKY-DINK INTERACTIVE TV

From Julian Dibbell

Winky Dink and You

“Broadcast in glorious black and white beginning in 1953, this program featured the adventures of a cartoon lad named Winky-Dink and his dog Woofer, interspersed with the in-studio antics of a host and an audience of kids. The gimmick was that the boys and girls at home were asked to help Winky-Dink out of a jam by drawing a ladder or a rope on the TV screen. This was done with the aid of a Winky-Dink Kit which was sold by mail for fifty cents. ‘We sold millions of those kits’ the show’s host Jack Barry commented, ‘It was well thought out.’

“You could place the clear piece of plastic that came in the kit over the television screen and connect the dots to create a bridge for Winky Dink to cross to safety, and trace the letters to read the secret messages broadcast towards the end of the show. Which I guess makes Winky-Dink the world’s first interactive video game. Of course, it goes without saying that scores of kids without the kits drew on the television screen itself, ruining many a family’s first television sets.

“Winky-Dink and You originally ran Saturday mornings at 10:00 am, from October 10, 1953 until April 27, 1957 on the CBS network. Along with host Jack Barry was Dayton Allen as Mr. Bungle, his assistant that never gets anything right. You may recognize the name ‘Mr. Bungle’ as the name of a very popular alternative band of the early

nineties.

“In 1956, Jack Barry began hosting a wildly popular prime-time game show he also produced called Twenty-One, and Winky-Dink was canceled the next year. Barry said at the time, ‘It strictly didn’t rate that well. It was on for almost four and a half years, but it never got the kind of audience the straight cartoon shows started pulling.’ Twenty-One, on the other hand, was riding the crest of popularity that game shows were enjoying on the Fifties prime-time schedule.

“In the fall of 1958, Twenty-One (and almost every other game show) was driven off the air when it was revealed that $129,000 winner Charles Van Doren was given some of the answers in advance. (The story was told in the movie ‘Quiz Show’.) Jack Barry, as host and producer of the show that broke the industry wide practice of prompting some contestants, took the brunt of the bad publicity. Because of the immense scandal that ensued, it was another ten years before Jack Barry worked on television again.

“In 1969, Winky-Dink was revived by Barry, this time as a five minute cartoon feature, complete with a new Winky-Dink kit for kids to send off for. Consumer groups argued that kids shouldn’t be playing with their eyes so close to the TV set, and the character was quickly retired.

“Modern audiences will remember Jack Barry as the host of the long running CBS game show ‘The Joker’s Wild’, a show he hosted from 1972 until his death in 1984. Barry also hosted a children’s version of the ‘The Joker’s Wild’

called ‘Joker, Joker, Joker’ from 1979 until 1981, bringing his career full circle.”

[Julian Dibbell remarks:] Thus ends a remarkable entry in the annals of dead- media history, with only a couple of important questions left dangling. To wit:

1. Why has Jack Barry not been canonized as the patron saint of interactive television? All other experiments in interactive TV to date have been just that: experiments, and mostly unsuccessful ones at that. Mr. Barry, on the other hand, put ITV on a major network for four years running, and though he downplayed the commercial success of the venture, it’s clear he had his sights set on bigger things than children’s programming anyway. Personally I suspect Winky Dink was more of a hit than he let on. Speaking as one who was old enough to catch the 1969 version of the show in my kindergarten years, I can attest that its appeal to at least one child was nothing short of ravishing. I did not have access to the Winky Dink Kit, sadly, and I can still remember clearly the gnawing existential hunger with which I yearned to cross the barrier of the TV screen and join with Winky Dink in his adventures. Certainly nothing in the subsequent history of interactive television, be it the ill-fated Qube or the insinuating WebTV, has inspired anything like that desire in me. It has been noted in an earlier Working Note that some media die into an afterlife as children’s toys, and perhaps that is to be interactive television’s fate. Perhaps it’s time the John Malones and Bill Gateses of the world came to accept the humbling but hardly dishonorable fact that they are

merely following in the great Jack Barry's footsteps.

2. Why has Winky Dink itself not ascended into the canon of iconographic Americana, right up there with Marilyn Monroe, the Apollo 11 moonwalk, and disco shoes? In the reader-response area of the TV Party site, one boomer nostalgist recalls coming to Winky Dink's aid with a stick of his mother's lipstick, scribbling directly on the screen without benefit of the official plastic screenguard; another remembers that one day the secret word kids were asked to spell out was the surprisingly arcane SABOTAGE. How is it that such ripe ingredients have escaped the eye of a DeLillo or a Pynchon? How is it that nowhere in postwar fiction do we find a scene in which, sometime in the same year the Rosenbergs were executed, or the same year Joe McCarthy's witch hunts came to a head, a mother comes home to find fragments of the word SABOTAGE scrawled in blood-red lettering across the face of her TV set, itself a strange new addition to the cultural landscape? Granted, the nod given by Bay Area thrash-funk weirdos Mr. Bungle does go a good way toward securing Winky Dink its rightful place in the field of pop-cultural reference. Likewise, the starring role of a certain "Mr. Bungle" in one of the founding myths of latter-day cyberculture, the so-called "virtual rape" case at LambdaMOO, dug up and hyped by this reporter and others back in late '93, brings the new-media resonances of Winky Dink full circle in a particularly pungent way. But I dare say the rich motherlode that is Winky Dink and You has only begun to be tapped.

Source The TV Party Website (www.tvparty.com)
 Winky-Dink and You (Or, Interactive Television, Take One) by Julian Dibbell

THE CAT PIANO

From Richard Dorsett

From the chapter “Persecution”: “To Brussels is due the unenviable distinction of having produced the first cat organ, in 1549. This triumph of ingenuity was designed to lend merriment to the street pageant in honor of Philip the Second, and is described by Juan Cristoval, a Spaniard in attendance upon the King.

“’The organ,’ says Cristoval, ‘was carried on a car, with a great bear for the musician. In place of pipes, it had twenty cats separately confined to narrow cases, from which they could not stir. Their tails were tied to cords attached to the keyboard of the organ. When the bear pounded the keys, the cords were jerked, and this pulled the tails of the cats, and made them mew in bass or treble notes, according to the nature of the airs.’

“Such an invention could have afforded, at best, but doubtful entertainment; yet the cat organ was so widely appreciated that German humourists undertook to alter and improve it; and after a time a choice variety of instruments were constructed, in all of which cats were induced by some well applied torture to furnish forth the necessary music.”

[Bruce Sterling remarks: see also Cat Piano and Tiger Organ, in which cats were alleged to have been whacked by needle-sharp piano keys, rather than having their tails yanked. There was no mention of a cat-piano- playing bear in the other account, and the bear, somehow, seems

even less plausible than the cats. One wonders what this bear was supposed to do with his keyboard skills during the off season.]

Source: The Fireside Sphinx by Agnes Repplier, 3rd edition, Houghton Mifflin, 1939.

THE CAT PIANO, THE DONKEY CHORUS, THE PIG PIANO

From Dave Walsh

“In keeping with Darnton’s methodology and subject matter we might want to look at the cat piano. Athanasius Kircher first wrote about it in his great Musurgia universalis of 1650, and it has reappeared occasionally since. In order to raise the spirits of an Italian prince burdened by the cares of his position, a musician created for him a cat piano. The musician selected cats whose natural voices were at different pitches and arranged them in cages side by side, so that when a key on the piano was depressed, a mechanism drove a sharp spike into the appropriate cat’s tail. The result was a melody of meows that became more vigorous as the cats became more desperate. Who could not help but laugh at such music? Thus was the prince raised from his melancholy.

“The cat piano confirms Darnton’s discovery that most early modern Europeans found the torture of cats funny. It also illustrates Kircher’s fascination with the relationship between the art of music and the natural production of animal sounds. But for us it is an instrument that has mercifully been forgotten.”. “1. According to Louis-Bertrand Castel and ‘Dr. Z.’ (see below), Athanasius Kircher described the cat piano is his Masurgia universalis, 2 vols. (Rome: Francisci Corbelletti, 1650), facsimile ed. (Hildesheim: Olms, 1970), but we have not been able to find it there. His pupil, Gaspar Schott, described it in his Magia universalis naturae et

artis, sive recondita naturalium et artificialium rerum scientia, 4 vols. (Wurzburg, 1657- 1659), vol. 2, chap.

“The cat piano was not unique. Schott proposed a donkey chorus, and Pierre Bayle tells us that the abbe de Beigne built a pig piano at the order of Louis XI. In every case the animal instrument was created to entertain a noble patron. Pierre Bayle, The Dictionary Historical and Critical, 5 vols. (London, 1736), facsimile ed. (New York: Garland, 1984), 3:803; and Isaac Nathan, Musurgia vocalis, 2d ed. (London: Fentum, 1836), p. 160.

“The cat piano occasioned a recent debate in Experimental Musical Instruments 5, no. 5 (1989-1990): 6; and—in 6 (1990-1991)--no. 1, p. 4, no. 2, p. 3, and no. 5, p. 2.”

Source: Thomas L. Hankins and Robert J. Silverman, Instruments and the Imagination. Princeton, N.J.: Princeton UP, 1995, pages 73, 246-7;Magia universalis naturae et artis, sive recondita naturalium et artificialium rerum scientia, 4 vols. (Wurzburg, 1657-1659), vol. 2, chap. “Felium musicam exhibere,” pages 372-373; La Nature 2 (1883) pages 519-520; Michael Bernhard Valenti, Museum museorum; oder, Vollstandige schau-buhne aller materialien und specereyen, nebst deren naturlichen beschreibung, election, nutzen und gebrauch. 2d ed., 3 vols. in 2 [Frankfurt am Main: J.D. Zummer und J.A. Jungen, 1714], page 73 and table 31; Gunnar Jungmarket, “Kattklaver och voterings-instrument Verklighet och fantasi,” Artes, no. 5 [1982]: pages 116-125; Pierre Bayle, The Dictionary Historical and Critical, 5 vols. (London, 1736), facsimile ed. (New York: Garland, 1984), 3:803; Isaac Nathan, Musurgia vocalis, 2d ed. (London: Fentum, 1836), page 160; Experimental Musical Instruments 5, no. 5 (1989-1990): 6; and in 6 (1990-1991) no. 1, p. 4, no. 2, p. 3, and no. 5, p. 2. Thomas L. Hankins and Robert J. Silverman, Instruments and the Imagination. Princeton, N.J.: Princeton UP, 1995, pages 73, 246-7.

TRAIN TOKEN SIGNALS SYSTEM

From Dan Howland

[Dan Howland remarks: Train token signals were a system for preventing collisions on single sections of railroad track. As the text mentions, the baton and paper version was all but dead when the book was published in the early 1940's.] "Token Signals System "The essential principle of the token system is that the engineer has in his possession a form of token that is visible evidence that the signalman has given him permission to travel over a specific length of track.

"In the earliest forms of this system, the token was a staff that resembled a policeman's baton, marked with the names of the stations at each end of the section.

"When two or more trains ran on a single line, the line was divided into sections, a staff being provided for each section. The staff for a particular section would be handed to the engineer at one signal box, and he would hand it in at the next box. From here it would be taken back to the first box by the engineer of the next train in the opposite direction, so that the staff was continually travelling between boxes.

"No engineer could enter the section unless he was in possession of the appropriate staff, and if this was not available, obviously there was a train already in the section whose engineer was carrying the staff." [Or the staff is sitting at the other station, and even though the track may very well be clear, you can't proceed. See

below.] “This train staff system had a serious drawback, for where there were two successive trains in the same direction, with no intermediate train in the opposite direction, the staff could not be brought back to enable the second train to proceed.

“This difficulty was overcome by the use of the train staff and ticket system, in which printed tickets were used as the authority to proceed. The engineer of the first train was shown the staff, which indicated to him that a train could not be travelling in the reverse direction, as it was not carrying the appropriate staff.

“Having seen the staff, he was given a printed ticket, taken from a locked box. One such box was at each end of the section, and the staff to the section was the key to the box.

“The printing on the tickets usually was to the following effect: ‘To the engineer. You are authorized, after seeing the train staff for the section, to proceed from station A to station B, and the train staff will follow.’ The engineer of the last train of the series would take the staff and not a ticket.” [I would argue that the represention by the baton of the idea that the track is clear, and the further abstraction of a printed chit representing the baton, makes this a “medium.” Consider: if station A and B had a reliable, instant means of communication between them, say, you could simply see all the way down the line, or if the stations were within hollering distance, then there would be no need for the baton or the chit.] “Although this system is still in operation on unimportant branch lines, where traffic is light and fairly regular, there are

possibilities of delays and inconvenience, and there is always the difficulty that the staff may be at one end of the section and the train waiting at the other end." [The solution to these difficulties was to have two machines which could issue keys, linked by telephone lines. A train traveling from station A to B had a key issued from station A. Until the train reached station B, it was impossible to issue a key from either machine.] [Bruce Sterling remarks: There are fascinating conceptual links here to telegraphy, flag signalling, and even token-ring computer networks, but let's face it: doesn't a telephone line render all this baton business irrelevant?]

Source: Popular Science Mechanical Encyclopedia: How It Works by Ellison Hawks (1941)

OPTICAL TELEGRAPHY; HELIOGRAPHY

From Mike Antman

“In 1791, hooves pounded and coaches lurched over the dirt highway near New Brunswick. ‘Not less than twenty expresses have passed through this city within one week,from New York to Philadelphia and back,’ a wondering newsman reported, ‘They travel with uncommon speed, from which it appears that something of great importance is carrying on.’ The newsman hardly imagined that he was witnessing the origins of what would one day be the world’s most efficient capital markets.

“Philadelphia, the financial heart of the nation, in 1790 had established the first stock exchange in the United States; yet, New York, a more easterly port, was first to receive news as ships arrived from Europe. The speeding coaches that clattered from New York to Philadelphia carried speculators and stock-jobbers, agents of foreign investors, and inside traders with privileged information that could move the market, and make their fortune at the expense of the Philadelphia merchants.

“The coups scored by these early commuters led a group of Philadelphia brokers to set up signal stations on high points across New Jersey. The signalmen watched through telescopes as coded flashes of light brought news of stock prices, lottery numbers and other important information.

“Relayed from station to station, the information could move from New York to Philadelphia in as little as 10 minutes, more quickly than any coach horse could run, so the system sharply narrowed the advantage of New York speculators. It remained in use until the arrival of the telegraph in 1846.

“Such bold strokes of innovation have characterized the Philadelphia Stock Exchange from its inception.”.

“As exchanges originally operated, a large part of the value to their members was access to secret information. In order to keep it secret, the exchange levied a fine of twenty-five cents on any member going out and returning during a session, fifty cents if he took his sales book with him. Although all partners of a firm were allowed to depart as a body, provided they not return during the session, if only one member left it cost him fifty cents. Passing notes to the outside was also forbidden and punishable.

“The coming of the telegraph, and in 1884 the ticker, made many of these rules obsolete. However, as late as the 1900’s the exchange coffers waxed rich with the contributions of members who cursed, spat, or refused to address their peers as ‘Mister.’”.

“As the world financial community becomes more sophisticated, the Philadelphia Stock Exchange is focusing on creating new products and new financial instruments promising to change the way businesses do business. The Philadelphia Stock Exchange is also developing faster techniques for executing and reporting trades, knowing

that some day the cutting edge computerized trading systems that we now use will seem as primitive as the earlier method of lights and mirrors. This is as it should be, because continued success comes only with a willingness to build further on the foundation of past achievements and in this process, we must keep the courage to change the future."

Source: A Blueprint for America's Free Markets: The History of the Philadelphia Stock Exchange

TRAIN TOKEN SIGNALS SYSTEM

From Mark Schubin

The flagged-baton medium may no longer be used on trains but it's very much alive with some highway repair crews. A few years ago, in Wyoming USA, we waited in line to go over a lengthy, curved stretch of highway that had been reduced to one lane by construction work. As the last car coming from our direction, we were given a baton with a flag to hold out the driver's window as we negotiated the section. When we got to the other end, the crew there relieved us of the baton and held it for the last car on their side. Last year, in a similar situation in Colorado, we were followed by an official vehicle, which then turned around for a return trip. I think the baton is much more efficient.

Token signals were still in use for freight trains in New South Wales, Australia, up until the 1990's. A recent poster shows a freight train stopped at a signal box with the driver hurrying across to pick up his token, in this case an embossed metal card.

As far as I know, the token system is still very much in use in India (and Pakistan, and Bangla Desh, Sri Lanka, etc. etc.) There the 'token' looks like a big tennis racket (without wire), the token itself being a brass ball kept in the handle with leather straps. The 'racket' (for the past section) is thrown on the platform from the locomotive cab, while the driver (or his assistant) extends an arm outside and picks up the (next section) 'racket,' which is held up by the station master (or his assistant). The brass

ball is needed to lock/unlock signals and points in the signal cabin. Quite a sight!

Source: personal experiences

RAMELLI'S BOOK WHEEL

From Dan Howland

Agostino Ramelli (1531-1608?) was an Italian engineer who served under King Henry III of France and Poland. Many of his inventions were military in nature, scissoring battering rams, mechanical bridges, and screwjacks to force apart bars of a castle's portcullis, for example. In this book of nearly two hundred engravings, there is only one data access device: the Book Wheel.

Ramelli says: "This is a beautiful and ingenious machine, very useful and convenient for anyone who takes pleasure in study, especially those who are indisposed by gout. For with this machine a man can see and turn through a large number of books without moving from one spot. Moreover, it has another fine convenience in that it occupies very little space in the place where it is set, as anyone of intelligence can clearly see from the drawing."

The drawing shows a gouty scholar sitting before what looks for all the world like a Ferris Wheel with eight lecterns in place of seats. As he spins this huge device (perhaps six feet in diameter), a series of gears attached to the axle keeps the lecterns upright.

It surely is a neat gadget, but perhaps someone of intelligence can tell me how it could be justified as a space-saver. A bookshelf in the background of the illustration holds twenty-three books, and most of them appear to be within arm's reach of a seated man.

“Ramelli may have been the first to design a workstation for scholars, something that the Internet is now bringing us. In 1945 Vannevar Bush, Director of the Office of Scientific Research and Development in the United States during World War II, published a seminal article that described a Memex, another version of the Scholar’s Book Wheel. While his design relied on microfilm, the goal of having a library at your fingertips is the same.

Source: The Various and Ingenious Machines of Agostino Ramelli (Le Diverse et Artificiose Machine Del Capitano Agostino Ramelli) Translated by Martha Teach Gnudi; Annotations and Glossary by Eugene S. Ferguson. Scholar Press and Johns Hopkins University Press, 1976 Reprinted by Dover Books, 1994 (ISBN 0-486-28180-9)

THE CAMERA OBSCURA

From Richard Kadrey

“The Camera Obscura “In 1038 AD, an Arab scholar named Alhazan described a working model of the camera obscura. Literally meaning dark chamber, the camera obscura was a room or box lit only by a small hole that admitted sunshine. Light rays poured through the hole, eerily assembling an image of the outside world on the opposite wall.

“Although Alhazan did not actually construct the device, his work would influence a medieval tinkerer named Roger Bacon. In 1267 AD, Bacon created convincing optical illusions by using mirrors and the basic principles of the camera obscura. Later, he used a camera obscura to project an image of the sun directly upon an opposite wall. “It was not until the Renaissance that the instrument was widely used as a drawing tool. Although Leonardo Da Vinci is popularly credited for using the camera obscura to draw, that is only partially true. A student of physiology, Da Vinci built a small camera obscura to test his theories about the workings of the human eye and the concept of perspective. Da Vinci never used the camera obscura to draw. Without a lens, the camera was not a very effective or portable tool for viewing the world.

“The introduction of the orbem e vitro, a kind of primitive biconvex lens, revolutionized the utility of the camera obscura. Like the lens that C.C. Harrison and J. Schinitzler would perfect in 1860, the orbem was constructed of two

convex lenses. The design reduced distortion and increased clarity. Although no inventor is known, the lens was first mentioned by Girolamo Cardano, a Milanese mathematics professor, in the 1550 edition of his scientific encyclopedia.

“In 1558 the Neapolitan scientist Giovanni Battista della Porta suggested the camera obscura would make a wondrous aid to artists. In his Magiae naturalis, he discussed the applications to portraiture, landscapes, and the copying of other paintings. With the lens, he wrote, ‘You will see everything clearer, the faces of men walking in the street, the colors, clothes, and everything as if you stood nearby.’

“Though some, including Joshua Reynolds, warned against the indiscriminate use of the camera obscura, others, notably Algarotti, a writer on art and science and a highly influential man amongst artists, strongly advocated its use in his Essays on Painting (1764): “’The best modern painters among the Italians have availed themselves of this contrivance; nor is it possible that they should have otherwise represented things so much to the life. Let the young painter, therefore, begin as early as possible to study these divine pictures.

“’Painters should make the same use of the Camera Obscura, which Naturalists and Astronomers make of the microscope and telescope; for all these instruments equally contribute to make known, and represent Nature.’“. “Gerolomo Cardano (1501- 1576), an Italian mathematician, introduced a glass disc in place of a

pinhole in his camera, and Barbaro also used a convex lens. "The first cameras were enormous. Anastasius Kircher [sic] (1601-1680) in a book written in 1646, described one which consisted of an outer shell with lenses in the centre of each wall, and an inner shell containing transparent paper for drawing; the artist needed to enter by a trapdoor.

"Other versions also appeared. Sedan chairs were converted, and tent-type cameras were also in use, even up the beginning of the nineteen hundreds. Then smaller, portable ones were made. Thus the camera obscura, as it came to be known, became a popular aid to sketching."

"Another notable improvement came in 1568 when Daniele Barbaro, a Venetian nobleman, described a camera obscura outfitted with a lens and diaphragm. This forerunner of the aperture could be made progressively smaller so the image would become ever sharper. With continuing improvements in optics, the camera obscura no longer needed a large, stationary room to create an image.

"In 1572 Friedrich Risner constructed a small hut that could be carried around the countryside and used to make topographical drawings. Camera obscuras began to shrink in size and improve in optical quality. By 1657, camera obscuras were small enough to be carried under one arm.

"During the latter half of the 17th century, they proliferated across Europe, with uses as varied as painting, architectural drawing and spying.

“As remarkable as the instruments were, they didn’t fully satisfy the needs of artists. While canvas painting is a vertical pursuit, many artists preferred to sketch a scene on a laptop pad. In 1676, Johann Christoph Sturm, a professor of mathematics at Altdorf University in Germany, introduced a reflex mirror. Mounted at a 45 degree angle from the lens, the mirror projected the image to a screen above. This elegant configuration is at the core of modern single lens reflex cameras.

“In 1685, Johann Zahn, a monk from Wurzburg, solved the final piece in the optical puzzle. Improving upon Sturm’s design, he introduced lenses of longer and shorter focal lengths. Scenes as wide as a landscape or as close as a portrait could be viewed with a simple change of lens.

“He also painted the interior of his camera obscura black to avoid internal reflections. Excepting a mechanical shutter, Zahn’s invention was the prototype for today’s camera. Yet it would be over one hundred and fifty years before the camera obscura and photosensitive chemicals were combined to make permanent photographs.”

PARISIAN SHADOW THEATRE

From Bruce Sterling

[Bruce Sterling remarks: This wonderful book, which draws on the obviously extensive holdings of the Zimmerli Art Museum, was published to accompany a "Spirit of Montmartre" art exhibition. The book contains five long art-historical essays, plus two appendices and a bibliography. This is dead media scholarship at its finest! We have a provocative media thesis, which proposes an alternative geneology for cinema: not in cameras and persistence-of-vision optical toys, but in French black and white silhouette illustration. This impulse moves through drawings, to photomechanical printing, through puppet theater, and, finally, into a now-forgotten gigantic 20-man media gizmo in the most notorious dive of Bohemian Paris, the Chat Noir "theater of shadows" of Henri Riviere (1864-1951). Cate's article offers names, dates, shadow-theater plot summaries, and enough technical detail so that a determined hobbyist could probably re-create Riviere's shadow-theater out of klieg lights, curtain runners and tin cans. [What we in Dead Media do not have in this series of quotes from Cate are the many compelling illustrations in this book, which emerge straight from the heart and gizzard of Lautrecian fin-de-siecle French poster art. The art in this book is stunningly effective. As a substantial bonus, one can learn the personnel, histories, and countercultural intrigues of a panoply of Bohemian avant-garde cults, including the Hydropaths, the Incoherents, the Bon Bockers, the

Fumistes, the Hirsutes, the Zutistes, the Decadents, and others even less probable. Dead media just doesn't get much better than The Spirit of Montmartre.]

"In the nineteenth century, guignols, or puppet-theater performances, were popular, domestic forms of family entertainment; one could also regularly encounter groups of small children watching Punch and Judy puppet shows in the public gardens of the Luxembourg and Tuileries.

"In the fall of 1885 George Auriol and Henry Somm constructed a small puppet theater in the Chat Noir's third-floor Salle des Fetes. the performances were not for a children's audience. The setting of Somm's one- act Berline de l'emigre is a family-run public toilet. This silly play, with its childish overindulgence in toilet habits and its sequence of fumiste puns, in- jokes, and racial slurs, is echoed sixteen years later in Jarry's second Almanach du Pere Ubu.

"The guignol existed a relatively short time at the Chat Noir before it was converted to a shadow theater, another traditional form of family entertainment. After one of the early performances of La Berline de l'emigre, Riviere put a white napkin over the opening of Somm's puppet theater; then, after making small cardboard cutouts of policemen (sergents de ville), he placed them behind the white screen, creating silhouettes that he moved across the screen as Jules Jouy sang his popular 'Chanson des Sergots.' This was the birth of the Chat Noir's famous shadow theater.

"It was not by chance that Riviere discovered the shadow

theater. The climate was certainly right for investigations into the artistic effects of silhouettes. Thanks to the newly developed photomechanical relief- printing processes, which easily and inexpensively reproduced high-contrast black-and-white drawings. artists and writers of the Chat Noir group were collaborating on publications related to Riviere's aesthetic interests.

"Less than two months earlier, Paul Eudel, who by coincidence lived directly across the street from the Chat Noir, published his important study on shadow plays entitled Les Ombres chinoises de mon pere [My Father's Shadow Theater, Paris, Editions Rouveyre, 1885.] Cohl and Ferdinandus, Chat Noir regulars and Incoherents, created many of the silhouette illustrations for the book. Riviere was obviously aware of Eudel's publication just as he was surely aware of Henri de Sta's humorous books, such as La Chanson du colonel [La Chanson du colonel, operette pare Albert Millaud et Hennequin, Paris, Leon Vanier, 1882] which were illustrated by de Sta entirely with silhouette images.

"In addition, Georges Lorin's Paris rose of 1884 [Paris rose, Paris, Paul Ollendorf, 1884] innovatively incorporates silhouette images within the text to suggest movement from one page to the next. Lorin's dynamic placement of silhouettes, in fact, predicts the effect, ten years later, of celluloid frames of a moving picture, as well as the bold black-and-white book illustrations of Vallotton. [Rassemblements, edited by Octave Uzanne, Paris, Paul Ollendorf, 1884, features thirty illustrations by Vallotton.]. "These publications by his Chat Noir

colleagues introduced Riviere to the artistic potential of silhouettes and motivated his investigations into the shadow theater as a modern medium. Most important, the shadow theater was able to merge the two-dimensional aesthetics of the visual arts with characteristics intrinsic to theater: movement and the interaction of music and voice."

"Somm's soon-to-be-famous thirty-second shadow sketch L'Elephant. was created almost immediately after the first performance of La Berline de l'emigre. Salis used this short, comic, scatological skit daily until his death in 1897 to introduce the cabaret's shadow-theater performances: "No set; a lighted screen.

"A Negro, his hands behind his back, is tugging on a rope. He advances, disappears, the rope stretches horizontally. Then, a knot in the rope. The rope continues to stretch, eternally.. Then, at one end, therea appears an Elephant who drops 'an odoriferous pearl', in the words of the Gentleman Cabaret Owner, from which a Flower springs up, then: Curtain!

"By 9 December 1896, when Jarry performed Ubu Roi at Montmartre's Nouveau Theatre, Somm's Elephant had been performed at least four thousand times.". page 58 "It was not until 1887 that Riviere replaced Somm and Auriol's puppet theater with a real shadow theater. To do this it was necessary to break through the main wall of the Salle des Fetes and construct a screen and rear staging area. At first the screen measured almost one meter square. Eventually, it was enlarged to 1.12 meters

high by 1.40 meters wide with a huge backstage attached to the outside of the building.

“Essentially, Riviere created a system in which he placed silhouettes of figures, animals, elements of landscapes, and so forth, within a wooden framework at thre distances from the screen: the closest created an absolutely black silhouette, and the next two created gradations of black to gray, thus suggesting recession into space. Silhouettes could be moved across the screen on runners within the frame.

“For instance, perspective was created by a succession of large to small silhouettes placed across the screen. The silhouettes were at first made from cardboard and then, in 1888 with the first full-scale production of Caran d’Ache’s Epopee, from zinc. Behind the three tiers of silhouettes were sliding structures supporting glass panels, which could be painted in a variety of transparent colors; and finally, at the rear of the work area was the oxyhydrogen flame, which served as the light source.

“With the help of backstage assistants who could number as many as twenty, the perfectionist Riviere was able to develop complicated and sophisticated effects of color, sound and movement for the series of over forty eclectic plays that he and his colleagues produced during the eleven years that the shadow theater existed at the Chat Noir.

“The Chat Noir closed in February 1897, a month before Salis’s death. It left no greater legacy than Riviere’s shadow theater, which was the cabaret’s biggest public

attraction. From the very beginning, Salis was the improvisational narrator, or bonimenteur of each shadow performance. His eccentric, egocentric personality gave the performances added verve and excitement.

“In 1887-88, the year after the shadow theater became fully established at the Chat Noir, Auriol published Le Chat Noir, Guide, which, with Incoherent annotations, lists the art on display in this cabaret-museum. With the following contemporary artists represented on the Chat Noir walls, one may assume that Riviere’s shadow theater played a crucial role in establishing the credibility of the cabaret with that other tier of the avant-garde, the Impressionists/Post-Impressionists: Edgar Degas, Camille Pissarro, Claude Monet, Mary Cassatt, and others.

“The three most popular shadow theater productions were L’Epopee (1888) by Caran d’Ache, and Le Tentation de Saint Antoine (1887) and La Marche a l’etoile (1890), both by Riviere. It was Riviere who facilitated the technical requirements of all the plays produced at the Chat Noir.

“In some cases the demands were extraordinary, especially when productions such as L’Epopee, La Tentacion, and La Conquete de l’Algerie (1888) by Louis Bombled called for forty to fifty different sets, or if they required subtle effects of color and movement such as Phryne (1891) by Maurice Donnay.

“Georges Fragerolle, Albert Tinchant, or Charles de Sivry were most often responsible for the musical scores. The plays were varied in content; Caran d’Ache created a

seriocomic monochromatic vision of Napoleon I's military campaigns in L'Epopee, which included dramatic perspective views of the Grand Army. Riviere's Symbolist-religious play La Marche a l'etoile evoked with minimalist tints of blue the mystical procession of believers to Bethlehem to worship the newborn Christ, and Donnay's Ailleurs was a 'poeme satirique, classique, gaulois, mystic, socialiste et incoherent'. "The fumiste character of the Chat Noir was maintained by such plays as Le Gils de l'eunuque (1888) by Somm, L'Age d'or by Willette, Le Secret du manifestant (1893) by Jacques Femy, and Pierrot pornographe (1894) by Louis Morin.

"The forty scenes of Riviere's Tentation de Saint Antoine visualize the odyssey of the hermit saint as the Devil presented him with myriad contemporary and ancient, worldly and other-worldly temptations, including present- day Paris represented by Les Halles (the meat market) and La Bourse (the stock market), science, and new technology, the awesome universe, a variety of ancient deities, and the seductress queen of Sheba. Quotations from Flaubert's novel of the same name were recited and accompanied by selections of music by Richard Wagner, Fragerolle, and Albert Tinchant. The play reaches its crescendo with the apotheosis of the saint after he successfully rejects all temptations.

"La Tentation de Saint Antoine was the Chat Noir's first major shadow theater production. Its premiere performance on 28 December 1887 took place eighteen months after it was first announced in Le Chat Noir. It must have taken Riviere that long to develop the ability to

obtain the great variety and nuance of color as well as the spatial effects that distinguish his adaptation of the traditional shadow theater concept from all those who went before his."

"However, it was also Riviere's sophisticated technology that made the Chat Noir's protocinematic productions ephemeral. While zinc silhouettes and preparatory studies remain today, it is only be means of the printed, color facsimile albums of plays such as La Tentation de Saint Antoine, La Marche a l'etoile, L'Enfant Prodigue (1894), and several others published at the time, and by means of the decorative programs designed by Auriol and Riviere that we can come close to understanding the content and visual impact of the Chat Noir's shadow plays.". page 63

"Over the years, thousands upon thousands of individuals viewed the Chat Noir's shadow theater productions: bohemians, aristocrats, politicians, generals, and members of the bourgeoisie sat side by side in the Salle des Fetes with artists, writers, actors and actresses, scientists, and adventurers.

"Beginning in 1888 with the Theatre d'Application on the rue St. Lazare, shadow theaters eventually spread to other locations in Paris as well as to other Montmartre cabarets, Le Conservatoire de Montmartre and Les Quat'z'Arts, in particular. In addition. Salis took his shadow theater company on the road to the provinces. In 1893 Somm, Steinlen, and Michel Utrillo traveled to the World's Columbian Exposition in Chicago to present their

shadow plays. Thanks to Utrillo, by 1897 Barcelona's avant-garde. had its own shadow theater at Ils Quatre Gats, the modernista cabaret that took its name from both Le Chat Noir and Les Quat'z'Arts. [During the Paris world's fair of 1900] the journal Le Rire brought Montmartre shadow theater and humor to visitors around the world by installing on the fairgrounds along the Seine the Maison du Rire, which performed a repertoire of Chat Noir shadow plays and cabaret revues."

Source: The Spirit of Montmartre: Cabarets, Humor and the Avant-Garde, 1875-1905 edited by Phillip Dennis Cate and Mary Shaw, Jane Voorhees Zimmerli Art Museum, Rutgers, The State University, New Brunswick, New Jersey, 1996 LC 95-81835

CAMERA OBSCURAS EXISTING TODAY

From William Gibson

My friend, the artist Rodney Graham, has been building and using camera obscuras for 20 years. His first, constructed in Rome after his camera was stolen, was a matchbox with a lot of black tape. They got bigger, some of them becoming purpose-built buildings with projection screens on the rear wall, positioned to capture the image of a particular tree. The latest, commissioned by the French government, is mounted on a museum-grade reproduction of a U.S. Post Office horsedrawn delivery wagon. He makes huge prints with the bigger CO's, and travels the world looking for perfect trees to photograph this way. Nice images, the faint inverted tree, and so odd somehow there's no lens.

There is a Camera Obscura built into one of the base-pylons of the SF-Oakland Bay bridge. You stand inside in utter darkness and see an inverted Bayscape. This is just a rivet-hole but it's presumed to have been left deliberately open. One of the most secret monuments of the Bay Area.

IMMORTAL MEDIA

From Jonathan Prince

[Jonathan Prince remarks: Not dead media, but media for when we are all dead] A PROPOSAL FOR A PERMANENT RECORD OF OUR CIVILIZATION "J. Lovelock (Oxford University, UK) presents an essay on catastrophe, civilization, and information storage. The author makes the following points:

1) We try to guard against local hazards, but we tend to ignore threats global in scale.
2) We fail to distinguish between the life-span of civilizations and that of the species. Civilizations are ephemeral compared with the species: humans have lasted a million years, but there have been 30 civilizations in the past 5000 years.
3) As individuals, we are amazingly ignorant and incapable. The important difference that separates us from the social insects is that they carry the instructions for nest building in their genes. We have no permanent ubiquitous record of our civilization from which to restore it should it fail. We would have to start again at the beginning.
4) What we need is a primer on science, clearly written and unambiguous in its meaning, a primer for anyone interested in the state of the Earth and how to survive and live well on it. One that would serve also as a primary school science text. It would be the scientific equivalent of the Bible.
5) Modern media are more fallible instruments for

long- term storage than was the spoken word. They require the support of a sophisticated technology that we cannot take for granted.

6) What we need is a book written on durable paper with long-lasting print, a book written with authority and readable enough to ensure a place in every home, school, library, and place of worship, on hand whatever happened.

Source: Science-Week, 29 May 1998

PIGEON POST IN PARIS

[Bruce Sterling remarks: I discovered a charming exemplar of dead media on the top floor of the Eiffel Tower. This small glassed-in diorama is an infotainment tourist attraction. It contains a miniature group of period-clad French enthusiasts, two-dimensional colored cut-outs with beards, slouch hats, cloth coats and large wicker baskets. They are releasing their homing pigeons from the top of Eiffel's creation, with the following legend.]

"La Socie'te' Colombophile de Paris utilise au mois d'aout 1891 La 3e plateforme de la tour Eiffel pour y faire des experiences de communication aérienne par pigeons voyageurs."

Source: Diorama in the top of the Eiffel Tower, Paris

DONISTHORPE'S KINESIGRAPH

From Stephen Herbert

Wordsworth Donisthorpe's Kinesigraph

In 1876, English barrister Wordsworth Donisthorpe patented and had made a plate-changing camera for recording moving pictures. In 1878, in a letter to 'Nature' he suggested that his 'Kinesigraph' and Edison's recently-invented phonograph could be combined to produce talking pictures on the screen. In 1889, Donisthorpe and his associate William Carr Crofts patented a novel camera and projector for taking and showing moving pictures on 'film'(initially paper). In 1890, they shot a film of Trafalgar Square, London,of which ten celluloid frames survive. They were unable to obtain funding to perfect their projector. That's the story as told in those few film history books that mention Wordsworth Donisthorpe and W C Crofts.

New research provides evidence for their motivation, and a link with the technology of the industrial revolution. Donisthorpe, and Crofts (his cousin) were both political activists, passionate Individualists fervent in their anti-socialist crusade. Both men were born into a linked dynasty of technologists; Donisthorpe's father had been an inventor of wool-combing machines, and it was the technology of the textile industry that provided the inspiration for the cameras. By 1890, only three or four people in the world had managed to obtain sequence pictures on sensitised bands (paper or celluloid film). Could it really be just a coincidence that two of those

people, Donisthorpe and Le Prince, came from the same industrial community in the same English city, Leeds?

NARAGANSETT DRUM ROCKS

From Alan Wexelblat

According to an item in the 3 April Boston Globe, the Narragansett Trail (a New England historical and recreational way) has several examples of 'drum rocks.' Supposedly (I have not investigated first-hand) these rocks emit a booming sound when jumped upon.

The Narragansett Indians used drum rocks to summon others, give information, and mark trails. Legend has it that a sound from a drum rock could be heard up to 35 miles away. The Globe's brief blurb notes that rocks were used by "leaders of the Indian nation, including their sachem, tribal medicine men, elders, and even spirits of the ancestors."

Curious necronauts might contact John Brown, tribal historic preservation officer of the Narraganset Indians (reservation near Charleston, R.I.), or the Warwick Historical Society, which is apparently responsible for labeling the drum rocks found on this trail.

Source: Boston Globe, April 3, 1998

PNEUMATIC MAIL IN LONDON

From Dan Howland

“The transmission of matter through closed tubes by means of a current of air flowing therein is not by any means a novel idea, although its successful application to commercial purposes is of recent date. For the earliest suggestion of pneumatic transmission we must go back to the seventeenth century and search among the records of that venerable institution, the Royal Society of London.

“Here we find that Denis Papin presented to the society in the year 1667 a paper entitled the ‘Double Pneumatic Pump.’ He exhausted the air from a long metal tube, in which was a traveling piston which drew after it a carriage attached to it by means of a cord.

“At the close of the eighteenth century a certain M. Van Estin propelled a hollow ball containing a package through a tube several hundred feet long by means of a blast of air; the device, however, was regarded more as a toy than a useful invention.

“Of more practical value were the plans of Medhurst, a London engineer, who published pamphlets in 1810 and 1812 and again in 1832, when he proposed to connect a carriage running inside the tube with a passenger carriage running above it.” [Jules Verne’s recently unearthed 1863 novel, Paris in the 20th Century proposed a similar transit system, in which a train would be pulled by magnetic attraction to a metal object in a pneumatic tube.] “The distinction of being the first city to install a

practical pneumatic tube system belongs to London, where in 1853 a 1 ½ inch tube was laid between Founder's Court and the Stock Exchange, a distance of 220 yards. The Carrier was drawn through the tube by creating a vacuum, a steam pump being used for the purpose. The roughness of the interior of the iron tubes gave much trouble, and when subsequent extensions of the system were made in 1858 and later, 2 ¼ inch lead tubes were used, the carriers being made of gutta-percha with an outer lining of felt."

["Gutta-percha" is a sort of early plastic made from the latex of Malaysian trees; it is not the punchline to a Chico Marx joke about fishing.]

"The London system has grown steadily and now includes 42 stations and 34 miles of tubes. The latter are of cast iron and lined with lead. On the shorter lines, the inside diameter is 2 3/16 inches, and on the longer lines, 3 inches. The lines are laid out radially, air being compressed at one end and exhausted at the other. Similar systems are used in connection with the telegraph service in Liverpool, Manchester, Birmingham, Glasgow, Dublin and Newcastle.

"Mention should be made here of the underground pneumatic railways constructed in London, the first built in 1863, 1,800 feet in length and 2 feet 8 inches by 2 feet 8 inches in section; the latter tunnels built in 1872, running from Euston Station to the general post office, a distance of 2 ¾ miles. The latter was in duplicate and D-shaped in section, measuring 4 ½ feet wide by 4 feet high, the

straight portion being of cast iron and the bends of brick. It was operated by a fan which forced air into one tunnel and exhausted it from the other. The capacity of the line was about one ton per minute. It was not satisfactory and was ultimately abandoned."

Source: Scientific American, December 11, 1897

PNEUMATIC MAIL IN BERLIN

From Dan Howland

In 1865, Seimens & Halske, of Berlin, laid down in that city a system of pneumatic tubes for the transmission of telegraph messages. The wrought iron tubes, 2 ½ inches in diameter, were in duplicate, one being used for transmitting and the other for receiving messages. They ran from the telegraph station to the Exchange, a distance of 5,670 feet. The tubes were looped together at the Exchange and a continuous flow of air was maintained by a compressor at one end and an exhauster at the other."The modified system now in use is worked by means of large storage tanks, containing either compressed or rarefied air, and it comprises 38 stations and more than 28 miles of tubing 2.55 inches in diameter.

"The pneumatic tube system in Paris dates from the same year as that of Berlin. Here a novel feature was introduced in the method of compressing the air, for instead of using a steam engine it was compressed in the tanks by displacement with water from the city mains. The tubes of the present system are 2.55 inches diameter, and the carriers are made up in trains of from 6 to 10, with a leather-covered piston at the rear which fits the tubes snugly and drives them forward. The tubes are wrought iron and the speed is 15 to 23 miles an hour."

Source: Scientific American, December 11, 1897

PNEUMATIC MAIL IN AMERICA

From Dan Howland

The father of the pneumatic tube system of railways in America was the late Alfred Ely Beach, who for half a century was one of the proprietors of the SCIENTIFIC AMERICAN. His experimental railway was first exhibited at the American Institute Fair held in New York City in 1867."Less well known but equally meritorious was the system of pneumatic postal tubes designed by Mr. Beach at about the same period. "In 1870, also, he built an 8 inch iron tube a thousand feet long, whose interior was glazed to form a smooth surface. This lead to a large receiving box, from which a second pipe led to an exhausting engine.

A letter dropped into the pipe at any point was swept along by suction due to the exhaustion of the air from the box, from which it was easily removed." [Illustrations show a car about the size of a backyard steam train. Above it, postal workers sort letters and drop them into slots. To maintain the difference in air pressure, at the end of each slot is a tiny revolving door, laid sideways like a paddlewheel. As the car approached, slots and tabs in the top of the car tripped the appropriate paddlewheel, dropping letters into the correct compartments of the car.

The pneumatic tube has been in use in this country on a small scale from a quarter of a century for the transmission of cash in retail stores and for general telegraphic purposes. The Western Union Telegraph

Company laid down four lines in 1876 from the main office in Broadway, New York, one to Pearl Street, and one to the Cotton Exchange. To these it has since added two miles of double line which run beneath Broadway to its uptown office. The most notable event in the recent history of pneumatic transmission occurred in Philadelphia, when a system of 6 inch tubes was built between the main post office and the sub-post office on Chestnut Street, near Third Street, a distance of 3,000 feet.

The reader will observe that in all the European systems none of the tubes are larger than 3 inches in diameter, so that in respect of size alone the Philadelphia plant marked a bold advance upon any existing system, the area of the tubes being increased more than four-fold, and the capacity of the carriers in proportion. The speed, moreover, was nearly doubled, and hence, with the improved mechanical appliances for transmitting and receiving, the capacity of each tube cannot be less than twenty times as great as that in the old country systems. The Philadelphia plant was opened in 1893 and has been in successful operation ever since.

“In 1897, the Tubular Dispatch Company, of New York, was authorized to construct a system of postal delivery tubes between the general post office and certain sub-stations in New York City. It was decided to adopt the system already in successful operation in Philadelphia, and to this end the Batcheller Pneumatic Tube Company, of Philadelphia, drew up plans for a set of lines running from the general post office to the Produce Exchange, to

the Forty-second Street depot, to One Hundred and Twenty- fifth Street, and across the Brooklyn Bridge to Brooklyn. The line to the Produce Exchange and return was built, and the opening took place on October 7 of this year."

Source: Scientific American, December 11, 1897

THE PIGEON POST

From Candi Strecker

“Bra manufacturers faced shortages during World War II, as nylon, rubber, silk and other necessary fabrics were requisitioned for the duration. One company, MaidenForm, took up the slack by making vests for carrier pigeons.”

[Bruce Sterling remarks: it’s hard to beat this anecdote as an odd social byproduct of a dead media industry. But is it true? While carrier pigeons saw a great deal of action during World War One, I have no data at all on any World War Two pigeons; much less flocks of pigeons so vast in extent that they could plausibly occupy the idle factories of MaidenForm.]

Lynn Peril replies: I originally picked up the quote from a secondary source, Marilyn Yalom’s History of the Breast, then found the primary source: a PR brochure called “Maidenform, Inc.: A Company Built By A Brand.” Published by Maidenform in 1992, this pamphlet recounts the company’s history from the 1920s to the early 1990s. It includes the following: “[Maidenform’s wartime] Manufacturing concentrated on products for the Armed Forces, ranging from parachutes for flares to vests for carrier pigeons.” And then there’s a picture of what looks like a pigeon in bondage, including a little black hood. Now, as to whether the army used any of these pigeon vests, who knows? But Maidenform, by its own account, was making them. Hope that clears up any questions!

Source: Mystery Date fanzine by Lynn Peril, issue #6

RADIO KILLED THE VAUDEVILLE STAR

From Gary Gach

[Bruce Sterling remarks: “Vaudeville” is dead but probably not a “medium,” whereas radio is not only a living medium but showing a great deal of experimental vitality. If there’s a “dead media” aspect to the compelling narrative that follows, it’s the eerie practice of a theater full of vaudeville patrons sitting patiently in their seats to watch a radio.

And who better to relate this chronicle of technological change than veteran American entertainer George Burns, star of vaudeville, radio, movies, and television.]

From George Burns’ memoirs: “The only problem was that just as we were becoming stars, vaudeville was dying. No one could pin the rap on us, though. Everybody believes it was the movies that killed vaudeville. That’s not true. Movies, vaudeville, burlesque, the local stock companies, all survived together.

“Then radio came in. For the first time people didn’t have to leave their homes to be entertained. The performers came into their house. Gracie and I knew that vaudeville was finished when theaters began advertising that their shows would be halted for fifteen minutes so that the audience could listen to ‘Amos & Andy.’ And when the ‘Amos & Andy’ program came on, the vaudeville would stop, they would bring a radio onstage, and the audience would sit there watching radio.

“It’s impossible to explain the impact that radio had on

the world to anyone who didn't live through that time. Before radio, people had to wait for the newspaper to learn what was happening in the world. Before radio, the only way to see a performer was to see a performer. And maybe most important, before radio there was no such thing as a commercial.

"Radio made everybody who owned one a theater manager. They could listen to whatever they wanted to. For a lot of performers, the beginning of radio meant the end of their careers. A lot of acts couldn't make the transition. Powers' Elephants, mimes, acrobats, seals, strippers, what could they do on the radio? What was the announcer going to say, the mime is now pretending to be trapped in a box? The seal caught the fish? You should see this girl without her fan? Gracie and I had the perfect act for radio, we talked."

Source: Gracie: A Love Story by George Burns, GK Hall & Co 1989 (out of print in paper, the book is still available in audiocassette)

PIGEON VESTS

From David Morton

Regarding the “pigeon vest” anecdote (Working Note 35.0). I don’t know if pigeons were used in the second World War, but I do know of a WWII-era product called the “pigeon vest.

“It was not worn by the pigeon, but by a soldier, specifically a paratrooper, who was to carry with him as he jumped one or more pigeons in the pockets of this vest. I don’t know if this is exactly the product that the earlier message referred to, but it does indicate that the U.S. army intended to use pigeons during WWII. Incidently, the source of this information is an army technical manual that I found on the shelf at the Rutgers University library.

PIGEON SPIES OF WORLD WAR TWO

From Lars-Erik Astrom

“In areas [in occupied France] where we had no direct contact with the Resistance movement, we used to get our bombers to drop homing pigeons in containers which would open after a few hours and release the birds if they had not been found by someone on the ground.

“Attached to the containers were questionnaires, asking a series of simple questions which, for example, a farm labourer might be able to answer, and which might be helpful to us. My own question was: ‘Are there any German radio stations in your neighbourhood with aerials which rotate?’ This feature was an almost certain criterion of a radar station, and we dropped the pigeons wherever we saw a gap in our knowledge.

“Before the end of 1942 the pigeons had given us the locations of three stations hitherto unknown to us, and more followed during 1943.” page 305: “ fortunately a heavily-laden and very gallant pigeon arrived at its home base, having been dropped by Bomber Command somewhere in North France with my usual questionnaire. It had been picked up by a Frenchman who had been present in one of the German nightfighter control stations, perhaps as a cleaner, and when he saw that there was a question about radar he had clearly delighted in describing the events one night in the station at le Croix Caluyau as he had witnessed them.

“I have never seen a pigeon carrying such a profuse

message. It ended with the exclamation by the German Commander, who had spent the night trying to intercept seven hundred separate bombers without being able to locate one: 'He would rather be attacked by a hundred bombers than submit to that torrent of paper again!'" [Lars-Erik Astrom remarks: This was the British radar countermeasure, the Window project: they filled the air with lots of metal foil strips to clutter the German's radar vision.]

"Another wartime experience that made me wonder was the ability of pigeons which had spent their entire lives in England to home back to their bases after we had dropped them on the Continent. I spent some time with the Air Ministry Pigeon Service in the months after the war, learning from experts what pigeons could do."

"Geographical landmarks, though, could not explain a good deal of the wartime flying, and I began to wonder whether the birds had developed a form of inertial navigation, based on the semicircular canals in their heads, which were known to be accelerometers. We tried to keep the Air Ministry Pigeon Service in being after the war, with a view to organizing a prolonged series of experiments, but the scheme fell through when both the pigeons and I left the Air Ministry."

Source: Most Secret War, by R. V. Jones, London 1978, ISBN 0241 89746 7

MILITARY PIGEONEERS OF WORLD WAR TWO

From James Agenbroad

“The Pigeon Service “Nonelectrical means were rapidly disappearing in air communications. but ground needs were somewhat more diverse and still held room for non electric methods. Thus pigeon communications, an uncomplicated activity, had a secure if minor place in the company of its intricate counterparts. In exercises and maneuvers, the ground arms habitually employed pigeons units theoretically located at inaccessible spots.

“The Camp McCoy maneuvers of 1940, for example, had developed ‘an immense respect’ for them. In Hawaii, the departmental commander had asked for them; and in Alaska also, the chief of the new defense command, Brig. Gen. Simon Bolivar Buckner, Jr., had interested himself in their value in remote regions, especially in the chilling and rugged wildernesses where pilots might be forced to land.

“Vilhjalmur Stefansson, the noted authority on the Arctic, Frederick C. Lincoln, expert of the United States Fish and Wildlife Service, and others advised the Signal Corps on a plan for the use of pigeons there. The effort failed through no more hazard than ordinary delay: birds which had been started on their way to Buckner’s new Fort Richardson while they were still young enough to be trained were grandfatherly when they arrived.

“Innovations at the Monmouth Pigeon Center, where the

appropriation was $2,490 more in 1941 than it had been the year before, were similarly undetermined of their final success, and similarly plagued with an aspect of absurdity. A joke revived from World War I hinted that the Signal Crops was crossbreeding pigeons with parrots so that the birds could say their messages, with angels so that they could sing them, and with Western Union boys so that they could sing and salute, too.

“The actual experiments were rather more likely to succeed. The pigeon experts were making a serious effort to train the birds to work at night, and to fly out from their home lofts as well as back to them. In effect, one experiment crossbred pigeons with a nighthawk and the second with a boomerang.

“In no way inconsequential, the work was supported by an increasing and general agreement to organize separate pigeon companies to serve field commanders. Plans went forward to create the first, although it was temporarily called the 2nd Pigeon Company, of these units at Camp Claiborne, Louisiana, in June, and to draw at least two of the officers from that considerable group of persons who especially admired these birds.

“Pigeon fanciers all over the country had sought to lend fine stock to be bred with the pedigreed strains in the Signal Corps lofts at Fort Monmouth, Fort Benning, and Fort Sam Houston. Many enthusiasts in the breeding and racing of pigeons had seen service in 1917 and 1918, and some were now coming back into the Signal Corps for duty in the emergency, among these being the officers for

the new company and those performing the experiments at the Pigeon Breeding and Training Center.

“With the first addition to its cadre, the new unit, redesignated the 280th Pigeon Company, made a reconnaissance trip to Vicksburg, reconnoitered along the Mississippi River, and after a little while took part in the summer maneuvers. Pigeons from the Fort Sam Houston loft were winning long races by flying distances as great as 600 miles within 17 or 18 hours.

“Both there and at Fort Benning the signal officers received instructions to breed young stock for the 280th, first for the maneuvers, then to replace a 75% loss of birds during them. The 280th for a time had 800 or 1,000 pigeons on hand at the beginning of a month and only 250 or 275 survivors at its close.

“In the Hawaiian Department the loft was transferred from Schofield Barracks to Fort Shafter in an effort to reduce losses: the birds had been flying into wires, disappearing into an eucalyptus grove near the loft, and even colliding with the aircraft of the adjacent base.

“Yet there was no suggestion that the Signal Corps ought to drop pigeons from its list of communications means. By mid-summer, the Pigeon Breeding and Training Center was able to report progress. The experiments as yet had no tactical value since their range had not got beyond a dozen miles, but the trainers had accustomed an increasing number of birds to fly at any hour and to cover a two-way course at six in the afternoon, a good meal providing the spur.

“At the close of the breeding season all the pigeons lent by civilian owners were returned, and thenceforward the Signal Corps bought birds at two dollars apiece. In nine months during 1941, the center bred and shipped out 2,150 to tactical units everywhere.”

“Pigeons, for example, received considerable use in this theater of war. [North Africa] Before the birds can be used in any situation, their home loft must remain in one place at least a week before they will settle there, having become so familiar with the location that they return to it invariably. Three lofts of the North African Pigeon Platoon, part of the 829th Signal Service Battalion, were located early in 1943 at Constantine, Tebessa, and Sbeitla.

“Pigeons homing on a loft at Beja in northern Tunisia were employed for a period of seventeen days during campaigns in the vicinity. During this time birds that had been parceled out to the front-line units brought back seventy-two important messages and many less urgent ones. In some cases they got the message through first, as upon the retaking of Fafsa in March during the southern Tunisia Campaign.

“The first complete report of the recapture reached the Corps headquarters carried by the pigeon ‘Yank’ returning to the home loft near Tebessa, having made the 90-mile flight from Gafsa in 110 minutes. It was the first report to arrive because wire had not yet caught up with the advancing troops and because a radio net had not yet been established. Pigeons could be valuable during the periods of radio silence, especially if at the same time

wire lines happened to be incomplete or out of action.”

Source: The United States Army in World War 2, Technical Services, Signal Corps, The Emergency (to Dec.1941) by Dulany Terrett Stock Number: 008-029-00048-2 Price: $26.00 Price (non-U.S.): $32.50 Description: CMH Pub. 10-16. L.C. card 56-60002. Item 345. Publisher: Defense Dept., Army, Office of the Chief of Military History Year/pages: 1956: 383 p.; ill., plate. Center of Military History Publication 10-16 SuDocs Class: D 114.7:SI 2/V.1 ISBN: 0-16-001898-6 Author: Terrett, Dulany

PIGEON PARAPHERNALIA

[Bruce Sterling remarks: We've had a gratifying response to the recent flurry on pigeons. Paratroop vests, clockwork canisters, specialty carbon paper, pigeon lingerie: the historical footprints of the pigeon-as-medium appear all over the world. Perhaps the following squibs will encourage some Necronaut to supply us with some accurate, thoroughly cited data on the material support system for military pigeons. It would be especially good to know something about the badges, mottos and battle dress of the various pigeon services of World Wars One and Two. I would also remind researchers that India's "Orissa Police Pigeon Service" apparently still exists.]

I can't remember where I saw it, but I have seen a photo of a British paratrooper unpacking an airdroppable cannister filled with pigeons. The exterior was a metal tube (suspended from the parachute) and inside of this were stacked small wicker baskets with the pigeons. I'm not sure if this was used operationally, or just in maneuvers.

The "pigeon in bondage" sounds like another way to resupply carrier pigeons via airdrop (paratrooper's vest would most likely be to supply pigeons for the platoon to send messages home, while a "human-less" system would be for use by agents behind enemy lines, where it would be undesirable to drop a paratrooper). This bears a resemblance to something I've heard about in passing: pigeons air-dropped in a harness to keep them from flying home immediately after leaving the dropping

aircraft, with a parachute to ensure a safe landing for the (temporarily flightless) pigeons.

As is obvious now, birds were in use in WWII; I have some surplus Army message pads that have pigeon sheets in the back; thin tough tissue, carbon paper, and a chart of codes for compact communications. Pad was dated 1940's. This is to be used when pigeons become dead media.

Source: Champion Recipes of the 1986 Hong Kong Food Festival. Hong Kong Tourist Association, 1986.

THE FISHER-PRICE PIXELVISION

From Greg Langille

A few years ago I purchased a Fisher-Price PXL 2000, a relatively cheap video camera that recorded on standard audio cassettes. I've found it very difficult to find information about it. Fisher-Price just says that "We can tell you that this product was introduced in 1988 and discontinued in 1989. There is no repair service or parts and we do not have any informational pamphlets available to send." So, it definitely is dead. However, on the web site of "Film and Video Umbrella", a curatorial agency funded by the Arts Council of London, there is a good description of the technology, which is still in use by (primarily experimental) artists today:

"In 1987, U.S toy manufacturer Fisher-Price introduced the latest addition to their range of childrens' products: a lightweight plastic video camera, called the PXL 2000, which retailed at a cost of just under $100 and recorded its endearingly rudimentary black-and-white images, at ultra-high speeds, on to a standard audio cassette. Loudly trumpeted as a kind of My First Movie Camera for the younger members of the video generation, it was confidently assumed that the PXL 2000 would go down a storm with legions of junior Spielberg wannabes, but instead, like many an apparently surefire success, it sank like the proverbial stone.

"Raised on the production values of MTV and Hollywood, America's vid-kids were less-than- captivated by what they could muster from the unmistakably low-tech (and

none-too-durable) PXL. After only one year in production, Fisher-Price withdrew the camera from the shops and consigned it to the company bin.

“Since then, though, the PXL 2000 has enjoyed a remarkable, and quite unexpected, afterlife on the fringes of the U.S independent scene; adopted by an increasing number of film-makers and video-artists for its unique visual properties. As the last few years have shown, in the right hands and with surprisingly minimal fuss, this crude and clunky children’s toy is capable of yielding some truly astonishing results.

“No matter how poor the light, the camera lends a distinctively hazy, dream-like quality to almost everything it shoots, accentuated by a ghostly optical shimmer when anything passes too quickly across the screen. Contrastingly, the simple fixed-focus lens lets one get uncannily close to people or objects, miraculously registering both detail and depth. Even more strikingly, the images produced reveal an extraordinary sense of intimacy and spontaneity, as well as with a desire to experiment that is no doubt encouraged by the ridiculously small-scale costs.

“This Film and Video Umbrella touring package highlights a number of recent works by most of the leading figures in the still-expanding Pixelvision field (among them Michael Almereyda, Michael O’Reilly, Sadie Benning and Eric Saks) and gives British viewers their first real glimpse of the unabashedly low-definition but increasingly high-profile Pixelvision craze.

“Until now, PXL-generated work has been an almost exclusively American phenomenon, as none of the PXL 2000 cameras ever made it over to the U.K. British enthusiasts may be interested to hear, though, that while the Fisher- Price model has been long discontinued, its original inventor is set to retrieve the patent, opening the release for a new, improved version later this year.”

So now it appears that Pixelvision may not be completely dead. I should mention that the camera I bought came with a small black and white monitor (about 3.5” screen) which the camera could be plugged into. This could be battery powered (a modification done by the previous owner) and carried around, a precursor to the video screen on modern digital videocameras.

Unfortunately it died soon after I bought it. The camera itself is very light and uses six AA batteries and records both sound and audio. The tape is run at a very high speed (I think about six times normal cassette speed), so most of the audio includes a loud “whirr” from the camera itself. Also, mine needs a LOT of light basically direct sunlight only.

But it works. I should mention that I paid $200 Canadian in 1994 to buy it from a guy who said he used it for skate board videos. It came with instructions from a hacker magazine for modifying the lens to use infrared light! For about $20 you could actually get it to work as a night vision camera! There must be a whole subtopic of dead media concerning unintended uses.

Source Film and Video Umbrella ; personal experience

NAZI VIDEOPHONES

From Lars-Erik Astrom

I saw a strange WWII German military optical telephone apparatus in an electronic surplus store in Sweden in the sixties. I cannot recall many details, but I think the transmitting unit was an infrared sound modulated lamp. and the receiving unit was a binocular with some photoelectrical detector. I also think that the user interface or I/O unit was a telephone handset.[Bruce Sterling remarks: It's a fact that the Germans had video telephones in the 1930s, but if the Nazis had light-transmitting telephones, that would indeed be a rare and remarkable dead medium.]

THE PIGEON POST; THE OSTRICH POST

From Bruce Sterling

“Pigeon News “The French army pigeon unit has survived recent cost- cutting drives, Ralf Krueger reports for Deutsche Press Agentur of Hamburg. Unlike Switzerland, which has retired its army pigeons, France is holding on to its cooing soldiers. They remain on standby, ready to fly messages undetected through enemy lines. Carrying on a French military tradition that is said to date to the 8th century, about 160 courier pigeons serve in the French army, occupying lofts at Mount Valerian base near Paris.

“In South Africa, homing pigeons have been linked to the theft of diamonds, Chris Erasmus writes in the ‘East African’ of Nairobi. Officials of the Alexcor diamond-mining corporation in Alexander Bay, a remote town on South Africa’s western coastline, are embroiled in a dispute with local racing-pigeon owners. Mine officials say pigeons are being smuggled into mining areas by workers or visitors and laden with gemstones. The pigeons then fly the gems out of the facility over high-security fences.

“This is not the first case of avian theft from the mines, Erasmus says. A few years ago, an imaginative worker used an ostrich to steal a large number of diamonds. The enterprising thief taught the ostrich to wait outside a particular stretch of electrified, high- security fence by

regularly tossing food over the fence. When the thief threw diamonds over, the ostrich gobbled them up and later regurgitated them."

Source: World Press Review, August 1998, page 36 Clippings section, quoting Ralk Kreuger of Deutsche Press Agentur of Hamburg, and Chris Erasmus of the East African newspaper of Nairobi

THE AUTO-TYPIST

From Dave Morton

[Dave Morton remarks: My father was telling me recently about an office machine that he used in the 1960s called the "Auto-typist," an automatic typewriter. I had never heard of this technology, but my mom chimed right in, saying that she had used them many times, acting as if they were the most common things in the world. So I did a little research, and this is one of the things I came up with. The article excerpted below describes some of the products offered by the American Typewriter Company of Chicago, maker of the Auto-typist.]

"Typewriters that think! Well, almost. If you were to see one of the new automatic typewriters at work, you could easily believe that a robot brain had been shackled to its keyboard. For, incredibly, the machine can pour out individual letters.

"The standard automatic typewriter (that reproduced a letter from a piano-roll type of master copy) is familiar to teachers. Each of its letters is like the others produced from the same master. True, the operator may insert individual inside addresses and salutations, so that these letters appear to be individualized. The standard automatic typewriter, however, has, at the insistence of Big Business, been refined far beyond this initial stage, so that letters actually are individualized.

"Reproducing from a master roll on which scores of assorted paragraphs have been entered, the machine can

select the paragraphs you want in the order in which you want them. Moreover, the machine will stop automatically at certain points, to permit the operator to insert names, dates, amounts, or other data; and then go on automatically.". "The secretary goes to the automatic pushbutton typewriter; presses buttons 3, 4, 62, 37, and 31 [the text explains that these refer to pre-programmed paragraphs for form letters]; inserts letterhead stationery; types the inside address and salutation; and pushes the starting button of the machine. Zing! At 150 words a minute, the machine rattles off the five-paragraph letter and closing lines, while the operator calmly goes to a second, a third, and a fourth machine and similarly starts them.". "The operator needs but one skill; the ability to typewrite. Even a beginner typist can turn out finished letters comparable to those typed by the best of secretaries. Because the job demands alertness and precision and the ability to work under pressure, the typing skill ought to be automatic so that the operator can devote his attention to running the equipment. "An experienced operator has little difficulty in keeping four machines running at once. Consequently, she earns a secretarial salary rather than a typist's salary, because she can produce as much correspondence as might be produced by a half dozen manual typists.

"The only operation that requires any special practice is the perforating of the master rolls. This is done on a separate machine having a typewriter keyboard. The automatic typewriters operate at such high speed that they need extra time between juxtaposed letters, to

permit the first letter to fall back into the basket before the second letter is struck. Because of this feature, the manufacturer prefers that master- perforation be done by his own or his agencies' staffs, though many large users have installed their own perforators and have permitted the manufacturer's agent to train one of the user's staff to perforate.

"The automatic typewriter is not an electric typewriter; it is pneumatic. The perforated master roll passes over air-valve slots. Each perforation permits air to escape from a particular slot, thus opening a valve. Each valve is connected by a tiny hose to a bellows, and each bellows is attached to a key. As the valves open, the bellows operates and the typebars are snapped up against the paper. The bellows-to-key arrangement is suitable for use with any make of manual or electric typewriter. The speed of the Auto-typist mechanism can be adjusted to operate any typewriter at the highest speed at which the typewriter is capable of being run." [Bruce Sterling remarks: So here we have a rapid pneumatic typewriter using a bellows and player-piano roll. This narrative would beggar credulity, if it came from any source less credible than David Morton.]

Source Alan C. Lloyd, Typewriters That Think by Alan C. Lloyd, The Business Education World 27 (April 1947): pages 453-454.

UNSTABLE PHOTOGRAPHS

From Jack Ruttan

“Fading memories: fight to save the family album
“Modern colour photographs are decaying quicker than Victorian black-and-whites, writes Simon de Bruxelles
“Why the past is looking just a little too rosy
“Photographs taken as recently as 30 years ago are already fading in the nation’s family albums.

“Millions of images taken since the invention of modern colour photography are changing because of the way their dyes break down. Just as the 19th century is now viewed in shades of sepia, so future generations may look back on the last three decades of the 20th as the era of purple lawns and red skies.

“Kate Rouse, archivist for the Royal Photographic Society in Bath, said: ‘After about 30 years, you begin to see a degradation of the image. The three dyes which make up the picture fade at different rates and there is a shift in colour. Eventually, the image is just going to fade away. We are reaching the point where the first ones have started to degrade and people are beginning to notice.’
“The short life of colour photographs is a headache for gallery and museum curators and archivists from 21 countries who are gathering in York later this month to discuss ways to slow the ageing process, as part of the Arts Council’s Year of Photography.

“But it is a more personal disaster for generations whose most cherished moments are proving far more fleeting

than they ever imagined. The 21st century may inherit a better record of Victorian ancestors posing sternly in black and white than of the present generation.

“Kodak invented the Instamatic camera in 1963, and began the mass marketing of colour film. Until then, virtually all photographs had been in black and white. In the early 1970s, sales of colour outstripped black and white and today it accounts for all but a tiny percentage of the 96 million films sold in Britain each year.

“There have been refinements since, but the principle of using layers of cyan, magenta and yellow dye to produce a colour image has remained the same. Ken Rogerson, technical manager for Fuji, said: ‘Organic dyes are inherently liable to fade, and they all fade at different rates. I don’t want it to sound like a Doomsday scenario, but ultimately they will break down into a colourless compound. Whites in a print may also turn yellow with time. Black and white is a metal image and has far greater stability.’” “The fading may be only gradual, but, as each dye breaks down, the colour of the image distorts. Skin tones can turn a deathly blue. The conditions in which the print is kept determine which dyes go first. Light, heat and humidity are the death of a colour photograph.”. “Works of art are also affected. Many of the most recent works in the Victoria and Albert Museum’s vast collection are unlikely to outlast original prints made by the great Victorian photographers, such as Julia Margaret Cameron and David Octavius Hill.”. “The artist David Hockney keeps his work in a cold store in Los Angeles. He acknowledges that much of it has a limited life span. In

the introduction to a recent exhibition of his work in Bradford, he wrote: ‘Colour is fugitive in life, like it is in pictures. Colour is the most fugitive element in all pictures, a great deal more than line. The piece of paper is beautiful, it will slowly change like everything else.’ “Sadly, the change is not always for the better. Lydia Cresswell-Jones, photograph specialist at Sotheby’s, said: ‘We see prints from Hockney’s Sonnabend Portfolio, taken in New York in 1976, and they are almost always brown and therefore quite hard to sell.

“’It is difficult to value them when they have degraded like that. I think the last one we sold made L260. This is one reason why, for many collectors, black and white is still the colour of photography.’”. “With collectors prepared to pay as much as L55,000 for a single print by a contemporary photographer such as Cindy Sherman, the lifespan of the work becomes a matter of economic as well as artistic importance. How much would a Rembrandt etching now be worth if it had begun to fade after 30 years? “Some manufacturers such as Fuji have begun producing ‘archival’ photographic papers, but they are unlikely to be used by high-street film processors and are not guaranteed to be fade free for more than 50 years. “Film is now giving way to the digital image, according to Doug Nishimura, a research scientist at the Image Permanence Institute in Rochester, New York. “However, he advises thinking twice before rushing out to transfer all your photographs on to CD-Rom. Mr Nishimura said: ‘You have to be prepared to refresh the images every five to ten years as the hardware evolves. Otherwise, all you

will have in the attic for your grandchildren is a rather nice frisbee.’”

Source article by Simon de Bruxelles in The Times of London, in Britain Newsfeatures, July 11, 1998

FREIGHT TUBES

From Brett Shand

[Brett Shand remarks: Well this ain't dead, but it sure the hell is interesting!]

[Bruce Sterling remarks: Tube freight is not dead, and not a medium either, but it is clearly a technology with apparently great promise that has conspicuously failed to deliver. This four-year-old government report by a pair of US federal engineers casts an interesting sidelight on a long-time Dead Media darling, pneumatic mail. Tube freight is the (mostly conjectural) big brother of the pneumatic post. The appeal is obvious: why settle for rapidly puffing mere "petit bleu" mailnotes beneath Paris, when the Russians and Japanese can ship entire trainloads at high speed through closed tubes? Furthermore, I confess myself thrilled to discover a credible reference to the long-abandoned underground railway of Chicago. If memory serves, Chicago suffered a catastrophe in the 1980s when this abandoned system broke open and was extensively flooded by the river. New York's abandoned pneumatic subway is notorious, but Chicago's dead subterranean railway still lacks its Dead Media chronicler.]

"Under a research program on advanced freight movement, the Federal Highway Administration (FHWA) with the support of the John A. Volpe National Transportation Systems Center is examining the technical and economic feasibility of tube transportation systems to address future freight transportation requirements.

“Tube freight transportation is a class of unmanned transportation systems in which close-fitting capsules or trains of capsules carry freight through tubes between terminals. All historic systems were pneumatically powered and often referred to as pneumatic capsule pipelines.

“One modern proposed system called SUBTRANS uses capsules that are electrically powered with linear induction motors and run on steel rails in a tube about two meters (6 feet) in diameter. The system can be thought of as a small unmanned train in a tube carrying containerized cargo.”.

“Potential Advantages of Tube Freight Transportation Systems “Tube transportation systems have a number of attractive features that make them worthy of evaluation as alternatives for future freight transportation systems. Because such systems are unmanned and fully automatic, they are safer than truck or railroad systems. When traveling down grades, the capsules may be able to regenerate energy for improved energy efficiency. Because they are enclosed, they are unaffected by weather and are not subject to most common rail and highway accidents. Hazardous cargo can be more safely transported than on surface systems. The tubes could also be used as conduits for communication cables for the future information highway.”

“The tubes can be placed above, on, or below ground. Underground locations are useful in environmentally sensitive areas and are important where surface

congestion makes surface right-of-way difficult or expensive to obtain. Much right-of-way potentially exists below our present highway system."

"Tube transportation has a history that extends back at least 200 years. During this period, systems for both passengers and freight have been built and operated. Some are in operation today. In addition, there have been many more proposals that were never built. All of the historical tube transportation systems were pneumatically powered.

"George Medhurst, a London businessman, is considered the earliest proponent of pneumatic-powered railways although there were a few earlier, brief suggestions from others. He first published a freight proposal in 1810, a passenger proposal in 1812, and a more comprehensive set of proposals in 1827.

"Despite four demonstration systems, including a 95-m (312-ft), underground system built in New York City in 1869-70, no large-size tube transportation system has been introduced into common carrier service. The primary result of this activity was to lend support to the development of underground electric railway systems for urban passenger transportation. However, small diameter pneumatic pipelines have been providing reliable freight transportation around the world for more than 150 years.

"Common applications of pneumatic pipelines before World War II were the high-priority movement of documents and parts in industrial environments and movement of letters and telegrams under city streets to

bypass congestion. These systems were built with tubes ranging from 5 to 20 centimeters (2 to 8 inches) in diameter. Such systems are still being built today to expedite small shipments."

"After World War II, larger pneumatic systems were developed and built in Japan and Russia to move bulk materials such as limestone and garbage. These systems had considerably greater throughput as a result of both their increased diameters of 0.9 to 1.2 m (3 to 4 ft) and their mode of operation, which allowed more capsules to move through the tube at one time. By the early 1970s, several groups began to give consideration to the use of these pipeline designs for common carrier, general merchandise freight applications using tubes 1.2 to 1.8 m (4 to 6 ft) in diameter.

"Nippon Steel Corporation and Daifuku Machinery Works Ltd., using an early license from TRANSCO of Houston, Texas, have built a 0.6 m (2ft) diameter, 1.5 km (0.9 mi), double line to move burnt lime in Nippon Steel's Muroran Number 2 steel plant. This elevated line was built in the mid-1980s and uses capsule trains (two cars per train) to move 22,000 metric tons (24,266 short tons) per month. This system is called AIRAPID.

"Sumitomo Cement Co. built a similar system in 1983 to move limestone 3.2 km (2 mi) between a mine and their cement plant. The 1 m (3.2ft) diameter pipe carries three car capsule trains delivering 2.2 million metric tons (2.43 million short tons) per year. This system was originally based on a Russian license but was considerably

redesigned by the company.

“A number of tube systems, called TRANSPROGRESS systems, for moving crushed rock are being used in the former Soviet Union. An 11 km (6.8 mi) line for garbage was built in 1983 from St. Petersburg to an outlying processing facility using TRANSPROGRESS technology. This technology has also been applied to intraplant systems.

“Historically, there is a precedent for underground freight operations. The most notable underground freight system was the 80 km (50 mi) electric railway system built under the city of Chicago for the collection and distribution of general cargo and coal.

“The Chicago system operated from 1904 to 1958, interfacing with the main-line railroads.”

Source: Tube Freight Transportation by Lawrence Vance and Milton K. Mills

William Vandersteel. The Future of Our Transportation Infrastructure, Ampower Corporation, North Bergen, N.J., 1993. Masaki Koshi. “An Automated Underground Tube Network for Urban Goods Transport,” Journal of International Association of Traffic and Safety Sciences, Vol. 16, No. 2, 1992. R. Livesey. “Blown Freight Is a Lovely Change From Road and Rail,” The Engineer, London, England, Oct. 28, 1971. “Im N chsten Jahrtausend in 57 Minuten von Genf nach Zurich,” Der Bund, Sonderbeilage, Bern, Switzerland, Sep. 8, 1992. “Vacuum Technology Weighed for Swiss Maglev Proposal,” MAGLEV News, Vol. 1, No. 15, May 17, 1993. “AIRAPID Capsule-Tube Transport System,” promotional brochure of Nippon Steel Corp., Daifuku Machinery Works Ltd., Chiyoda-Ku, Tokyo, Japan, undated. “The Capsule Liner,” promotional brochure of Plant Engineer Division of Sumitomo Metal Ind. Ltd., Chiyoda-Ku, Tokyo, Japan. “TRANSPROGRESS Systems for Pipeline Pneumatic Container Freight Transportation,” promotional brochure of Licinsintorg, Moscow, Russia, 1986. I. Zandi, W.B. Allen, E.K. Morlok, K. Gimm, T. Plaut, and J. Warner. Transport of Solid Commodities via Freight Pipeline, Department of Civil and Urban Engineering, University of Pennsylvania,

Philadelphia, Pa., published in five volumes for the Department of Transportation, Publication No. DOT-TST-76T-35 through DOT-TST-76T-39, July 1976. Eric Rath. Container Systems, John Wiley & Sons Inc., 1973.

THE CLEGG-SELVAN PNEUMATIC VEHICLE; WIRE CONVEYORS, CASH CARRIERS, PARCEL CARRIERS; THE LAMSON TUBE; PNEUMATIC TUBE INDUSTRIAL HISTORY

[Bruce Sterling remarks: the pneumatic tube conveyor is very much alive, and evolving into new technological niches year by year. Its technical history however is surprisingly rich, full, and littered with the dead, as this corporate document shows.]

“The first documented, genuine pneumatic tube in the United States is officially listed in a patent issued to Samuel Clegg and Jacob Selvan in 1840. This was a vehicle with wheels, on a track, positioned within a tube. Inventing and patenting went on for years in North America but there just didn’t seem to be much of an effort to locate markets for this new invention.

“In Civil War times, a phenomenon called ‘five-and-dimes’ were thriving all over the Eastern Seaboard. These stores were rapidly taking on the appearance of something larger, the department store. Cash required rapid movement from areas on the trading floor to the safer reaches of the store. Some of the stores were building up, not out, and this slowed the change making process even more.

“William Stickney Lamson, and his wife, took charge of a family enterprise called the Rachet Store. This retail

business would soon shape up to become one of the first American ‘five-and-dimes’. The need in this business to move change lead to several innovations including wrapping change in handkerchiefs and tossing it to the sales clerks in the front of the store.

“Innovations soon gave way to invention. Bill Lamson cut a croquet ball in half, hollowed out both sides and placed change inside. Then, after rubber-banding the halves together, would toss the ball from clerk to clerk. This lead to the ‘carriers’ on a wire and using multiple- spring gadgets to move the balls at higher speeds.

“The wire conveyors or ‘cash carriers’ suited the smaller stores fine, but the ever-expanding department stores in America required additional speed and more efficiency. Soon Bill Lamson was to jump on the pneumatic tube train in America.

“At about this same time, Mr. William Grover and brother Mr. Clarence Grover founded a company in Woodburn, Michigan. Included in the official company mission, which appears in the Record of Articles dated 1917, is the following: (the company was to be involved in), ‘the manufacture, sales and distribution of Pneumatic Tubes; Cash and Parcel Carriers; Store, Office and Factory Fixtures; Wood and Metal Novelties; Tools and Machinery.”

“Some years later the Grover Company was purchased by the Powers Regulator Company of Skokie, Illinois. This move in the marketplace would result in two new companies that dominate the marketplace today.

“The first company was formed after the new Powers Regulator made a major shift in the way its products were to be distributed. In the Grover Company, products were sold and installed by a group of distributors around the country. Powers Regulator decided to market and sell all products from ‘in-house’ and because of that move, had no need for a distributor network. This left several pneumatic tube distributors with no source of supply.

“In early 1964, Mr. Ross Cook, Mr. Wilfred Rathbun, Mr. Frank Ware and Mr. Ted Nuestad, got together and formed a new corporation, Zip Tube Systems, Inc. The first stock certificate was issued to Ross Cook, Inc. on March 6, 1964. The new company was located at 6621 Eight Avenue, Los Angeles, California. The company moved once within California, and finally to Denver, Colorado in 1981. By the time Zip Tube Systems, Inc. moved, it had expanded its distributor network to have national coverage. Today, we have now expanded into the international market and have in excess of 30 distributors internationally.

“Through the years, Zip has developed and refined an extensive product line to service the need of a diverse customer base. Zip Tube Systems, Inc. is unique. It is owned by a network of engineers and installers throughout the world. This experience has made us a leader in the pneumatic tube industry.

“During the last several years we have made a significant increase in our product line with the introduction of an automatic and a semi-automatic pneumatic tube system.

We have also introduced an extreme duty line of equipment designed for the steel mill, foundry and other harsh industrial environments. These products compliment our already large selection of standard product lines. Zip is especially proud to be one of the only companies that will custom manufacture a pneumatic tube system to an individual customer's needs.

"We would like to welcome you to Zip's long history, and we are confident you will find your pneumatic tube system extremely economical, rewarding and easy to maintain."

Source: Company Profile And History of Zip Tube Systems Inc. [2015 note: Ziptube.com is dead but visible through archive.org]

FUNGAL HALLUCINOGENS IN DECAYING ARCHIVES

[Bruce Sterling remarks: this colorful medical tale of the hazards of decaying media has all the qualities of a Jan Harold Brunvand urban legend. Improbable, yes, but what a bar story.]

“Book Fungus Can Get You High” by Ellen Warren, Chicago Tribune “CHICAGO, Getting high on great literature is taking on a whole new meaning. It turns out that, if you spend enough time around old books and decaying manuscripts in dank archives, you can start to hallucinate. Really.

“We’re not talking psychedelia, ‘Lucy in the Sky With Diamonds’ stuff, here. But maybe only a step or two away from that.

“Experts on the various fungi that feed on the pages and on the covers of books are increasingly convinced that you can get high, or at least a little wacky, by sniffing old books. Fungus on books, they say, is a likely source of hallucinogenic spores.

“The story of The Strangeness in the Stacks first started making its way through the usually staid antiquarian books community late last year with the publication of a paper in the British medical journal, The Lancet.

“There, Dr. R.J. Hay wrote of the possibility that ‘fungal hallucinogens’ in old books could lead to ‘enhancement of enlightenment.’ “’The source of inspiration for many great literary figures may have been nothing more than a quick

sniff of the bouquet of mouldy books,' wrote Hay, one of England's leading mycologists (fungus experts) and dean of dermatology at Guy's Hospital in London.

"Well, said an American expert on such matters, it may not be that easy.

"'I agree with his premise, but not his dose. It would take more than a brief sniff,' aid Monona Rossol, an authority on the health effects of materials used in the arts world.

"For all the parents out there, these revelations would seem ideal for persuading youngsters to spend some quality time in the archives.

"But attention kids: You can't get high walking through the rare books section of the library.

"Rossol said it would take a fairly concentrated exposure over a considerable period of time for someone to breathe in enough of the spores of hallucinogenic fungus to seriously affect behavior. There are no studies to tell how much or how long before strange behavior takes hold.

"Still, this much seems apparent, if you want to find mold, the only place that may rival a refrigerator is a library.

"Just last week the Las Cruces, N.M., Public Library was closed indefinitely, prompted by health concerns after a fungus outbreak in the reference section. Library director Carol Brey said the fungus promptly spread to old history books and onward to the literature section.

"The town's Mold Eradication Team, she said, shuttered the library as a precaution. 'We didn't want to take any

chances,' she said. A mold removal company will address the problem, which is believed to have originated in the air conditioning system.

"Psychedelic mushrooms, the classic hallucinogenic fungus, derive their mind-altering properties from the psilocybin and psilocin they produce naturally.

"One historic example of this phenomenon, scientists now believe, is the madness that prevailed in the late 1600s in Salem, Mass., where ergot, a hallucinogenic fungus, infected the rye crops that went into rye bread. Ergot contains lysergic acid, a key compound of the hallucinogenic drug LSD. This tiny fungus and its wild effects on the rye-bread-eating women may have led to the Salem witch trials.

"Rossol, a New York chemist and consultant to Chicago's Field Museum of Natural History who publishes the newsletter Acts Facts, the journal of Arts, Crafts and Theater Safety, said that there have not been scientific studies on the hallucinogenic effects of old books.

"But, relying on accounts from newsletter readers who report their own strange symptoms, ranging from dizziness to violent nausea, she says there is no doubt that moldy old volumes harbor hallucinogens."

Source: Ellen Warren in Chicago Tribune (no date given); reprinted in Arizona Republic, October 6, 1996, Houston Chronicle October 6, 1996, and in Rare Books Newsletter of the National Library of Scotland pages 59-62 (Autumn 1996) see also: Sick Library Syndrome by Dr. R. J. Hay in The Lancet 346, December 16, 1995, pages 1573-1574.

THE ROBOTYPER; THE FLEXOWRITER

From Mike Kelley

Back in the late 1950's and early 60's I worked first in the U.S. Senate, then in the White House, operating an automatic typewriter that made a final product, a letter, which the recipient thought was hand-typed. The salutation was personalized, as was the address, but the body of the letter was typed automatically.

I could operate three of these machines at once, turning out 85-90 "hand typed" letters an hour. I moved sequentially from one to the next, typing in the address and Dear ____ on one, while the previous machine was still typing the body of the letter.

The machines were called Robotypers and they are indeed a dead medium today. They operated like player pianos, each with its own air pump, a coded roll representing the "hand typed letter," and an IBM model B or C typewriter (another dead medium).

There was a platform in front of the box that held the roll, with little hooks for each of the typewriter's key levers. One hook would go over each key lever, beneath the keyboard, and these would pull down the keys as the roll, with its coded air holes, was pulled over a bar.

Mechanics had a hard time disengaging the typewriter from the Robo machine when repairs were needed.

At the U.S. Senate, the place I worked was called the "Robo Room", a terrible name for a room with a terrible sound.

In the White House, we had the machines in a separate room near the Correspondence Section. At the White House, the only type of IBM machine used for letters was the Proportional Spacing model, also a dead medium. These models used different widths for various letters, much like (but not nearly as complex) as cold type.

Most typed characters took up 3 space units. The “i” was two units wide, small “m” and “w” were 4, and the capital “m” and “w” were 5 units. This made the spacing movement uneven. In making the Robo Rolls at the White House, I had to add room on the roll to compensate for proportional spacing, a work something like typesetting.

Without this extra work on the rolls, the old IBM’s keys would overstrike typed characters on the page, or sometimes keys would even smash into each other. I don’t see the Robotyper on your Master List of Dead Media, but it surely is one very dead medium today.

At its peak, however, it gave a lot of folks the feeling that their mail to politicians got a hand typed reply.

A newer and competing auto-typer, developed in the 1950s a bit later than the original ROBOTYPER, was the FLEXOWRITER, yet another dead medium. This machine, eventually manufactured by Singer, was an all-in-one typewriter and tape reader-writer.

The Flexowriter featured a reader/writer unit attached to the side of the typewriter. It had a little sprocketed drum, which pulled an oiled pink paper tape across a slot that contained 6 or 7 teeth.

These teeth would move up and down in mechanical synchrony with each move of the sprocket-drum. There was a large blank tape reel stored on the back of the machine. When composing a new letter, the end of this master tape would be fed through the sprocket, and the teeth would literally punch out holes in the tape, in patterns corresponding to each keystroke.

Patterns were easily readable by those of us who learned them, so we could find a typo on the tape. We would fix it by hitting the “delete” key, which punched holes across the entire tape. When a letter was completed, the operator added a “Stop” code, a number of “Deletes”, and then cut the tape from the master roll. The front and back of the tape would then be glued together, lining up the delete holes at each end.

This “endless loop” would then be put into the machine, and would type out the correspondence. The advantage of the Flexowriter was that the same machine could write AND read the tapes. It was a self contained unit, needed no noisy air pump, and the little tape loops for each type of correspondence could be stored in far less space than the Robo rolls (which were similar in size to a player piano roll. The products of both of these now Dead Media would be sent for a “genuine, hand made signature” to yet another machine called the auto-pen.

As far as I know, the auto- pen is still alive and well in offices today.

Source: personal experience The Robotyper and the Flexowriter

COMPUTER GAME DESIGNER DIES YOUNG, BUT OUTLIVES OWN GAMES

From Stefan Jones

Dan Bunten / Danielle Bunten Berry 1949-1998 [Stefan Jones remarks: One of the things that primed me to become a delver in Dead Media studies was Bruce Sterling's description, in his speech to the Computer Game Developer's Conference, of the fate of his Atari 800. I owned (own) of of those machines, and spent many hundreds of hours playing games on it before consigning it to a box in the corner of the basement. Although many of its games were far more entertaining than those available for my PC, the trouble of getting it going and loading software from decrepit disk drives took its toll.

[I just learned that one of the maestros of the Atari platform, Dani Bunten, recently passed away. Bunten's masterpieces, "M.U.L.E." and "Seven Cities of Gold," were utterly at home on the Atari platform. Ports to other platforms were of limited success; indeed, it can be argued that "M.U.L.E." is best played not just on any Atari machine, but one a particular model, the Atari 800. It was this particular computer, and no other, that had the extra joystick ports that allowed four players to participate.]

On her web page, Bunten expresses regrets on the fate of M.U.L.E: "My only disappointment with the game is that it only exists on long defunct hardware and it looks awful (since those machines only offered 48K of memory and I used it mostly for program rather than graphics). I almost

got a Sega Genesis version through EA in '93, but at the Alpha phase they insisted on adding guns and bombs (or something similar) to 'bring it up to date.' I was unable to comply." From Greg Costikyan's obituary: "Dani Bunten Berry was a giant.

"I don't mean that she stood six-foot-two, although she did. I mean that she was one of the great artists of our age, one of the creators of the form that will dominate the 21st century, as film has dominated the 20th and the novel the 19th: the art of game design.

"I mean that she displayed a complete mastery of her craft, always pushing the edges of the possible, always producing highly polished work of gem-like consistency and internal integrity.". "This year, at the Computer Game Developer's Conference, she was awarded the CGDA Lifetime Achievement Award. These things, alas, tend to be awarded to the dying. But certainly no one in the field deserved it more."

Dani Bunten Berry's design credits (mostly designed as "Dan Bunten," before her sex change): WHEELER DEALER, Speakeasy Software, 1978 COMPUTER QUARTERBACK, SSI, 1979 CARTELS AND CUTTHROATS, SSI, 1981 CYTRON MASTERS, SSI, 1982 M.U.L.E., Electronic Arts, 1983 SEVEN CITIES OF GOLD, Electronic Arts, 1984 HEART OF AFRICA, Electronic Arts, 1985 ROBOT RASCALS, Electronic Arts, 1986 MODEM WARS, Electronic Arts, 1988 COMMAND HQ, Microprose, 1990 GLOBAL CONQUEST, Microprose, 1992

[Bruce Sterling remarks: Dan Bunten was a guru of

his/her field when occupying either gender. Among her numerous aphorisms, this one seems particularly prescient and memorable: “No one on their deathbed ever says ‘I wish I’d spent more time alone with my computer.’”]

Source: Obituary by Greg Costikyan, Dani Bunten Berry memorial website

PNEUMATIC TUBES

From John Aboud

This Old Technology Hasn't Gone Down the Tubes

By Marcia Biederman" [John Aboud remarks: there is a photo captioned, "At Columbia-Presbyterian, Marina Conliffe receives blood samples." "Marina" is opening a barrel-shaped canister, which opens like a clam. It doesn't operate like the traditional bank tubes common at drive up windows. The pneumatic station has a digital readout and touchpad. This is likely the computer enhancement mentioned in the article.]

"Long before E-mail and faxes, pneumatic tubes were widely used in New York to whisk small capsules containing memos or other things from one office to another. Science fiction may have inflated hopes for the tubes, but they are still being used, in old and new ways.

"'They're elegantly simple,' said Mark A. Hirsch, senior project manager for the New York Public Library, explaining why pneumatic tubes were built into the ultramodern Science, Industry and Business Library on Madison Avenue, which opened in 1996. The tube system, which conveys call slips to the stacks, is not much different from the early-20th-century one still used at the 42nd Street research library.

"Gregg Hayes, executive vice president of Pevco, a Baltimore company that installed the new library's system, said hospitals in New York and elsewhere have revived the pneumatic tube industry. New technology, he

said, controls the force of air in the tubes, allowing lab specimens and medication to be carried. Carriers used to 'just bang into the stations,' or receiving bins, he said, but now they glide in, and computers can track their movements.".

"Pneumatic tubes are also used by Costco, the warehouse-club chain, which has huge stores in Brooklyn, Queens and Staten Island, to move cash from registers to safes. Larry Montague, director of security, said that is safer than having employees walk around with the money.

"But at many of the city's brokerage houses, E-mail has replaced pneumatic tubes. And Sue-Ann Pascucci, manager of the New York Transit Museum archives, said nothing remains of New York's first subway, described by Stan Fischler in "Uptown, Downtown: A Trip Through Time on New York's Subways" as a 312-foot pneumatic tube. Entered via a station with a grand piano, the subway, built in 1870, propelled a 22-passenger car between Broadway and Murray Street until political entanglement closed it in 1873."

[John Aboud: In my three years in New York, I've noticed that The New York Times is obsessed with abandoned parts of the subway system. The "grand piano" bit is a favorite. Also note that Pevco has a Web site.]

[Bruce Sterling remarks: Pneumatic mail systems (especially pneumatic postal systems owned and constructed by cities and national governments) are very much in decline as a medium. But private pneumatic mail systems for large buildings are still being built today.

Pneumatic transfer systems (which don't carry messages and are not "media,") seem to be more or less holding their own as a technology. I would point out that computerizing a pneumatic system is not necessarily a new lease on life for this technology. It may give the system new features, but at a great hazard. It not only spoils the system's original elegant simplicity, but introduces new factors of chip, interface and software death.]

PNEUMATIC TUBE APPLICATIONS

From Bruce Sterling

[Bruce Sterling remarks: the following outtake from the website of Comcosystems gives a good idea of the current spectrum of applications for living pneumatic tube systems. These areas of activity would be good places to look for dead tubes.]

“Applications “Pneumatic tube systems are highly flexible systems that tend to be limited by the nature of the material moved rather than the industry or location used.

“Any situation where small to medium-sized objects must be regularly distributed to or from a central location to remote locations would be made more efficient with the addition of a pneumatic tube system.

“We commonly install tube systems for the following applications: “Hospitals: Pneumatic tube systems are commonly used in hospitals to reduce care staff workload by moving medication and samples between patient areas and labs.”.

“Sample Transport: Pneumatic tube systems are ideal for moving samples from collection points to a lab for analysis. We manufacture heavy-duty systems for use in harsh environments. Steel mills and hospitals are frequent users of pneumatic tube systems for sample analysis.

“Toll Plazas: Pneumatic tube systems are used at toll plazas to increase efficiency and employee safety. Employees are spared the hazard of crossing lanes of

traffic and less cash is available in the event of robbery. Toll plaza arrangements are commonly in use along tollways, in parking garages, and at airports.

“Central Supply: Pneumatic tube systems are used whenever items from a central location (such as a pharmacy or warehouse) must be regularly dispatched to remote sites. Industries that employ pneumatic tube systems for central supply distribution include hospitals, automotive plants, car dealerships, and factories.

“Cash Handling: Pneumatic tube systems are frequently employed for cash handling. A Pneumatic tube system provides a secure method of moving cash from registers to central counting rooms. Keeping cash in a central location reduces losses due to robbery and employee theft. Industries that employ pneumatic tube systems for cash handling include retail stores, grocers, theaters, and home improvement centers, to name a few.

“Security Transport: Pneumatic tube systems can provide a secure method of transport for nearly any kind of item. All kinds of items can be moved securely with a pneumatic tube system including documents, parts, keys, and even firearms. Locations using Pneumatic tube systems for secure transport include penitentiaries, youth detention centers, retail stores, courts, and hospitals.”

Source: http://www.comcosystems.com

DEAD SUPERCOMPUTERS BECOME FURNITURE

From Paul Di Filippo

“In supercomputing, the time separating the world’s fastest computer from the scrap-metal heap is appallingly short.

“But when it comes to supercomputers, to become obsolescent isn’t necessarily to become useless. While many of these machines are mothballed in dank basements, a few are proudly displayed in private homes as though they were objets d’art. They can also make dandy space heaters.”...

“The life span of a supercomputer, which may cost upwards of $30 million, is typically five years, and sometimes far less. Jack Dongarra, a computer scientist at the University of Tennessee who maintains an annual list of the world’s 500 fastest computers, finds that about 250 machines fall off his list yearly.

“But there is no pasture to go out to when a supercomputer is retired. No one reharnesses it to do the billing statements for the local waterworks. The life of a machine is nasty, brutish and short.

“Enter the connoisseurs.

“In a warehouse in suburban Seattle, Nathan Myhrvold, Microsoft Corporation’s chief scientist, keeps a growing collection now numbering six supercomputers, three early Crays and three Connection Machines made by

Thinking Machines Corporation. The Cray 1, designed in 1976 by Seymour Cray, the legendary inventor, was notable in part because it was a round refrigerator-shaped cabinet encircled by a padded bench, which was just the thing for technicians who needed to work on the machine's innards.

"Today, the original Crays have less horsepower than some $1,000 personal computers, but as fashion statements, their time may be here again.

"Mr. Myhrvold is now planning a new home that will rival that of his boss, Bill Gates. It will have a living room big enough for a supercomputer.

"'The key aesthetic is that it is the most expensive sofa in the world,' said Mr. Myhrvold, who bought his machines for their salvage costs or for a few thousand dollars."... "A small living room didn't deter Dan Lynch, an Internet pioneer who was one of the founders of Cybercash. Mr. Lynch, a wine aficionado, says he has a Cray 1 as an objet d'art in his vineyard in the Napa Valley along with 'a bunch of tired old '47 Chevys.' "While at Convex, a Texas-based supercomputer company, Steven Wallach, a computer designer, once used an Alliant supercomputer in his office as a conversation piece and as partial support for his desk.

"But even Mr. Wallach. said he was surprised to learn that another Convex employee had bought a Convex C-1 for its scrap price and was using the computer to heat his garage."

Source: Serving Wine on the Mainframe by John Markoff, New York Times,

June 28, 1998

DEAD TUNNELS OF CHICAGO

From James Agenbroad

Chicago's Abandoned Freight Tunnels

The definitive history of the Chicago freight tunnels is Bruce Moffatt's "Forty Feet Below : the Story of Chicago's Freight Tunnels" from which I have paraphrased this story.

The book is filled with maps, diagrams and photos. Around the turn of the century, tunnels were dug under most of the streets in the "Loop" area of downtown Chicago. Permission was granted under the pretense of creating a competing local telephone service. Interestingly enough, new telephones were installed in the tunnels, and they were technically advanced, with "secret" (i.e. automatic) exchanges so that you didn't have to tell your number to an operator.

These phones were of the "candlestick" type with a large dial on the handle. But the phone system was mostly a ruse to secure permission to dig under public streets, and then to construct the second longest 2-foot gauge railroad in the U.S.A. The builders envisioned their tunnel being used for general freight shipping in central Chicago.

However, it was hard to raise freight from forty feet below street level (via elevators or conveyor belts). The little electric railroad's small cars were incompatible with standard railroad cars.

So, the most economic uses of the mini-railroad became the hauling of coal and coal ash in and out of buildings, as

well as removing spoil from construction sites.

The large capital costs of the tunnels meant that the company was often on the brink of receivership. Bruce Moffat argues that it was the subway that finally killed the tunnel. When the subway came thorough, the tunnel lost several miles of track, as well as its best customers, and the freight line had to use circuitous routes around the subway bore.

When the tunnels were abandoned in 1959, with several loads of ash still in their cars in the sidings, they lay forgotten by most until 1992, when a tunnel under the Chicago river burst and filled them with water.

This was a problem for all those buildings with connections with the tunnels, because their basements were now filled with water up to the level of the river. Most affected were those with the deepest basements and the best connections to the tunnel. e.g. Marshall Fields building which had a mini switch yard in the sub-basement. Since it carried mail from 1906-1908, this dead tunnel system was once a medium.

Source: Forty feet below : the story of Chicago's freight tunnels / by Bruce Moffat. Glendale, Calif. : Interurban Press, 1982. 84 p. : ill., maps (1 folded), ports. ; 28 cm. (Interurbans special. 82) Includes index. ISBN 0916374548 : $9.95

THE CHICAGO FREIGHT TUNNEL FLOOD

From Nicholas Bodley

“In one of Chicago’s strangest accidents, a piling driven into the Chicago River bottom caused a leak in one of Chicago’s underground freight tunnels. The resulting inrush of water spread throughout much of the system’s 50 miles of tunnels, flooding subbasements and disrupting utility service throughout the Loop. No significant injuries were reported, and due to the subterranean nature of the accident, spectators had little to see. Prompt response by government agencies emptied the tunnels of water and restored utility service.

“The freight tunnels are unique to Chicago. In 1899 under the guise of constructing a telephone system, developers semi-clandestinely began digging tunnels connecting any and all Loop office buildings they thought might be in the market for direct freight service. A two foot gauge mine type electric railway was laid in the tunnels. Connections were made to the major railroad and port facilities. Ultimately the system was extended to completely cover every block in the greater Loop area. After a series of financial setbacks the system was formally abandoned in 1959.”

Source: Chicago Public Library website

CANADA'S TELIDON NETWORK

From Jack Ruttan

Telidon is an obsolete, two-way version of the British Prestel system.

TELETEXT
An inexpensive, one-way information delivery system designed for mass-market home and business use. It makes use of the spare signal carrying capacity in existing television channels [my note: the "vertical blanking interval, that space you see when you misadjust the tv's vertical hold.]. It can present from 100 to 300 'pages' or TV. screens of information.

VIDEOTEXT
An information delivery system that makes use of the telephone for two-way telecommunications. It may be linked into two-way cable T.V. or hybrid TV/telephone systems. Electronic mail is made possible by this system.

VIEWDATA
An early name for videotex, and still used as the generic name for the British Prestel system." British Teletext started in 1975.

The book used the term "Electronic Highway." A small town called Elie, Manitoba, was to be the first in the world totally wired with fiber optic cable. Unfortunately, the book is not current enough to say if this actually took place.

It also doesn't say when Telidon was abandoned, though I'm sure I saw it operating at Expo 86 in Vancouver. (very

very slow screen refresh times, and graphics like some of those early Apple II computer games).

Source: GUTENBERG TWO, Godfrey & Parkhill eds. (Toronto: Press Porcepic Ltd. 1980)

DEAD TUNNELS OF CHICAGO, EYEWITNESS REPORT

From E. J. Barnes

Dear Bruce, My friend Jim Mulqueeny works for the Chicago Transit Authority (CTA), so I forwarded him the article mentioning freight tunnels, especially thinking of the flooding of the Chicago tunnels a few years back. Here is his reply. He alludes to current use of the tunnels by cable companies. This may bring the tunnels back into the realm of living "media", just barely. Jim Mulqueeny: "The lamented Flood occurred April 13, 1992. On my way to work I had heard that the basements of my building (the Merchandise Mart), City Hall, and Marshall Field's were all flooding. I immediately knew the freight tunnels were the only thing these had in common. By the time I got to work the rest of town had figured it out and we were sent home (down darkened stairways) at 10 AM. Blue Line ridership hasn't been the same since.

"There is a book (and video) chronicling the tunnel system, by a friend of mine and co-worker, Bruce G. Moffat, called Forty Feet Below. Until the flood, the tunnels were fresh and clean. They're not too bad now, though construction of the two subways through them has broken up the network. They are still great for cable companies and may yet have other uses."

Source: eyewitness report

THE OPTIGAN

From Philip Downey

“So you’ve found yourself at the Optigan page and you’re wondering ‘What is the Optigan? Looks like an organ.’ Sure, it’s an organ, but it’s really not like any other organ you’ve ever heard. The Optigan is unique in the way it produces its lovely sound because it reads its sounds off clear plastic discs. The Optigan Corporation made quite a few of these discs; there seems to be one for every musical genre. To further enhance your Optigan experience, the Optigan Corporation even had music specially arranged for the Optigan and released a number of Optigan Music Books.

“Still, some people doubt the importance of the Optigan. So what does the Optigan sound like? Listen to a few short sound samples, or you can peruse the list of musical releases where the Optigan can be heard providing sonic assistance.

“The discs used by the Optigan are made out of the same material as photo negatives. The size is the same as a 33 1/3 vinyl record. Instead of grooves, the Optigan discs have little waveforms which are read by a light bar reader inside the Optigan. The discs sits on a felt pad and a brass wheel drops on top of the disc when the drawer is closed. The wheel spins the disc when the Optigan is turned on. Volume is controlled with a foot pedal.

“The unique feature of the Optigan is that the chord buttons do not play a chord when pressed, but an entire

band jamming in the key chosen in the style of music that the disc is for. So, pressing the A minor chord button on the Nashville Country disc brings to life a whole country band doing a looped riff in A minor. The five switches above the chord buttons are usually percussion, but sometimes have special effects like crowds cheering or monkeys howling. It must be heard to be appreciated (or laughed at)."

[Bruce Sterling remarks: Pop music in the late 90s has reached such an ecstasy of sampling and appropriation that one might have known that an analog device like the Optigan would enjoy some kind of resurgence.]

SPARKLEHORSE RIDE IN WITH NEW ALBUM

SPARKLEHORSE are set to make a return with their second album, the follow-up to 1996's acclaimed 'Vivadixiesubmarine transmissionplot'.

"The new album, 'Good Morning Spider,' contains 17 tracks and was produced by Sparklehorse main man Mark Linkous. It is released by Parlophone on July 20. Briefly describing the album, Linkous says: 'There's a lot of piano and cello and an organ made by Mattel Toy Corporation in the '70s called an Optigan, which I broke. Some rhythm tracks were built from samples I made of steam-powered engines.'" "Like its predecessor, 'Good Morning Spider' works like an impressionist's paintbrush. Simple songs, derived from the most traditional forms (folk, country, the drunkest drunk punk) and crudely rendered by Linkous and his daunting armoury of arcane instrumentation (including '70s relic the Optigan, the

Mattel Corporation’s abortive proto- sampler), gradually assume supernaturally emotive qualities, thanks to their author’s gauche yet profound lyricism (‘The tree you planted has become fecund with kamikaze hummingbirds,’ wheezes Mark on ‘Thousands Of Sparrows’) and an ear for melody that could stir fossilised reptiles.”

Source: optigan.com

THE RAILWAY PANORAMA

From Patrick Lichty

“This 45-minute experience was an essay in detail. It offered a chance to experience the 14-day journey by rail from Moscow to Peking, a 6300-mile journey over tracks not yet completed at the time of the Paris Fair of 1900.

“There were three realistic railway cars, each 70 feet long, with saloons, dining rooms, bars, bedrooms, and other elements of a luxury train. Totally detailed and lavishly equipped, the cars were elevated a little above a place for spectators in conventional rows of seats. The gallery faced a stage-like arena where the simulated views along the train trip were presented by an inventive contraption.

“The immediate reality of a vehicular trip is that nearby objects seem to pass by more rapidly than distant ones. So, nearest to the participants was a horizontal belt covered with sand, rocks, and boulders, driven at a speed of 1000 feet per minute! Behind that was a low vertical screen painted with shrubs and brush, travelling at 400 feet per minute. A second, slightly higher screen, painted to show more distant scenery, scrolled along at 130 feet per minute. The most distant one, 25 feet tall and 350 feet long painted with mountains, forests, clouds and cities, moved at 16 feet per minute.

“Real geographical features along the way were depicted on this screen: Moscow, Omsk, Irkutsk, the shores of great lakes and rivers, the Great Wall of China, and Peking. The screens, moving in one direction only, were implemented

as a belt system. Due to the inexact speeds of the scenery,the ‘journey’ never repeated itself exactly, providing an ever-changing combination of scenes and a reason to pay to see the attraction again.” [Bruce Sterling remarks: this is the best physical description I’ve yet seen of the railway panorama. The eerie mix of mechanical stage effects, panorama, thrill ride and immersive virtuality gives this contraption a very high Cahill Rating.]

Source: Digital Illusion: Entertaining the Future with High Technology Clark Dodsworth, Jr., editor. ISBN 0201847809 Addison Wesley/ACM Press, 1997 545 pp.

THE MAREORAMA; THE CINEORAMA

From Soeren Pold

The Mareorama is described in an old Dutch article from "De Natuur," which is quoted in Oettermann

"The spectator himself is in motion and actually feels the roll and pitch of a ship while making a sea voyage by way of Nice, the Riviera, Sousses, Naples, Cape Pausilippe and Venice to Constantinople.

"The plan for the Mareorama presented two problems: two screens, each 2,500 feet long and forty feet in height, were to be unrolled, and a double, swinging movement was to be imparted to the spectator's platform, which was shaped like a ship. The mechanism required for this was conceived by Mr. Hogo d'Alesi, a well-known painter who specialises in rendering the most beautiful vistas for the posters of the large railway and shipping companies. The screen is also his work, painted after the sketches made by him during a voyage of one year especially made for the purpose.

"For eight months, a team of painters worked under him to transfer these to the 215,000 square feet of screen, which was to be unrolled before the visitor's eyes.

"One of the screens moves on the port side, the other on starboard. Both are coiled upon cylindrical reels situated near the ends of the building, where they are concealed from the view of the ship's passengers by sails and ornaments. In the engraving (fig. 3.19) one of the screens has been removed in its entirety to show the mechanism

for the movement of the two screens, as well as one of the vertical cylinders round which the second screen will be rolled.

“These extremely heavy cylinders are supported by floats in a water-basin. To simulate the roll and pitch of a ship, and to impart these movements to the boat-deck carrying the spectators, it is supported by a system of Cardanic rings, similar to that used for accommodating ship’s compasses. This involved the use of floats in water, hydraulic piston engines, and pumps driven by electric motors (fig 3.20).

“Few visitors to the Exhibition will be able to resist the temptation of this opportunity to make an inexpensive voyage which involves no hazard whatsoever, yet is so natural that one can even make acquaintance with the less agreeable sensation to which passengers on board ships are likely to be subjected. While this may also deter many, it is a reassuring thought that even on the high seas, amid the raging elements, one can get out and tread on terra firma at any moment.”

[Soeren Pold remarks: Oettermann’s book of course also has the illustrations mentioned in this quote. Regarding the tone of the passage, it is remarkable how similar it is to descriptions of Virtual Reality a couple of years back, praising the naturalness and the technology. Probably VR will qualify as a dead medium in ten years, and descriptions of it will read just like the above.] [Bruce Sterling remarks: I especially admire the tactful 1900-style reference to the nausea of simulator sickness, an

ailment with roots going back almost a hundred years.]

Source: The Panorama: History of a Mass Medium by Stephan Oettermann, Zone Books, MIT Press, 1997 390 pages ISBN 0942299833

NEWSPAPER VIA RADIO FACSIMILE

From David F. Gallagher

“Station W9XZY, the experimental radio facsimile broadcasting station operated by the St. Louis Post-Dispatch, last month inaugurated the world’s first regular broadcast on ultra-high frequencies of specially-prepared facsimile newspapers.

“Number 1 of Vol. I of the Post-Dispatch’s first radio edition consists of 9 pages 8 ½ ins. long and 4 columns wide, using the newspaper’s regular 7-point type... The range of station W9XZY is from 20 to 30 miles.

“On the first page of this ‘radio newspaper’ now being received in every home in the St. Louis service area of W9XZY equipped with a facsimile receiver, are the leading news articles of the day. Then following sports news, several pages of pictures, Fitzpatrick’s editorial cartoon, a summary of radio programs and radio gossip, and a page of financial news and stock market quotations..

“The receiver, a closed cabinet with no dials to be operated or adjustments to be made by the owner, contains continuously-feeding rolls of paper and carbon paper which pass over a revolving metal cylinder from which a small stylus projects.

“Pressure, varying with the intensity of the radio waves, is exerted on a metal bar, parallel to the axis of the cylinder, beneath which the paper and carbon is fed. It requires 15 minutes to transmit one page.” Photo caption: “Arrival of

the afternoon ‘radio newspaper,’ on schedule at 2 P.M., rain or shine, is the signal for the folks at home to gather around the facsimile receiver to see the cartoons, news photos, etc., that regular radio programs leave to the imagination.”

Source: First Daily Newspaper by Radio Facsimile, Radio-Craft Magazine, March 1939.

ULTRA-PERSONAL SONY HANDYCAM

From Stefan Jones

“Sony halts camera that can see through clothes”

“TOKYO (August 12, 1998) Electronics giant Sony Corp. said Wednesday it had halted shipments of some video cameras after finding they could be used for filming more of their subjects than meets the eye.

“Some versions of the Handycam have infrared technology which lets users shoot at night or in darkness in a ‘night shot’ mode.

“But magazine reports revealed that when the special feature is used in daylight or a lighted room with a special filter it can ‘see through’ clothing, underwear can show up, especially on those lightly dressed, and people wearing swimsuits look almost naked.

“A Sony spokesman said the first the company knew of the camera’s surprise feature was when reporters started asking for comments on the ‘new way’ of using the camera.

“Sony technicians then experimented and confirmed that the technology had the unintended capability.

“’When we developed this feature for the Handycam, we were thinking of people filming night views, their children sleeping, or perhaps the nocturnal behavior of animals,’ the spokesman said.

[Bruce Sterling remarks: This weird incident received lavish media attention. It’s remarkable that Sony removed

this product from the market merely because of unforeseen prurient applications. It's been said that one of the major reasons for the failure of Sony Betamax was Sony's unwillingness to see Betamax used for video pornography. Given the notoriously seamy history of home video technology, one can bet good money that this infrared device will be re-released specifically because it has imaginary abilities to make people seem people nude.]

Source: Reuters wire service August 12, 1998 09:36 a.m. EDT

VINYL RECORD WITH ZOETROPE

From Bill Burns

In 1956, Morgan Development Laboratories, Inc. in Westport, Connecticut, made 78 RPM records with zoetrope- style images on the label. The manufacturer called them “Red Raven Movie Records.”

The oversize label has sixteen images, which create a Zoetrope-style moving image when viewed in a mirror device placed on top of the record. The web site has animated GIFs of three of the records, plus RealAudio files which can be played while viewing the GIFs, a very effective presentation of this double dead-media format.

A quote from the site: “On the Red Raven Movie Records, the 16 image cycle, (in that image one begins where image 16 left off) is printed on the outer two inches of the larger-than-normal label. When the Red Raven mirror device is placed on the turn table atop one of these ‘Movie Records’ the images appear to move. Of course there are 16 mirrors aligned at an angle to the surface of the record, which does the same job that the slits in the [Zoetrope] cylinder did.”

Source: Wolverine Antique Music Society

BRITISH FOREIGN OFFICE ABANDONS TELEGRAMS

From Charles Crouch

[Charles Crouch remarks: After almost 150 years, the UK Foreign Office is switching from telegrams to e-mail for notifying London of important local events.]

“Stiff upper lips at the Foreign Office must have quivered yesterday at the news that the telegram is to be usurped by new technology. The Foreign Secretary, Robin Cook, has ordered embassies abroad to use e-mail to inform mandarins back home of important events, rather than slower telegrams.

“The telegram from Our Man Abroad has long been an FO emblem. The first known example, sent from Paris in December 1852, recorded that ‘Galliard is arrested’, the subject’s identity and crime are unknown.

“Using telegrams for matters of great import is now absurd. They can take 24 hours between dictation and delivery, by which time London already knows about issues thanks to the media.”

Source: The Times, London, Monday August 17, 1998, page 17

GILBRETH'S CHRONOCYCLEGRAPH

From Deac Rossell

[Dead Rossell remarks: Chronocyclegraphs were first developed by Frank B. Gilbreth, one of the pioneers of industrial time-and-motion studies in the 1910's.]
"Gilbreth was the first to apply the analysis of the path of movement to solving industrial problems. He developed his technique without any knowledge of Marey's work and, when his attention was drawn to it as the result of correspondence with a friend in England, he felt that it would have helped him considerably if he had known of it earlier.

"His technique differed from Marey's in that instead of taking a series of photographs on one plate, he took a single photograph of lights placed on the operator's hands or on some other part of the body. He used a stereoscopic camera, opening the shutter at the beginning of the work cycle, and closing it at the end. This gave him a line graph in three dimensions when the result was viewed through a stereoscope.

"He was not satisfied with the information given by this 'cyclegraph' and continued his experiments until he had developed an apparatus which interrupted the light of the lamps at regular intervals, giving a graph made of rectangular spots, of a length varying according to the speed of the movement, and showing the acceleration and deceleration along its path.

"Finally, by re-arranging the interruption of the lights so

that they came on quickly and went off slowly, he developed the chronocyclegraph as we know it, with its characteristic pear-shaped spot showing the direction of the movement.

“Gilbreth was still working on the development of the chronocyclegraph technique when he died in 1924. He had taken many successful chronocyclegraphs himself, but the method had not been sufficiently standardised for others to use it easily. He was planning to adapt his material so that it would be in a suitable form for teaching others, but unfortunately, in the inevitable rearrangements after his death, the apparatus was lost.”

“

“Since Gilbreth died, chronocyclegraphs have been very little used by other motion study experts. Alford, in his “Production Handbook” published in 1945, lists the chronocyclegraph among present day research techniques, but most other writers only refer to it as one of Gilbreth’s experiments...

“We have no specifications for Gilbreth’s apparatus, but from the photographs shown in Fig. 25, it is obvious that his early apparatus embodied a tuning fork as the interruptor of the electric supply. The bottom photograph shows an apparatus embodying a disc commutator. As the disc revolved, each contact engaged a stationary contact finger connected to a resistance, so arranged that first four, then three, and then two contacts were linked, the circuit being broken completely on the last contact, making the light progressively dimmer, until it went out

altogether.

“The disc had two series of these contacts, and revolved at five, ten, or fifteen revolutions per second, by means of a pair of stepped pulleys, driven by a belt from an electric motor. It gave lights blinking at 10, 20 or 30 times per second.

“This apparatus was noisy and cumbersome, but its chief disadvantage was that because it functioned by delaying the extinguishing of the lamps, it was only possible to increase the speed of the flashes at the expense of the intensity of the light. This caused difficulty in photographing anything but the very shortest cycle, except in almost total darkness.

“Also, because of the interruption of the current, the intensity of the light must always fall below the maximum for the same lamp on uninterrupted current, since the disc was liable to stop at a point where the maximum current could reach the lamps. It was therefore unsafe to use more than the nominal amount of current recommended for the lamp employed.”

Source: The Purpose & Practice of Motion Study by Anne G. Shaw (Manchester & London, 1960: Columbine Press) pages 93-96

SIGNALS OF THE BEYAZIT TOWER, ISTANBUL

From Bruce Sterling

“When the firefighters watching out for fires from Beyazit Tower in the old days saw flames, they gave the news in their own cryptic jargon: “’Congratulations, you’re a father!’ “’Is it a girl or a boy?’ “If the fire was on the other side of the Golden Horn, in Galata, Uskudar, or the other districts along the Bosphorus, the answer was ‘a girl!’, but if it was on the western side of the inlet in Istanbul proper the answer was ‘a boy!’

“Two earlier timber fire towers were themselves swallowed up by flames, but the present Beyazit Tower, made of stone, has survived since 1828. Standing in the midst of the busy center of the old quarter of Istanbul, it is still used as a fire tower today as in the past. The tower is 85 meters high and has a total of 256 wooden steps.

“Tower is used to watch out for fires at. night. Information about fires at all times of day is relayed here via radio. Air pollution can seriously reduce visibility, making the job of watching difficult at times.

“In the past, if a fire was spotted in the districts westwards of the Golden Horn us far as Yesilkoy, the signal was two baskets hung on either side of the tower; if the fire was in Beyoglu or along the Bosphorus, one basket was hung on one side and two on the other; and for the districts on the other side of the Bosphorus one basket was hung on either side. This custom continued

until 1934.

“Today, the tower is also used to give a weather forecast for the following day. A green light means rain, a red light snow, a yellow light fog, and a blue light sunshine.

“At night, between 04.45 and 06.00 when the Ataturk and Galata bridges are closed to road traffic to let ships in and out of the Golden Horn, the ships are guided by lights on Beyazit Tower. A green light means that ships in the Golden Horn can sail into the Marmara Sea, and a red light that ships in the Marmara Sea can sail into the Golden Horn. Two red lights mean that the bridges are closed to shipping.

“Today, special permission is needed for those not on duty at the tower to enter, due to the dangerous condition of the wooden staircase.” “

Source: article by Deniz Kaya

INFORMATION TECH OF ANCIENT ATHENIAN DEMOCRACY, PART ONE: POST-IT NOTES OF 500BC

From Julian Dibbell

If any of you are on your way to or through Greece in the near future, may I suggest you make a beeline for the Agora Museum, on the site of the excavated ancient Agora, the original Athenian marketplace and civic center, where it all went down, birth-of-Western-Civilization-wise, in the 5th and 4th centuries B.C.?

The museum is, I assure you, a Dead Media treasure trove. Yes, let the package tours deliver their waves upon waves of sweat-drenched, awe-struck retirees unto the easy wonders of the sacred Acropolis; we Necronauts are made of more discriminating stuff.

Many were the baffled Northern European backpackers I saw walk past the Agora Museum's rows and rows of graffiti-encrusted potsherds (broken bits of ceramic on which the Athenians scratched random notes to themselves and others), struggling to grasp why good foundation-dollars had been squandered on collecting and presenting so arrant a pile of junk.

But who among us could stand before that same pile and not shiver with the awareness that we had stumbled upon the ancient precursor of the Post-it Note™?

I for one got goose bumps. For me, however, the greatest thrill, and here I speak sincerely, was the museum's

ample collection of inventions devoted to the efficient daily management of one of the ancient world's most complicated social entities: Athenian democracy.

I suppose this has been written about elsewhere, but it hadn't really occurred to me before how novel, and in many ways still historically unique, a form of social organization Athens came up with.

This was participatory democracy on a large scale and a broad base: every citizen (i.e., every free adult male) was a member of the Assembly that debated and voted on all matters of policy; every citizen could be expected at some point in his life to be called up for a year of service on the Council of 500 that drew up the measures the Assembly voted on; juries were made up of 200 citizens at a time; and prosecutors were pretty much anybody who felt exercised enough to bring suit on behalf of the People.

Qualities of leadership were of course admired and rewarded, but in general, random selection seemed to play as much of a role in filling civic positions as election did.

The implication being, I guess, that the Athenians felt their system had enough checks, balances, and redundancy built into it to overcome the failings or excessive strivings of any single participant.

For perhaps the first time in history, in other words, the political was in principle no longer the personal. The notion of the abstract citizen was born, and a momentous birth it was, full of weighty implications for the philosophy of politics in general and for the history of the

modern, post-Enlightenment state in particular.

But if you didn't learn all that back in school, I can't help you now. Our interest here is rather in the practical problems this new conception of politics posed for the Athenians, and in the technological solutions they came up with.

In engineering terms, the overarching problem the Athenians were faced with was not a unique one. It was a problem as old, in fact, as the construction of the ancient Mesopotamian irrigation system (one of the world's first great engineering projects) and as modern as the design of integrated circuitry: it was a problem of flow.

Unlike the more autocratic forms of government that had been the hallmark of civilization hitherto, Athenian democracy depended for its legitimacy on a constant, high-volume circulation of individuals in and out of public offices. It was this channeled flow that made the system both impersonal and representative.

Without the static structure of the offices to shape the flow, after all, the people's will would have been no more coherent than a mob's. Without the bodies of the entire citizenry coursing through it, on the other hand, the political structure would have been no more than a bureaucracy.

The Athenians had to keep those bodies flowing smoothly, then, and that was largely a matter of keeping track of who belonged where and when. They also had to maintain a smooth and dependable flow of the information generated by those bodies, the votes, the

decrees, the endless speechifying.

They had, in short, to do a lot of stuff that modern information technology would have helped them tremendously to do, and nonetheless they managed pretty well, with the materials at hand, to build the tools they needed to make their system work. Those tools, the info tech of ancient Athenian democracy, are the subject of the following Notes. I present them now without further ado.

Source: Exhibits and literature of the Agora Museum in Athens, Greece, including the pamphlets The Athenian Citizen (revised 1987); Life, Death and Litigation in the Athenian Agora (1994); Graffiti in the Athenian Agora (revised 1988); and Socrates in the Agora (1978), published and sold as Picture Books No. 4, 23, 14, and 17 by the American School of Classical Studies at Athens, c/o Institute for Advanced Study, Princeton, NJ 08540, USA.

INFO TECH OF ANCIENT ATHENIAN DEMOCRACY, PART TWO: THE KLEROTERION RANDOMISER

From Julian Dibbell

The flow of bodies through the Athenian political system was essentially a circuit, officeholders, jurors, litigants, etc. were drawn up from the reservoir of citizenry, slotted into their temporary places, delivered of their votes and opinions, then returned to their private lives, where they would live by the rules and verdicts they had helped to shape, and whence they would again be inserted into the system at some future date and, like as not, in some other role.

In a sense, then, there was no beginning and no end to this process, but there are two good reasons for us to start our examination of Athenian political technology at the phase in which citizens were selected for office: one, because it's more or less logical to start there, and two, because I cannot wait to tell you about the gadget the Athenians invented to facilitate that phase. Simply put, the "kleroterion," or allotment machine, is the crown jewel of the Agora Museum's collection.

What survives for display is just a fragment of one of the original devices, a roughly two-by-three-foot slab of rock with a curious grid of deep, thin slots gouged into it, but once you grasp the design of the whole, even this poor remnant becomes suffused with a kind of Flintstonian majesty.

As originally constructed, kleroteria were tall rectangular stones about as tall and wide as a grown person, and about half a foot thick.

Covering the face of the stone was a rectangular matrix of what looked like short horizontal lines and were in fact deep slots carved into the rock. The slots were arranged neatly in rows and columns, usually 50 rows down and typically 5 or in some cases 11 columns across.

Along the left side of the grid a tube (of metal? some sort of reed? my sources don't say) was attached to the stone, running from the top to near the bottom of the slab. At the top of the tube was a kind of funnel, and at the bottom was a small crank-driven device, about which more later.

Now, to understand how the kleroterion worked, and indeed how Athenian democracy in general worked, it helps to know that the citizenry was divided into ten tribes, which were in turn divided into a number of "demes."

Citizens were born into their demes, and it was through his deme and tribe that the city tracked a citizen's place in the political system. The tribes, for example, had the responsibility of supplying jury members, and this was a complicated job. It was complicated because the Athenians were rightly paranoid about corruption working its way into the jury system, and had therefore settled on the practice of assembling very large, randomly selected juries at the last possible minute.

This, naturally, was a recipe for royally gumming up the works, but through the miracle of bronze-age technology,

as embodied in the kleroterion, the Athenians were able to efficiently go about the business of, for instance, condemning Socrates to death.

It worked like this. When a citizen sought jury duty (which paid only slightly better than modern jury duty, so don't ask me why they sought it, but apparently they did), he went at dawn to the kleroteria maintained by his tribe and showed up with other potential jurors.

He brought with him an identity ticket made of bronze or wood, and he gave it to the presiding tribal officer (known as the archon), who then slotted it into one of the kleroterion's columns according to the jury-section letter stamped on the ticket. The slots were filled starting at the top row and working down.

Once all the candidates' tickets were slotted in, the archon took a quantity of small bronze balls, some colored white, the rest black, and poured them into the funnels at the tops of the kleroteria. The total number of balls was equal to the number of rows filled with tickets, and the number of white balls was a function of the number of juries that needed to be filled that day.

So: the balls fell down into the tube, at the bottom of which they were stopped by the aforementioned crank-driven device. The crank was turned, and one ball dropped out. If the ball was black, the first row of tickets was removed from the kleroterion, and their owners were dismissed. If the ball was white, the first row of tickets remained in place, and their owners were jurors for the day. Another ball was released, another row of

candidates dismissed or accepted, and so on.

At last the final ball was dropped and the judicial day began. Jury-selection was not the only task to which the kleroterion was put. Some kleroteria were located in the chambers of the legislative Council House, where they were used to select committees on which representation of all the tribes was required: as many columns of slots were filled as there were tribes, and as many white balls were dropped as there were committees to be selected.

I have left out some of the complexities of these procedures, so it may be hard to appreciate the full ingenuity of the device, but trust me: it was an elegant design.

So elegant, indeed, that I am tempted to believe that the equally elegant correspondence between the workings of the kleroterion and the workings of Athenian democracy in general was more than just coincidental.

Based upon the elemental intersection of an ordered grid (the matrix of slots) and a randomized flow (the tube of balls), the kleroterion could almost be read as an abstract diagram of the Athenian political circuitry itself. But what would be the profit in reading it thus?

We would then be left to ponder endlessly the chicken-and-egg question of whether the circuitry was built according to the diagram, or the diagram drawn according to the circuitry, and we don't exactly have all day. Our tour of the Agora Museum has just begun.

Source: Exhibits and literature of the Agora Museum in Athens, Greece, including the pamphlets The Athenian Citizen (revised 1987); Life, Death and

Litigation in the Athenian Agora (1994); Graffiti in the Athenian Agora (revised 1988); and Socrates in the Agora (1978), published and sold as Picture Books No. 4, 23, 14, and 17 by the American School of Classical Studies at Athens, c/o Institute for Advanced Study, Princeton, NJ 08540, USA.

INFO TECH OF ANCIENT ATHENIAN DEMOCRACY, PART THREE: CRYPTOGRAPHIC ID CARDS

From Julian Dibbell

After the kleroterion allotment system, the second phase of an Athenian citizen's passage through the political system was an easy one. It consisted of the citizen's showing up for the office for which he had been selected.

And yet for Athenian society in general, this phase was fraught with the risk of inefficiency and corruption.

The citizen might not show up when needed, after all. Or he might show up at the wrong place. Or worst of all, someone not actually selected for the office might show up in his stead.

Whatever the problem, though, the Greeks had a doodad for it, and for this one, the problem of getting the right citizen in the right office at the right time, they had at least three.

ALLOTMENT TOKENS

Among the most fascinating objects in the Agora Museum, the little bits of ceramic identified as "allotment tokens" are also among the most obscurely explained by the museum literature.

Their design is clear enough. About the size of a Scrabble piece magnified by 2, these fire-hardened clay plaques differed from a Scrabble piece in shape only by virtue of the fact that one edge had an irregular, one-of- a-kind

jigsaw cut to it. This edge fit neatly into the jigsawed edge of one, and only one, other token, from which it had been cleaved before being fired.

There was writing on the tokens as well. Painted onto the original clay plaque before it was cut and fired were the name of a tribe, the name of a deme, and in the case of the existing specimens, the letters “POL”, thought to be an abbreviation for a political office.

The office and deme names were written on one side of the plaque, at opposite ends from each other, and the tribe name was written across the middle of the other side, so that when the plaque was cut in two, one half bore the deme name, the other bore the office name, and each bore a piece of the bisected tribe name, which would only become legible again when the two pieces were rejoined.

What was the point of this high-concept design? The museum literature offers only the tentative suggestion that the tokens were “a possible means of allotment.”

But it’s hard to imagine how they could be sensibly used for that purpose, especially when the magisterial kleroterion already did the job handily. The seasoned Necronaut can only conclude that, like the cyrograph used in medieval monasteries to ensure the validity of copied manuscripts and the tally sticks used by the old English Exchequer to ensure the stick-bearer’s right to valuables deposited with the king, the “allotment” tokens were a kind of premodern authentication device.

I imagine it worked about like this: After a citizen was

allotted a particular office, probably a low-profile one with a high turnover, he was issued the “office” half of one of the token pairs. The other half, presumably, named the citizen’s deme and was given over to an officer of his tribe whose duty it was to hold onto these things for safe keeping.

When the citizen then went to perform the duties of his newly allotted office, he took his token with him.

If anyone challenged his right to be there doing what he was doing (not unlikely; Athens, as near as I can make out, was lousy with political sticklers and cranks), he could simply produce the token.

If this didn’t satisfy the challenger, they could both walk over to the citizen’s tribal headquarters and match his token with its well- guarded mate, thus settling the matter.

Revisit the Working Notes on the cyrograph and the tally sticks and you will, I think, be struck by the remarkable similarities of design between those later devices and the Athenian allotment tokens.

Were those later inventions then copies of this earlier one? I doubt it. Simple and ingenious as it is, the idea was bound to recur of its own accord.

Indeed, as George Dyson points out in his discussion of the tally sticks, the idea has lately popped up again, in disembodied form, in certain digital authentication systems based on the splitting of very large numbers into their two prime factors. But the allotment token is an

instructive artifact nonetheless, if only because it shows us that the so- called smart card, so often taken as an icon of information-age ingenuity, is in fact not only an archaic invention but an ancient one.

JUROR TICKETS

We have seen how the bronze or wooden juror tickets were used in conjunction with the allotment machine, but that was only part of their use in the jury system.

The museum literature describes the rest of it, starting with what happened after all the balls had dropped through the kleroterion's tube and the remaining tickets, those of the selected jurors, were pulled out of their slots: "The tickets of the allotted jurors were given to the archon in charge, who, having identified each man, allowed him to draw from a box a bronze ball inscribed with a letter indicating the court to which he was assigned.

The archon then placed his ticket in the box destined to go to that court so that the juror could receive his pay and reclaim his ticket only in the court to which he had been allotted." ("The Athenian Citizen," Picture Book No. 4, p. 21)

The tickets served essentially the same validating purpose as the allotment tokens, in other words, although in a comparatively low-tech fashion. No wooden ones survive, as far as I know, but they no doubt resembled the bronze ones: long, thin strips, about 1 inch by 5, engraved with the ticketholder's name.

The surviving tickets sometimes show signs of reuse, with

previous holders' names flattened out and new ones inscribed. I imagine that the greater investment of cleverness and manufacturing effort in the allotment tokens reflected a greater importance attached to the offices they secured. Or it might just have reflected a greater likelihood of fraud in the exercise of those offices.

TAGGING ROPES

We come now to the lowest of the low technology used in identifying citizens assigned to a particular duty: the ropes, dipped in red paint, that were swung at citizens hanging out down in the Agora when everybody was supposed to be up in the Assembly.

The "police" who did the swinging were public slaves, held in common by the citizenry, and when they thwapped you with their ropes, you were truly busted: with a big red stripe across your toga, it was no use lingering in the Agora or trying to slink home. You would be fined on sight.

Of course, no material traces of this technology survive for display. All the elements of the apparatus, the ropes, the paint, the slaves, were quite perishable.

Footnote: Yes, it is both oversimplifying and somewhat perverse to characterize slavery as a technological phenomenon, but I don't think it's an entirely misguided way of thinking about it. Certainly ancient cultures, still half-immersed in animistic worldviews, would have drawn a softer line than we do between harnessing the inner force of, say, wind or fire or metals and harnessing the inner force of fellow humans. For that matter, it

probably wouldn’t be too hard, and might even be illuminating, to make the case that in some historical instances slavery has served as a kind of medium.

Source: Exhibits and literature of the Agora Museum in Athens, Greece, including the pamphlets The Athenian Citizen (revised 1987); Life, Death and Litigation in the Athenian Agora (1994); Graffiti in the Athenian Agora (revised 1988); and Socrates in the Agora (1978), published and sold as Picture Books No. 4, 23, 14, and 17 by the American School of Classical Studies at Athens, c/o Institute for Advanced Study, Princeton, NJ 08540, USA.

INFO TECH OF ANCIENT ATHENIAN DEMOCRACY, PART FOUR: VOTING MACHINES

From Julian Dibbell

Once the citizen was in his allotted place in the system, he got to work. There was a variety of jobs to do in the Athenian political sector, but they all essentially came down to one task: generating information. You argued. You heard arguments. You drew up legislation. You presented legislation. You reached your verdict. You cast your vote. You were the source, along with all your fellow citizens, of a flood of words and rulings and decisions.

This flood needed managing, and mostly it was the institutions of the state that managed it, chiefly through their structure and conventions. But inevitably they had a little help from the gadgetry; for where there are voluminous information flows, as we postmoderns know only too well, there are technologies built to channel them.

Here are a few that helped channel the flow of deliberation and decision in ancient Athens.

THE KLEPSYDRA

The water clock, called klepsydra by the Greeks (and in English usually spelled “clepsydra”), timed oral presentations in both the courts and the Council House. In trials, the plaintiff and defendant were granted equal time to make their cases, and the klepsydra was well- designed to assure all in attendance that the time was truly equal.

It was a pretty simple machine: a large clay vessel with a small bronze tube at its base and a small hole just below the rim. A plug was inserted in the tube, and the pot was filled with water, the overflow hole at the top providing a precise, and plainly visible, governor of the amount. When it was time for one of the litigants to start speaking, a slave pulled the plug and let the water start flowing into another vessel.

The speaker spoke for as long as the water flowed, and if he was smart he kept an eye on the angle of the flow in order to gauge how much time he had left. The klepsydra on display in the Agora Museum has a capacity of two "choes," or about six quarts.

This, according to the literature, translates into approximately six minutes' speaking time and was the amount permitted for the rebuttal speech in cases involving less than 500 drachmas.

The rigor of the klepsydra's pacemaking put pressure on litigants to make their speeches tight and lucid, which in turn led to the rise of a profession that could rightly be considered the ancestor of the lawyer's: speech-writing for hire.

Many of the speechwriters' compositions survive, and in one, by the accomplished Isokrates, the klepsydra is artfully referenced: "Now about the other men he has plotted against," Isokrates has his client say of the opposing litigant, "and the suits he has brought and the charges he has made, and the men with whom he has conspired and those against whom he has sworn falsely,

not twice the amount of water would be sufficient to describe these."

My Columbia Encyclopedia says the water clock first appeared around 2000 B.C., in Egypt, whence it was much later imported to Greece. But I wonder if the invention wasn't largely a novelty until Athens put it to use in its court rooms and committee chambers.

In the ancient world, I suspect, the rhythms of agriculture, commerce, warfare, and even science were still too slack to have much use for the klepsydra's precise replication of particular units of time.

But in a society where the abstract notion of equality before the law was a cornerstone, and where litigation was almost as common as pederasty, the demand for a meticulous technological embodiment of that equality must have been bottomless.

BRONZE JUROR BALLOTS

The Athenians didn't invent voting, of course, but they surely did more of it than any other civilized society before them had.

Most of it was done by hand, but as in modern democracies, certain kinds of votes required a degree of anonymity that normal hand or voice votes didn't provide. Hence the invention of, among other devices, the bronze juror ballot.

The juror ballot was a flat bronze disk about the diameter of the palm of a juror's hand, with a short bronze rod intersecting the disk at its center, like the hub of a wheel.

Each juror carried two of these ballots with him from deliberations: one with the hub hollowed out from end to end, tubelike, and the other with a solid hub.

The hollow ballot represented a vote for condemnation, the solid one was for acquittal, and the juro dropped the one that reflected his decision into a closed receptacle on his way out of the court room. The other he dropped into a box reserved for discards.

They are curious objects, the ballots, almost whimsical-looking, to those of us accustomed to the plain- paper or complex mechanical ballots of latter days. But in fact there seems to be little about the Athenian juror ballot that wasn't shaped by years of utilitarian redesign.

The generous size and shape of the disk, for example, would have made the ballots easy to hold in the hand. The slight dimensions of the hub, more importantly, would have allowed the jurors to comfortably conceal their decision by holding the rod lightly between a thumb and finger, thus covering the tell-tale ends as they went to vote. And because the hub and disk were of a piece, and cast in durable bronze, the ballots would have been well suited for the rigors of the Athenian justice system's high-volume information flow.

Perhaps it's also worth noting the binary nature of the information conveyed by this particular medium. Certainly, between the massively parallel 1-bit computations of jury balloting and the 50-bit capacity of the kleroterion, the Athenians were doing what was, by the standards of antiquity, an extraordinary amount of

systematic binary data processing.

Not quite as much, maybe, or in nearly so sophisticated a form as the Chinese, who had long before invented the remarkable 6-bit binary fortune-telling medium known as the I Ching, which is known, as well, to have inspired Gottfried Leibniz many centuries later to work out the theoretical foundations of binary mathematics.

But it's not impossible that the binary workings of Athens's technopolitical infrastructure had a similar long-term effect on the history of computing. Perhaps, for instance, they had some detectable influence on Aristotle's rudimentary formulation of what would later be formalized as Boolean logic, and hardwired into the Von Neumann machines we use today.

Or not. I leave it to credentialed historians to connect whatever dots can be connected here. C.

OSTRAKA

The Ancient Greek word for a potsherd (which is a piece of broken ceramic) was "ostrakon," and from it is derived the modern English word "ostracism." This is not an obvious derivation, obviously, but it has its logic.

What's more, it has the unique charm, for the likes of us, of preserving in the amber of everyday vocabulary a medium that lived and died more than two thousand years ago.

In the Agora Museum's ample collection of engraved ostraka there is a large subset consisting of potsherds with the names of leading Athenian politicians carved

into them.

These were ballots, used in a special kind of vote called ostracism, the purpose of which was to curb the power of men whose strength and influence had grown so great that their dominance verged on tyranny and could not be checked by normal means.

The museum's literature describes the practice thus: "Each year the Assembly decided whether a vote of ostracism should be held. If a majority of the quorum of 6000 citizens voted affirmatively, the day was set and at that time a large open area of the Agora was fenced off. In the enclosure were ten entrances, one for each of the ten tribes. By these the citizens entered each with a potsherd on which he had scratched the name of the man who seemed to him most dangerous to the state.

"Officials at the entrance collected the sherds and kept the citizens inside the enclosure until all had voted. The sherds were then tabulated; if more than 6000 votes were cast, the man whose name appeared on the greatest number was sent into exile for ten years. Such was ostracism, introduced as a safeguard against tyranny, later used as a weapon by rival statesmen, and finally abandoned in the late 5th century [B.C.] when it deteriorated into a political game.

"The potsherds, or ostraka, after being counted, were treated like so much waste paper. They were shovelled up and carried out to fill potholes in the roads leading out from the Agora." ("The Athenian Citizen," pp. 25-26) The virtues of the ostrakon as a medium for this sort of

decision process are easy to see. Raised hands wouldn't do, since many citizens would probably not have wanted the targets of their ostracism vote to know that they had cast it. The anonymous technologies of jury voting, on the other hand, weren't open-ended enough to handle what was quintessentially a write-in vote. Additionally, many citizens seemed to enjoy the opportunity to scratch in a punctuating sentiment ("Out with him!" or "Traitor" or even occasionally a few lines of satirizing doggerel) beneath the name of their public enemy No. 1.

Finally, let's not forget that it couldn't have been a simple matter otherwise to collect in one place 6000 potsherds suitable for patching the highways of Attica. I can well imagine the Athenian DOT letting the potholes build up in the months preceding an ostracism vote, smug in the knowledge that the citizens would soon be coming together to spare them the expense of gathering the necessary roadfill.

I can imagine, too, an Athenian child playing by the roadside some late afternoon, just after the transit workers have finally come and done their job. Intrigued by the patch of fresh gravel on the road, the child digs for "buried treasure", and finds it! A cache of broken pottery bits, all curiously inscribed. He takes one home and adds it to his small collection of strange found objects (a hawk's feather, a piece of amber, a bronze kleroterion ball), and as he grows into his citizenship he comes at last to understand the meaning of the ostrakon.

But by then the ostracism vote has been abolished, and as

this object is the closest he will have come to taking part in that tradition, he saves it, dusts it off now and then over the years, and near the end of his life takes it out to show to his grandchildren, pointing out the now legendary name carved into its surface, trying to bring to life for them a time they will nonetheless persist in thinking of as almost mythical.

No, there's nothing in the literature to support this scenario, but I've found nothing there that would rule it out either. For who's to say there weren't dead-media enthusiasts even in the ancient world?

Source: Exhibits and literature of the Agora Museum in Athens, Greece, including the pamphlets The Athenian Citizen (revised 1987); Life, Death and Litigation in the Athenian Agora (1994); Graffiti in the Athenian Agora (revised 1988); and Socrates in the Agora (1978), published and sold as Picture Books No. 4, 23, 14, and 17 by the American School of Classical Studies at Athens, c/o Institute for Advanced Study, Princeton, NJ 08540, USA.

INFO TECH OF ANCIENT ATHENIAN DEMOCRACY, PART FIVE: PUBLIC RELATIONS

From Julian Dibbell

The Info Tech of Ancient Athenian Democracy Part Five

The Technology of Decree

In the final phase of the Athenian political circuit, the decisions reached by the citizenry were recorded and published. In this area of endeavor, the Athenians probably didn't break much new ground, for though the bottom-up nature of Athenian democracy was a political novelty, the top-down phenomenon of the government decree certainly was not.

Autocracies of various sorts, I can only assume, had long before worked out most of the techniques the Athenians used to publicize official policies. But I wouldn't rule out a uniquely Athenian twist here and there.

The Athenian government seems to have published a lot of official proclamations and records, and this seems to have had as much to do with the citizens' distinctly democratic urge to keep an eye on the doings of the state as with the state's need to communicate its will to the citizens. But if, in consequence of this distinction, there were any peculiarly Athenian innovations in the technology of decree, I'm not qualified to identify them. For that matter, I can't even say with confidence that all of the following media are entirely deceased. But they do

give off a nice archaic aroma.

THE WRITTEN DECREE: STELES, BULLETIN BOARDS & AXONES

As far as I know, the stele (or, in Latin, stela) survives these days only in the form of the cemetery headstone. It is therefore close enough to death, in more ways than one, that it can very handily pass for dead. In ancient times, however, and particularly it seems in democratic Athens, the stele was a medium much in demand, especially for official proclamations.

As a big slab of rock, of course, the stele was well suited to this purpose.

For being big, it was hard to ignore, especially when propped up in the middle of a well-trafficked space like the Agora. And being a slab of rock, it was not likely to blow away or otherwise succumb to the abuse of circumstance. For these reasons, too, you might think that only proclamations of great and long-lasting import were published via stele.

And indeed, a lot of the surviving steles record just that sort of text: treaties with other Greek states, fundamental laws, memorials to fallen soldiers. But just as many, it seems, are covered with administrative trivia: long lists of property confiscated by the state in legal actions, minute records of the works of public agencies, yearbook-style catalogs of the extracurricular activities of young military cohorts, published at the end of their service. (Choice excerpt from one of the latter: “They made the voyage to Salamis for the games in honor of Aias.. They dedicated a

cup worth 100 drachmas to the Mother of the Gods.. They kept harmony and friendship among themselves throughout the year."

The local critics' response to such fascinating material does not survive, but we can easily imagine it: "A gripping read! I couldn't put it down! Then again. I couldn't pick it up!")

The stele, in short, was no big deal. It was simply what the government used for publishing, at least when it wanted its publication to last more than a couple weeks.

For more ephemeral communications it had other means, a centrally located bulletin board being the most important of them.

There, along the base of a set of statues honoring the 10 mythical founders of the Athenian tribes (called the Monument of the Eponymous Heroes), the government affixed wooden whiteboards displaying mobilization orders, drafts of new laws, and notices of lawsuits.

A more intriguing medium of proclamation, the axones, is mentioned in passing by the Agora Museum's literature, but its details are left maddeningly unexplained.

On page 2 of the pamphlet "Life, Death, and Litigation in the Athenian Agora," a sketchy drawing is presented: A wooden frame stands upright, three square- sectioned dowels or beams installed within it, horizontally, with Greek script running along the four faces of each. The inscribed cross-beams appear to be attached to the frame by free-turning spindles, with the apparent implication

that users could rotate the beams to access a desired section of text.

The caption: “Reconstruction of wooden axones on which the laws of Solon were recorded in the Stoa Basileios.” That’s it.

Why the Solonic laws were displayed in this form is not discussed. Nor does the text even tell us how big the axones frame was. Taller than a person? Desktop size? If anybody out there knows more, please enlighten us.

Finally, let’s consider the medium that suffuses all of the aforementioned: writing, which though hardly extinct these days, is not exactly the spring chicken it was in ancient Athens.

The Greeks had after all been writing for only about 250 years by the time Athenian democracy was fully implemented, near the end of the 6th century B.C. And we who spend our leisure hours sorting live media from dead would do well to keep in mind that the distinction between young media and old can be just as interesting.

As for how writing among the Greeks may have differed from what it has become today, I won’t go into such formal aspects as the absence of spaces between words, the general paucity of punctuation, and the snaking left-to- right-to-left direction of many ancient Greek inscriptions.

Much has been written elsewhere on these topics. But there is a subtler, more subjective type of difference to be discerned in the inscribed artifacts collected at the Agora,

I think. I base my sense of it, somewhat tenuously, on a single recurring theme in the earliest of those inscriptions: the use of the first person to identify inanimate objects, as in, for example, “Of Tharrios I am the cup,” written on the side of a cup. Or on the handle of a pitcher: “I am rightfully (the possession) of Andriskos.” (“Graffiti in the Athenian Agora,” figures 5 and 52)

That this was not just a jocular convention is indicated by the fact that it can also be found in an official decree of a sort, a stele placed at the Agora’s political boundary that bears the inscription “I am a boundary marker of the Agora.” What then to make of this curious practice?

Though I’m aware it may in fact mean very little, I suspect it actually implies a semiconscious notion among the Greeks that writing bore the voice not just of the writer but of the object written on.

I suspect, further, that this notion was as much a belief as a conceit, as much magical as metaphorical. And yet I don’t mean to imply that the Greeks were therefore more primitive thinkers than we are.

On the contrary, the nearest parallel to this phenomenon that I can think of is our own semiconscious, semimagical belief that computers speak in a voice of their own. Computers, too, are merely a kind of inscribed object, after all.

Yet look at all the computer programs that have been written as if it were they, and not their programmers, who were speaking to us through the interface. Look at all the automatic teller machines that refer to themselves in

the first person, look at all the anthropo- and zoomorphized software agents coming out of comp sci labs, look at our insistent attribution of personae to "artificially intelligent" programs (Deep Blue, Eliza) that are in fact a very far cry short of HAL. I'm not saying any of this is silly.

I have in fact long sympathized with the view that thinking of computers as thinking beings (a habit the philosopher Daniel Dennett refers to approvingly as the intentional stance) is a sensible cultural response to the technology's complexity, and that it will only grow more sensible as the complexity increases.

But suddenly I find myself wondering. Are we, instead, simply in an early, passing stage of enchantment with our powerful new information technology, as the Greeks perhaps were with theirs? And will we look back someday on the symptoms of this enchantment and find them just as odd, and charming, as the talking cups and pitchers of the Athenians?

THE OBJECT AS DECREE; TILE STANDARD

Not all decrees can be made entirely through language. In the case of officially decreed weights and measures, for instance, some specific object must sometimes be constructed and pointed to as defining the metrological unit in question.

The Athenians, for example, evidently kept complete official sets of weights, made of bronze, in the government buildings of the Agora. They were made and overseen by the Controllers of Measures (or Metronomoi), who also

kept on hand ceramic and bronze vessels that defined the official dry and liquid measures.

In this the Metronomoi were not that different from, say, the U.S. National Institute of Standards and Technology's Office of Weights and Measures, which, if I read their Web page right, keeps precision-shaped standard-setting objects on hand to calibrate measuring tools that go out for use in science and industry. But when it comes to government requirements for specific products like wine bottles, say, or bedding, modern methods of standard-setting are much more abstract, usually involving precise, technically involved textual descriptions. NIST and other standards bodies do not, as far as I know, guard in their vaults an Official Wine Bottle or an Official Fire-Retardant Mattress, suitable for comparison with their commercial epigones.

In the case of at least one product, however, the Athenians appear to have done approximately that. Outside a civic building in the Agora, carved into the stone of a wall, were two official tiles, each defining the standard dimensions of a different type of roofing tile.

This site, the museum literature observes, "must often have been the meeting place of irate buyers and makers of roof tiles so that an offending product could be compared with the standard."

Now, this is clearly as mundane a phenomenon as any I have discussed in these Notes. But let me point out nonetheless that when a tile ceases to be a tile, and becomes instead the definition of a tile, something

strange and deeply human has happened.

It is a moment not unlike that in which some culturally valued object, a head of cattle, or a pretty shell, or a lump of metal, ceases to be itself and becomes instead the definition of all things valued: becomes money. Indeed, this weird alchemy, this transmutation of the specific object into the abstract notion, seems to be the defining feature of information technologies in general.

Of media, if you will. For what, in the long run, has been the work of the Dead Media Project if not to catalog the endless variety of tangible physical phenomena, bones, knots, sound waves, fire, air, electricity, flowers, that humans have transformed into the abstract stuff of symbol and image?

And if the birth of Athenian democracy can also be thought of as a movement from the specific to the abstract, from the rule of a particular person or persons to the rule, in principle, of any and all citizens, then doesn't that imply a peculiarly resonant relationship between democracy and media? I think it does. Abstractions, after all, are hard to believe in if you don't have some way of physically embodying them.

Mathematics didn't really take off, for instance, until the Mesopotamians figured out how to squish numbers into the surfaces of clay tablets. And while it may be stretching things to say that democracy would never have taken off if the Athenians hadn't figured out a way to build its logic into the kleroterion, the allotment token, the juror ballot, the axones, and all the other physical mechanisms of its

political culture, surely these tools were indispensable to democracy's robust development in the long run.

They didn't do it alone, of course. But along with the traditions, the conventions, and the citizens of Athens, they gave democracy its shape.

They made it real.

Source: Exhibits and literature of the Agora Museum in Athens, Greece, including the pamphlets The Athenian Citizen (revised 1987); Life, Death and Litigation in the Athenian Agora (1994); Graffiti in the Athenian Agora (revised 1988); and Socrates in the Agora (1978), published and sold as Picture Books No. 4, 23, 14, and 17 by the American School of Classical Studies at Athens, c/o Institute for Advanced Study, Princeton, NJ 08540, USA.

THE STEREOSCOPE; IMAX

From Stefan Jones

A Dead Medium Revived: The Stereoscope in Across the Sea of Time

I've been a low-key aficionado of 3D media for some years. I go out of my way to take in presentations in stereo, and snap up magazines and comics that feature the technique. (I also have the odd habit of crossing my eyes whenever I see identical pictures, images, or patterns displayed side by side, in hopes of fusing the pairs to produce a 3D effect. I was reassured no end when a character in Pynchon's Mason & Dixon indulged in this trick.)

I recently had the good fortune to take in the latest in popularly available 3D entertainment, at the Sony IMAX theatre in Manhattan. The theatre presents several 3D movies, each a bit under an hour long, several times each day. My cousin, playing local guide, selected a production titled Across the Sea of Time, and it turned out not only to be a great demonstration of modern 3D effects, but a wonderful tribute to a dead medium.

IMAX theatres feature a screen several stories tall and immensely wide; the film itself is projected at high speeds and has fantastically high resolution. The 3D effect is provided by a high-tech "shutter" system. The projector alternately displays frames from a "right eye" and "left eye" perspective. Each eye is presented with only the appropriate view via bulky (but fairly comfortable)

headsets with electrically “opaqueable” lenses.

Infrared sensors on the goggles keep the shutter effect in synch with the projector. The film follows the adventures of “Tomas Minton,” a young Russian boy who stows away aboard a merchant ship to track down a branch of his family that emigrated to New York at the turn of the century.

The only clue to the whereabouts of his relatives: some ancient letters and a bundle of stereoscope slides, taken by the fictional stereoscopist “Leopold Minton.” Tomas, barely fluent in English, tromps through 1990s Manhattan, taking in skyscrapers, Central Park, ethnic neighborhoods and a Broadway play.

The quality of these “modern day” images was stunning; I found myself repeatedly reaching out to grab at fish, balustrades and other objects. I was more impressed by close-up images and street scenes than “show off” aerial shots of bridges and such; the former showed off IMAX’s wonderful ability to capture fine details, such as scuff marks on a stage and the faintly grimy fingerprints Tomas leaves on a granite block after washing his face in a fountain.

The dead media angle: Tomas’ adventure is narrated by his distant relative Leopold, via readings from his letters home; and interspersed with the moving, color images of modern day Gotham are hundreds of stereoscope images of old New York, blown up to full IMAX size and expertly adapted to the shutter 3D process.

As Leopold describes his arrival in America, the street life

of turn- of-the-century Manhattan and Brooklyn, the construction of subways and skyscrapers, the delights of Coney Island and his growing family, we see all of these things, in wonderfully clear and detailed black and white still images. The stereoscope slides I'd seen previously tended to depict natural wonders and monuments.

"Minton's" slides show ordinary people and places: immigrants at Ellis Island, kids playing in the street, young women in full- length bathing suits at Coney Island, workers lighting fuses in the tunnels of the nascent subway system, and more. Thanks to the depth, great clarity and immense size of the images, we see the subjects as people, not blurred and anonymous phantoms.

I highly recommend this film to anyone visiting New York City; besides reviving some wonderful images from the past, it makes for a great ersatz tour of Manhattan.

Source: personal experience

MUTANT MOSQUITOES IN SUBWAY TUNNELS

From Bruce Sterling

“A variation on the old urban legend about albino alligators dwelling in the New York sewer system comes to us from London: Biologists say a new species of mosquito is evolving in the tunnels of the London Underground. Researchers at the University of London believe the insects are descendants of mosquitoes that colonized the tunnels a century ago when the railways were being built. Originally bird-biters, they apparently evolved new feeding behavior, dining on rats, mice, and maintenance workers. ‘It looks as if there has been a unique colonization event,’ says biologist Richard Nichols.

“Nichols and colleague Kate Byrne have shown that the Underground mosquitoes, dubbed molestus, are now different from Culex pipiens, the bird feeders. Genetic studies revealed significant differences in the frequency of alleles at 20 different loci, suggesting that the subterranean pests are well on their way to becoming a separate species, and it is almost impossible to mate the two varieties. The team, which has a paper in press at the journal Heredity, also found some genetic differences between mosquitoes on different Underground lines, suggesting that drafts disperse the insects more readily along rather than between lines.

“The Underground provides an ideal breeding ground for mosquitoes with its moderate temperatures and pools

created by water leaks, says Nichols. ‘Human skin and other debris from passengers likely provide food in the pools for larvae.’”

[Bruce Sterling remarks: The London Underground is very far from a dead medium, but this eldritch report makes one wonder about other possible speciation events. Chicago’s abandoned tunnel system would seem ideal for this. So would the dead Superconducting Supercollider in Waxahachie, Texas. What unique little creatures may end up leaping and crawling in the vacancies of mankind’s dead technology? Have they gone all blind and pale yet?]

Source: Science magazine 4 September 1998, Volume 281, page 1443
Random Samples page, edited by Constance Holden

TELEGRAPHIC PAPER TAPE; DIGITAL PAPER TAPE; BAUDOT CODE; DEAD ENCODING FORMATS; ILLIAC; TTY

From Martin Minow

[Bruce Sterling remarks: Martin Minow is a senior software engineer at Apple Computer He is a 35 year programming veteran who worked on the original Illiac computer, as well as TRASK, the PDP-11, the DECtalk speech synthesizer, and many other projects.]

PAPER TAPE ODDITIES

This note describes a variety of encoding formats used for computer processing and typesetting from, roughly, 1950 through the early 1970's. Paper tape formats, especially the five-channel format generally called Baudot, were used for telegraphy since 1874. See the article on Telegraphs in the Encyclopaedia Brittanica, 11th Edition for more details on early telegraphy. Baudot is a 5-unit start-stop code. (It is described in International Telegraph Alphabet No. 2, and defined in International Telegraph and Telephone Consultative Committee (CCITT) Recommendation F.1, Division C.) In addition to Baudot, I will describe an incompatible variant used by Illiac, a first-generation computer designed in the late 1940's and in production from 1952 through 1962 at the University of Illinois at Urbana- Champaign.

OPERATION

The Encyclopaedia Brittanica, 11th Edition, vol 26, p. 521 describes the Baudot code in its Telegraph article, here

somewhat paraphrased.

The system brought out in 1874 by Emile Baudot and since considerably developed is a multiplex system giving from two to six channels on one wire, each channel giving a working speed of thirty words per minute.

Each channel consists of a keyboard and receiver, both electrically connected to certain parts of the distributor (which multiplexes channels). The keyboard has five keys similar to those of a piano.

The letters and figures are obtained by the different combinations, which can be forced by the raised and depressed keys. In the unforced position, a negative battery is connected to the distributor, and in the depressed position, a positive battery.

At regular intervals a rotating arm on the distributor connects the five keys of each keyboard to the line, thus passing the signals to the distant station.

There the signals pass through the distributor and certain relays, which repeat the currents corresponding to the depressed keys, and actuate electromagnets in the receivers. Each receiver is provided with five electromagnets, corresponding to the five keys of the keyboard. The armatures of the electromagnets can thus repeat the various combinations for all the signals. When a combination of signals has been received, and the armatures have taken up their respective positions, a certain mechanism in the receiver translates the position of the five armatures into a mechanical movement. This movement lifts a paper tape against a type-wheel. The

type-wheel prints the corresponding letter on the paper tape. The movement for any particular combination of armatures can only take place once per revolution of the type-wheel, and at one particular place. The signals must therefore be sent at regular intervals. To ensure this being done correctly, a telephone or time-tapper is provided at each keyboard. It warns the operator of the correct moment to depress his keys.

The Murray system extended Baudot's design, to use mechanical typewriter-like keyboards, and tape perforators that could control a printer. This printer is purely mechanical, and its speed is very high. An experimental printer constructed about the middle of 1908 by the British Post Office, operated successfully at the rate of 210 words (1260 letters) per minute. (This corresponds to about 21 characters per second.)

THE ILLIAC PAPER TAPE FORMAT

A computer programmer, looking at Baudot, is struck by how the letters and numbers are not ordered by their binary numeric representation.

The engineers designing Illiac solved this problem by reassigning the digits, so they had a direct numeric representation on paper tape. This had several effects. First, the letters were scattered from hell to breakfast.

Second, the mechanical teletywriter keyboard layout appeared, for all practical purposes, to be completely random. It was easy to rename the keycaps, but difficult to redesign the teletypewriter mechanism itself.

Furthermore, the hexadecimal digits representing the

values 10 through 15 were not the modern A through F but “K, S, N, J, F, L.”

The five-channel paper tape has 2 symbol holes, a sprocket hole, and three symbol holes. Associated with each sprocket hole, reading across the width of the tape, is a 5 digit binary number. Three digital positions are to the right of the sprocket hole, and two are to the left. The weight assigned to each position is indicated by the numbers at the head of the table.

The fifth, leftmost, digital position is regarded separately, and does not truly have a weight of 16, as the fifth binary position ordinarily would have.

The fifth- hole position is used to identify some letters of the alphabet, special symbols, and certain printing operations such as “carriage return and line feed.”

The printed digits are directly associated with their binary representation. This greatly simplified the paper tape reader program and Illiac programming. This simplicity was essential for a computer with only 1024 words of memory. The complete paper-tape code is given in Appendix 6 of Fosdick’s book (page 272).

The motivation for the strange Illiac format becomes understandable when you combine the constraints of the paper tape format, the standard Baudot encoding, and the engineer’s need to have direct correspondence between the digits 0 through 9.

For example, the ‘R’ is the letter- shift character for digit 4 in both encodings, even though they have different binary

encodings.

OTHER USES

Baudot, or RTTY, has widely used by amateur radio operators. Surplus Baudot code teleprinters with built-in modems were also distributed to hearing-impared individuals who could then communicate independently. See the Disability Resources Page for more information on TTY communication. United States telephone corporations are still required by law to provide TTY communication services.

Source: Encyclopedia Britannica, 11th Edition, volume 26, page 521; A Guide to Illiac Programming by L. D. Fosdick, Digital Computer Laboratory, University of Illinois, Urbana, Illinois, 1961; personal experience

MILITARY PIGEONEERS OF WORLD WAR TWO: QUALIFICATIONS FOR PIGEONEERS, PIGEON LOFTS; LOFT ROUTINES; PIGEON BANDING CODES, LOFT EQUIPMENT PIGEONEER SUPPLIES, MESSAGE HOLDERS, PIGEONS BY PARACHUTE

From Bruce Sterling

[Bruce Sterling remarks: I have come into lucky possession of a vintage 82-page training manual for United States military pigeoneers. This section, excerpted from this manual, will reveal the inner workings of military pigeonry in unprecedented technical detail.]

SECTION 1. GENERAL

1. Purpose

This manual provides instruction for proper breeding, care, and training of the homing pigeon, and for the selection and training of enlisted pigeoneers. With certain modifications this information can be used by all pigeon units serving field forces, both in theaters of operations and in the zone of the interior.

32. Qualifications for Pigeoneers

a. GENERAL. Minimum specifications required for a pigeoneer are:

(1) Skill. That required for a basic private, plus the ability

to care for, feed properly, catch, and hold pigeons; to attach messages; and to train birds for messenger service.

(2) Knowledge. That required for a basic private, plus a thorough knowledge of capabilities, limitations, and habits of homing pigeons.

(3) Personal traits. A pigeoneer who is boisterous and of a turbulent nature tends to frighten and upset pigeons and thus reduce their effectiveness. The successful pigeoneer should possess;

(a) Dependability. To perform all his duties regularly and promptly.
(b) Kindness. To obtain confidence of the pigeons.
(c) Patience. To spend much time and repeated effort required for training pigeons.
(d) Neatness. To maintain a sanitary and attractive loft for the pigeons.
(e) Firmness. To enforce control over pigeons.
(f) Power of accurate observation. To note and learn characteristics of individual pigeons in the loft by observing details readily and accurately.

b. BASIC TRAINING. Only qualified basic privates are selected for pigeoneer training. Skill and knowledge to be attained in this course may be based on this manual."

SECTION III

CARE

17. Loft

Pigeons are housed in lofts which may be buildings or vehicles designed and equipped for that purpose. The loft

includes all the equipment, accessories and utilities necessary for the care of pigeons. Perches are placed on the sides of loft walls. When a pigeon is 'settled' to a loft, that loft becomes its home.

a. An aviary is the part of the loft where pigeons can be given sunlight. It is usually built with wire netting on the sides and roof.

b. The trap is a specially constructed opening which permits the pigeon to enter but not to leave the loft. When the pigeon enters the loft this way, is is said to have 'trapped.' A trap which permits the pigeons to open and leave at will is called an 'open trap.' A landing board is placed in front of the trap upon which pigeons alight when about to enter the loft.

c. A settling cage of wire which is built to fit over the roof and landing board of the loft, is used to aid in settling and training pigeons to trap."

19. Receipt of Pigeons at Loft

To receive pigeons at a loft, proceed as follows:

a. Immediately upon their arrival transfer the birds to the loft from the crates or baskets in which they were transported. The pigeons may have completed a lengthy trip and be in comparatively poor condition because of delays in travel or lack of proper care and attention.

b. Immediately after the birds have been transferred to the loft, carefully examine and handle each pigeon, separating the healthy from the sickly. Place the healthy birds in a compartment where they can obtain plenty of

fresh drinking water, and feed them sparingly. Isolate the birds which appear sick until they are fully recovered.

c. It is imperative that the pigeons be vaccinated against pigeon pox if they were not vaccinated prior to shipment..."

SECTION IV

LOFT MANAGEMENT AND RECORDS

25. Routine

A pigeoneer in charge of a loft can best care for his pigeons by observing the following daily routine in loft management:

a. Upon entering the loft, make a general inspection to see that everything is in order.

b. Sweep or scrape all sand and droppings and sift through a fine screen. Add new sand and spread in a thin layer.

c. Provide fresh drinking water.

d. Provide bath water.

e. Conduct prescribed exercise and other training for pigeons according to schedule. This may include all types of flights.

f. Post loft records.

g. Prepare daily quantity of feed and give prescribed portions.

h. Inspect all pigeons as to condition, health, mating, breeding, etc., whenever required.

i. Carry out any special instructions given for the day."

27. Records and Reports

The records and reports required for each pigeon unit are Breeding Card, Pigeon Breeding Record, Pigeon Flight Record, Pigeon Pedigree, and Monthly Pigeon Loft Report."

28. Banding

a. Each breeding loft is furnished with identifying metal leg bands to be used in the banding of all youngsters. These bands, PG-16, are manufactured in pairs. Each pair bears the pigeon's serial number.

(1) One of the pair of bands bears a marking which includes US, the last two figures of the calendar year the bird was hatched, the letters SC or AAF, and a serial number. This band is placed on the left leg and indicates that the pigeon was bred by the United States Army. It should not be removed as it serves to identify the pigeon with its breeding record.

(2) The other band of the pair bears marking identical to that in (1) above except that in place of the 'US' it bears the letters 'USA.' This band is placed on the right leg, and it means that the pigeon was bred and is the property of the United States Army. This band is removed whenever the pigeon ceases to remain the property of the United States Army.

(3) Characteristic markings of leg bands now used are as follows:

(a) Right leg, USA 44 SC 15. Left leg, US 44 SC 15

(b) Right leg, US 44 AAF 407. Left leg, US 44 AAF407.

(4) The following designations were used prior to 1944:

FtM. Fort Monmouth
4CA 4th Corps Area
4th SC 4th Service Command
7th SC 7th Service Command
8CA 8th Corps Area
8th SC 8th Service Command
9th SC 9th Service Command
CZ Canal Zone
HT Territory of Hawaii
PI Philippine Islands
ML Mobile Loft
C Combat
PR Puerto Rico
SC Signal Corps
TH Territory of Hawaii

b. In addition to the banded pigeons bred and owned by the United States Army, there are those of the United States Navy, and two large national associations of civilian pigeon fanciers, the American Racing Pigeon Union and the International Federation of American Homing Pigeon Fanciers, as well as those of numerous smaller organizations."

29. Loft Equipment

a. T/O and E 11-39 prescribes the authorized allowances of nonexpendable pigeon equipment for signal pigeon companies and is the basis for requisition.

b. Army Service Forces Catalog SIG 4-1, Signal Supply Catalog, Allowances of Expendable Supplies, prescribes the authorized allowances of expendable items for signal pigeon companies and is the basis for requisition."

Leg bands "PG-15," in assorted colors, light blue, black, dark blue, green, pink, red, yellow, "pigeon, leg, marking, celluloid."
Leg bands "PG-16," "pigeon leg, identifying, aluminum; 1 pair to each pigeon."
Blow gun, disinfectant, 1-qt. capacity."
Pigeon's water bowl "PG-75".
"Pigeon, pressed wood pulp. Supersedes Bowl PG-29."
Loft-cleaning brush.
"Pigeon loft, counter duster."
Cage. "10-bird, training."
Multivitamin capsules.
Quassia chips. Used to create a disinfectant rinse for bathing the pigeons.
Two-bird collapsible pigeon carry case, made of fiberboard.
"Container, assembled 11 ½ x 6 x 6 in.; dismantled (folded flat) 15 x 12 x ½ in.; net weight, 1 lb."
Half-pint pigeon drinking cup with attachment hooks.
Pigeon transport crate. "20-bird, transportation."
Dummy pigeon egg. "Pigeon nest, white glass."
Message holders, of transparent plastic.
Pigeon bathing pan.
Parachute equipment for pigeons "PG-100/CB."

“Pigeon; a collapsible cylinder type container; 4-bird capacity; attached to a 6-ft parachute with quick release clip.”
Parachute equipment for pigeons “PG-101/CB.” “8-bird capacity; attached to a 9-ft. parachute”
Pigeon field equipment set including 2-bird parachute, twelve bird-mountable message holders, map overlay pad, a message book and two black pencils.
Jumbo field equipment set with 4-bird parachute, 24 message holders, message book, map overlay pad and two pencils.
Pigeon vest “PG-106/CB” “Shaped to form a pigeon’s body permitting neck, wing tips, tail and feet to protrude, made of porous fabric and has strap for carrying pigeon on paratrooper’s or scout’s chest, adjustable to any size pigeon.”
Cedar shavings.
Scraper. “Similar in shape to a putty knife except blade is 3 in. wide. Supersedes scraper PG-34, Stock No. 9A2034.” [presumably used for scraping pigeon dung]
Sieve for pigeon feed.
Tobacco stems [favored nesting material.]
Disinfectant. “Black Flag (liquid), 1 qt. or equal.”
Plus paperwork: Pigeon Breeding Records, Pigeon Pedigree forms both short and long, map overlays, Pigeon Breeding Cards, Monthly Pigeon Report, and a Pigeon Flight Record.

The Army also issued six different mixtures of pigeon

feed, for breeding, molting, training and conditioning, and for tropical climates, as well as two kinds of pigeon grit.

30. Message Holders

Message Holder PG-67 consists of a body, cap, leg clamp, strap, and fastener. The body, cap, and leg clamp are made of transparent plastic material."

[This ingenious device looks like a small three-ribbed drug vial. It is weatherproof. The cap, which is labelled "PG-67," comes off (unscrews?) from the top of the message holder. The bottom end of the vial has a semicircular leg-holder attached. The bird's leg is fitted into this semicircle, and a wide strap of sturdy fabric wraps both the leg and the vial. The fabric strap then snaps neatly onto the body of the vial with a common metal fabric-snap.]

a. To attach message holder to pigeon, place leg clamp of holder around the aluminum identification band on the pigeon's leg and secure strap by means of the fastener. The message holder must always be attached with the cap pointing in the direction of the pigeon's body. If attached with the cap pointing down it will interfere with the bird's walking. The aluminum bands must be loose enough on the pigeon's leg to allow the message holder to adjust itself to positions that will not interfere with the bird's flying. In emergencies, a message holder may be placed on each leg.

b. Pigeons to be used for signal communication should be trained with the message holder attached to the leg to accustom them to carrying it. Pigeons should be

distributed to combat troops, with message holders attached if it is known that the receiving troops have not had training or experience in handling the birds. (...)

c. To remove a message from a pigeon, catch the bird after it has trapped; hold it in one hand, extend its leg, and remove the message holder with the other hand. Release pigeon in loft.

d. When it is necessary for a pigeon to carry a message and a message holder is not available, fold message blank, attach it by looping it around the leg band and tie its two ends together with a piece of thread or light weight string.

Caution: NEVER WIND a string or rubber band around a pigeon's leg because it will stop the circulation and may cause the pigeon to lose its leg."

36. Delivering Pigeons by Parachute

a. EQUIPMENT. Parachute equipment PG-100/CB consists of a collapsible, cylinder-type, 4-bird container and a 6-foot hemispherical baseball-type parachute with a quick release clip. Parachute equipment PG-101/CB is of similar design except that the container has an 8-bird capacity and is attached to a 9-foot parachute. This equipment is specifically designed to supply initially or to resupply pigeons to infantry parachute troops, infantry glider troops, or any isolated forces requiring delivery of pigeons by air.

b. INSTRUCTIONS FOR USE. To insure safe delivery of the pigeons, caution must be observed when attaching containers to the parachutes. The instructions printed on

each parachute pack should be strictly adhered to.

c. RESULTS. Best results will be obtained when pigeons are launched between the altitudes of 200 and 1,000 feet with air speed not exceeding 125 miles an hour. Pigeons launched within these general limits are less likely to become lost because of excessive drift. The possibility of injury to the birds from high speed air rushing through the container, or from shock when the parachute opens, will be reduced to a minimum."

Source: War Department Technical Manual TM-11-410, The Homing Pigeon. War Department, U. S. Government Printing Office, January 1945

BIBLIOCADAVERS

From Jim Thompson

“A Kentucky bookbinder and printer, Timothy Hawley Books, offers a line of what it calls bibliocadavers, handsomely bound volumes whose blank or printed pages are created from a pulp containing the ashes of a loved one.”

Source: Atlantic Monthly, September 1998, page 24 in Notes and Comment by Cullen Murphey

THE PRAGUE PNEUMATIC POST

From Bruce Sterling

“About two dozen brass and black-steel tubes are lined up along one wall of a large, airy room. Indicator lights are mounted on the front of the tubes; at the end of each tube is a receptacle made of dark polished wood. Also below each tube is a separate hatch neatly labeled with an engraved and painted brass plaque.

“A red indicator light on one of the tubes turns on. A low-level hum gradually builds over several minutes to a high-pitched whir. It all ends with a dull plunk as a metal cylinder drops from the tube and into the basket. An operator retrieves the canister, reads the label that denotes its intended destination, then deposits it into one of the lower hatches.

“A green indicator light comes on, signifying that the canister is on its way to its final destination.

“For about 25 businesses in Prague, the capital of the Czech Republic, m-commerce (that’s ‘m’ as in ‘mechanical’) is still the quickest, safest,and cheapest way to get things done. In a matter of minutes, an important document can make its way from point A to point B on the potrubni posti, Prague’s underground pneumatic tube network, at a cost of about 11 U.S. cents per transmission.

“The network, comprised of some 60 kilometers of underground tubes, has been in operation since the 1920s, when it was considered the state of the art for high-speed document transfer. Other citywide pneumatic

networks have long since been shut down or retooled for other purposes, but the Prague network continues to handle about 9,000 transmissions per month (in its heyday in the 1960s and ‘70s, the system carried more than a million messages per month).”

“The pneumatic network is owned and operated by SPT Telecom, the Czech national phone company. That ownership ultimately may prove to be the tube network’s downfall: Telsource N.V., a Swiss-Dutch alliance that now owns about 27 percent of SPT Telecom, has said that all SPT operating divisions must turn a profit or face shutdown. Despite an increase in use in recent years, the potrubni posti now operates in the red.”

[Bruce Sterling remarks: The pneumatic post is a Necronaut’s darling. Every time I distribute a post on this subject, it is met with replies protesting that pneumatic tubes are alive and well. Yes, they are, but this is something rarer: a pneumatic medium, a government-supported city-wide mail system, dating back to the days when tubes were not merely packet-shippers (as they are today) but state-of-the-art public communications networks. One might have known one would find a survivor in Prague, the City of Alchemists and home of many a living fossil. But now the potrubni posti is under cruel threat from mere commercial necessity, and who knows, it may already be dead.]

Source: Right Down the Tubes by Mimi Fronczak Rogers

BABBAGE'S DIFFERENCE ENGINE

From Nicholas Bodley

[Bruce Sterling remarks: there's a fine melancholy pleasure in reading mindblown pop-science reportage about incredible machinery, especially when that hype pre-dates the utter collapse and obscurity of the Babbage Difference Engine. This Brewster book has received most any number of dead media citations over the years.]

"Of all the machines which have been constructed in modern times, the calculating machine is doubtless the most extraordinary. Pieces of mechanism for performing particular arithmetical operations have been long ago constructed, but these bear no comparison either in ingenuity or in magnitude to the grand design conceived and nearly executed by Mr. Babbage."

[There's a lethal poetic pang in that little word "nearly."]

"Great as the power of mechanism is known to be, yet we venture to say that many of the most intelligent of our readers will scarcely admit it to be possible that astronomical and navigational tables can be accurately computed by machinery; that the machine can itself correct the errors which it may commit; and that the results of its calculations when absolutely free from error, can be printed off, without the aid of human hands, or the operation of human intelligence."

[The bold term "computed by machinery" was a stunning neologism at the time.]

"In all this, I have had the advantage of seeing it actually

calculate, and of studying its construction with Mr. Babbage himself. I am able to make the above statement on personal observation. The calculation machine now constructing under the superintendence of the inventor has been executed at the expense of the British government, and is of course their property.

“It consists essentially of two parts, a calculating part and a printing part, both of which are necessary to the fulfilment of Mr. Babbage’s views, for the whole advantage would be lost if the computations made by the machine were copied by human hands and transferred to types by the common process.”

[Many people overlook this highly mediated aspect of Babbage’s primeval computer: from the get-go, the device was designed to be half-printer, constructed on novel principles.]

“The greater part of the calculation machinery is already constructed, and exhibits workmanship of such extraordinary skill and beauty that nothing approaching to it has been witnessed. It was permitted to call a computer “beautiful” in those pre-geek days.]

“In order to execute it, particularly those parts of the apparatus which are dissimilar to any used in ordinary mechanical constructions, tools and machinery of great expense and complexity have been invented and constructed; and in many instances contrivances of singular ingenuity have been resorted to, which cannot fail to prove extensively useful in various branches of the mechanical arts.

[Babbage was inventing not just a computer, but a new means of highly precise industrial production. His book Economy of Manufactures was a major influence on Karl Marx.]

“The drawings of this machinery, which form a large part of the work, and on which all the contrivance has been bestowed, and all the alterations made, cover upwards of 400 square feet of surface, and are executed with extraordinary care and precision.

“In so complex a piece of mechanism, in which interrupted motions are propagated simultaneously along a great variety of trains of mechanism, it might have been supposed that obstructions would arise, or even incompatibilities occur, from the impracticability of foreseeing all the possible combinations of the parts; but this doubt has been entirely removed, by the constant employment of a system of mechanical notation invented by Mr. Babbage, which places distinctly in view at every instant the progress of motion through all the parts of this or any other machine, and by writing down in tables the times required for all the movements, this method renders it easy to avoid all risk of two opposite actions arriving at the same instant at any part of the engine.

[Inbuilt crash avoidance, one can’t have subparts of the program competing for resources, or overwriting one another.]

“In the printing part of the machine less progress has been made in the actual execution than in the calculation part. The cause of this is the greater difficulty of this

contrivance, not for transferring the computations from the calculating part to the copper or other plate destined to receive it, but for giving to the plate itself that number and variety of movements which the forms adopted in printed tables may call for in practice.

“The practical object of the calculating engine is to compute and print a great variety and extent of astronomical and navigational tables, which could not be done without enormous intellectual and manual labour, and which, even if executed by such labour, could not be calculated with the requisite accuracy.

“Mathematicians, astronomers, and navigators do not require to be informed of the real value of such tables; but it may be proper to state, for the information of others, that seventeen large folio volumes of logarithmic tables alone were calculated at an enormous expense by the French government; and that the British government regarded these tables to be of such national value that they proposed to the French Board of Longitude to print an abridgement of them at the joint expense of the two nations, and offered to advance 5000L. for that purpose.”

[Navigational logarithms were to be the Difference Engine Killer App.]

“Besides logarithmic tables, Mr. Babbage’ machine will calculate tables of the powers and products of numbers, and all astronomical tables for determining the positions of the sun, moon, and planets; and the same mechanical principles have enabled him to integrate innumerable equations of finite differences, that is, when the equation

of differences is given, he can, by setting an engine, produce at the end of a given time any distant term which may be required, or any succession of terms commencing at a distant point.

“Besides the cheapness and celerity with which this machine will perform its work, the absolute accuracy of the printed results deserves especial notice. By peculiar contrivances, any small error produced by accidental dust or by any slight inaccuracy in one of the wheels, is corrected as soon as it is transmitted to the next, and this is done in such a manner as effectually to prevent any accumulation of small errors from producing an erroneous figure in the result.

“In order to convey some idea of this stupendous undertaking, we may mention the effects produced by a small trial engine constructed by the inventor, and by which e computed the following table from the formula X2 + X + 41. The figures as they were calculated by the machine were not exhibited to the eye as in sliding rules and similar instruments, but were actually presented to the eye on two opposite sides of the machine: the number 383, for example, appearing in figures before the person employed in copying. “While the machine was occupied in calculating this table, a friend of the inventor undertook to write down the numbers as they appeared. In consequence of the copyist writing quickly, he rather more than kept pace with the engine, but as soon as five figures appeared, the machine was at least equal in speed to the writer.

“At another trial thirty-two numbers of the same table were calculated in the space of two minutes and thirty seconds, and as these contained eighty-two figures, the engine produced thirty-three figures every minute, or more than one figure in every two seconds. [That would be 0.5 cps, but the thing is made of brass, for heaven’s sake.] “On another occasion it produced forty-four figures per minute. This rate of computation could be maintained for any length of time; and it is probable that few writers are able to copy with equal speed for many hours together.

“Some of that class of individuals who envy all great men, and deny all great inventions, have ignorantly stated that Mr. Babbage’s invention is not new. The same persons, had it suited their purpose, would have maintained that the invention of spectacles was an anticipation of the telescope; but even this is more true than the allegation that the arithmetical machines are precursors of Mr. Babbage’s engine. The object of these machines was entirely different. Their highest functions were to perform the operations of common arithmetic. Mr. Babbage’s engine, it is true, can perform these operations also, and can extract the roots of numbers, and approximate the roots of equations, and even to their impossible roots.

“But this is not its object. Its function, in contradistinction to that of all other contrivances for calculation, is to imbody in machinery the method of differences, which has never before been done: and the effects which it is capable of producing, and the works which in the course

if a few years we expect to see it execute, will place it at an infinite distance from all other efforts of mechanical genius.

“A popular account of this engine will be found in Mr. Baggage’s interesting volume ‘On the Economy of Manufactures,’ just published.

Source: Sir David Brewster, Letters on Natural Magic, New York, J&J Harper, 1832, pages 263-7

THE PIGEON POST

“2,000 homing pigeons lose their bearings, disappear” “Homing pigeons, as the name suggests, are supposed to find their way home. But more than 2,000 of the creatures have disappeared this week and no one can explain it.

“The birds lost their way during two separate homing pigeon races held Monday. Out of 1,800 birds competing in a 200-mile race from New Market, Va., to Allentown, Pa., about 1,500 have vanished. And in a 150-mile race from western Pennsylvania to suburban Philadelphia, 700 out of 900 pigeons are missing.

“Most of the pigeons should have been back in their lofts within a few hours.”.

“’There is something in the air,’ said Gary Moore, who was the ‘liberator’ for the 150 mile race, deciding when and where the birds were released. ‘To lose this many is just unbelievable.’ “Was it sunspots? A UFO? The currents of El Nino? “It’s hard to come up with an answer, pigeon-race enthusiasts say, because no one knows how homing pigeons do what they do.

“Moore’s theory is that the disappearance may have something to do with cellular phone activity. It’s widely accepted that the pigeons use electromagnetic fields to help them navigate, and cellular phone calls might interfere with that process, he speculated.

“Most long-distance races are held on weekends, when cellular phone activity is lower. But the two races in question were postponed from Sunday to Monday

because of rain.

“Sun-spots can also send the pigeons off course, but the sun activity that day was low, organizers say.”. [Bruce Sterling remarks: if cellphones interfere with bird navigation, we should logically have been seeing growing difficulties with all forms of bird migration, not just pigeons. And if sunspots can affect pigeons (surely a phenomenon difficult to quantify), then one wonders whether the recent cosmic magnetar blast, which detectably disturbed the earth’s magnetic field, may have had a role. Could it really be that the cellphones are disturbing pigeon brains and disrupting pigeon navigation? If so, what a rare and choice example of one medium directly killing another. It’s an interesting subject to ponder, next time you press a cellphone to the side of your skull.]

Source: Washington Post; Austin American-Statesman, Thursday October 8, 1998, page A8

BERTILLONAGE

From Damien Peter Sutton

The “Signalectic Process of Criminal Classification,” or “Bertillonage,” was an early form of police classification, using photography, anthropometrics, and elaborate card catalogs.

Bertillonage was developed by Alphonse Bertillon, the Director of the Identification Bureau of the Paris Prefecture of Police, in response to the problems of controlling and using the Bureau’s chaotic library of criminal photographs.

The aim was twofold: to establish a usable system of unique identification for criminals, and to establish a statistical system for discovering the basic criminal ‘biotype.’

Alphonse Bertillon was the son of the anthropometrist Adolphe Louis Bertillon. Anthropometrics was the science of taxonomy of the human race, which relied on a statistical approach, using abstract measurements. Anthropometrics had been used extensively in the colonies by most European powers with colonial interests.

Bertillon surmised that if a record could be made of eleven special measurements of the human body,then that record, when accompanied with a photograph, would establish unique, recordable, processable ID characteristics for every member of the human race.

The Bertillonage measurements were: Eventually

Bertillon began taking measurements from specialized photographs. Collections also exist of his accumulated pictures of ears, facial profiles, etc.

Bertillon's project was part of a broad movement of taxonomic work based on the so-called "biotype," which attempted to use statistical analysis of police records to scientifically identify the "criminal type."

Eugenics movements at the time promoted the segregation of these inferior types, so that they might not breed.

Bertillon's system lasted approximately 20 years. It was abandoned, not merely because of ethical problems, but because the archive itself became unwieldy.

The Bertillonage apparatus included an overhead camera, under which the subject would recline in the two poses for the measurement of stretch and height; plus a camera set up in precisely measured distance from the subject, for measurement of the facial dimensions, ear, torso, and arm/hand.

All these images were photographed against a gradated screen, so that the photographs could act as measurement records.

Bertillon's equipment was standard photographic equipment with minor modifications.

But, as Sekula points out: "The central artifact of this system was not the camera but the filing cabinet."

The filing cabinets of the period lacked the swift capacity and power of modern ones.

Source: Alan Sekula, ‘The Body and the Archive’ in The Contest of Meaning, edited by Richard Bolton, MIT, 1989. Also Alphonse Bertillon: Father of Scientific Detection, by Henry Rhodes, London, Abelard-Schuman, 1956.

TYPESETTERS: A DEAD CLASS OF MEDIA WORKERS

From Bruce Sterling

[Bruce Sterling remarks: the Graphion company still designs and sells fonts, but metal fonts, and the devices that used them, are gone. Even phototypesetting has been quietly annihilated. Typesetters were once as common on the techno-landscape as telegraph operators, and had a similar propensity to ride the rails, picking up a job wherever the impulse struck them. They were a powerful and well- paid trade, rather like programmers today. But every media revolution has its casualties.]

“Typesetting as a skilled trade originated in the Renaissance. The Typesetter was solely responsible for the appearance of every page. The wonderful vagaries of hyphenation, particularly in the English language, were entirely in the Typesetter’s control (for example, the word ‘present’ as a noun hyphenates differently than the same word as a verb).

“Every special feature: dropped capitals, hyphenation, accented characters, mathematical formulas and equations, rules, tables, indents, footnotes, running heads, ligatures, etc. depended on the skill and esthetic judgment of the Typesetter.

“Such was the attention to detail and pride in the appearance of a well composed page that Typesetters would occasionally rewrite bits of text to improve the appearance of the page. This greatly annoyed Mark Twain

(who began his own career as a Typesetter) and encouraged him to invest heavily in an early, and unsuccessful, attempt to produce a keyboard-driven typesetting machine that wouldn't edit his words.

"There was a romantic tradition, in this country at least, of the drifter Typesetters, who were good enough at the craft to find work wherever they traveled. They'd work in one town until they wanted a change and then drift on. They had a reputation for being well read, occasionally hard drinking, strong union men who enjoyed an independence particularly rare in the 19th century.

"Typesetting was a skilled and respected trade even after the keyboard-driven typesetting machines were introduced, around 1900. These machines typically produced lead strips for each line of type, which were stacked in a frame, proofed (the type was of course backward), and clamped into columns or pages. Extra space between lines was supplied with thin strips of lead, inserted between lines.

"Pages such as price lists and directories would be kept in 'standing type' and edited by adding and removing individual lines of type. Large type in headings, etc., was likely to be set by hand and combined with the machine set lines.

"The I.T.U. The International Typographical Union, was described as 'the oldest union in America, and organized to prevent the use of labor saving improvements.' The union fought hard for its members and when times were hard would send money and train fare to unemployed

Typesetters, and direct them to places where prospects were better.

“When preset advertising copy began to be provided by advertisers, in the late nineteenth century, the union required that this type could be used as received only if a union Typesetter was employed to reset, print, proof, and throw away the same copy. The union leader who negotiated this requirement is reported to have been a Mr. Bogus, and this redundant make-work typesetting was called ‘bogus’ type and added a word to the language. (There are other explanations for the word, but none that we know of contradicts this one)

Even as late as the 1980s, most type was set on lead casting machines, and the production manager at the San Jose News complained that his reporters’ stories were being retyped by ‘400-dollar a month secretaries who type 80 words a minute and don’t make mistakes, and then retyped at 40 words a minute on Linotype machines by 800- dollar a month Typesetters who do make mistakes.’

“In the 1970s when the machines that set type began to use low cost mini, and later microcomputers that automated the old typesetting skills, the need for the ITU members began to decline. One after another, newspapers that were already losing advertising dollars to the new upstart television were hit by ITU strikes called to prevent the loss of jobs for Typesetters. One by one these papers closed their doors forever, and Typesetters were really put out of work.

“Finally the union had to settle for agreements that said basically, ‘you can’t fire our people, but you can give them any kind of honest work you have available.’ Since these Typesetters had an average age of over 50 years, the papers could use them for anything from driving trucks to managing the paper warehouse, and they’d all be gone, replaced by people with lower wages (if inflation didn’t make the wages equal) within 10 or 15 years.

“A sad 49 year old Typesetter told me in 1978, ‘My Daddy always told me ‘get a trade’, so I did my apprenticeship and became a Typesetter! Now I’m unemployable!’

“The ITU no longer exists as an independent union. It had a long proud history,protecting and getting good wages for its members through some very hard times for trade workers.

We’d be well advised to realize that most of the jobs we do so well now will probably go away or change completely in a single life time, and when you reach the age of the Typesetter quoted above, you probably won’t have a union working to protect your right to work. So stay up to date!

“Lewis Mumford tells us that the guild of scribes and copyists delayed the introduction of printing presses into Paris for as much as twenty years. In this century people and machines become obsolete almost overnight. Absit omen.”

SPIRIT DUPLICATORS

From David Morton

The Difference between Mimeograph, Hectograph, and Spirit Duplication

The item being discussed here is that familiar, purple-inked, smelly technology we all knew in school way back when.

This is called a “spirit duplicator,” and not a mimeograph, although mimeograph was the generic term for several distinct devices. The word mimeograph was coined by the A B Dick Company, which in the 1887 began manufacturing a stencil-based print duplication system. As W B Proudfoot has shown, the mimeograph was the culmination of a number of inventions, some of which came from A B Dick and some from elsewhere. After purchasing the rights to a process of making stencils invented by Thomas A. Edison, the A B Dick company began selling mimeograph copying equipment under the trade name “Edison’s Mimeograph.”

The device made copies of hand-drawn stencils one at a time on a “flat bed” duplicator. By the time Dick began selling the device in 1887, the Gestetner company in England was already selling a similar machine called the cyclostyle, but mimeograph became the generic term. The mimeograph printing process used ordinary ink (either water soluble or oil soluble), and could even be used to make multi-color prints. The ink flowed through the perforations in the stencil and onto ordinary paper.

Stencils could be prepared by hand or, later, on a typewriter. (Proudfoot 1972, p. 76) Eventually, mimeograph machines used a crank mechanism or an electric motor to speed up the process (as did the hectograph and spirit duplicator devices discussed below).

They all look similar, but are quite distinct. The Hectographic or “gelatin” duplicator, according to one source, “originally applied to a process which involved transferring the material to be copied from a sheet upon which it had been written with a special ink to a pad made from a mixture of gelatin, glycerin, and sometimes glue.”(Doss, 1955, p. 15)

The technology probably appeared in the 1870s, shortly after aniline dyes were developed in Germany. (Proudfoot, 1972, 36).

Copies were made by pressing paper against the inked gelatin surface.” The special dye for making the master copy came in the form of ink or in pens, pencils, carbon paper, and typewriter ribbon. The gelatin process was useful for print runs of up to fifty copies. At least eight different colors were available, but purple was the most common “because of its density and contrast.”

THE SPIRIT DUPLICATOR

Finally we get to the spirit duplicator. It was invented in 1923 by one Wilhelm Ritzerfeld, founder of the Ormig Company in Germany (Proudfoot 1972, 36). The spirit duplicator master consisted of a smooth paper master sheet and a “carbon” paper sheet (coated with a waxy

compound similar to that used in the hectograph) acting "backwards" so that the wax compound (we'll call it the "ink") was transferred to the back side of the master sheet itself. The master could be typed or written on, and when finished the "carbon paper" was discarded. The master was wrapped around a drum in the spirit duplicator machine. As the drum turned, the master was coated with a thin layer of highly volatile duplicating fluid via a wick soaked in the fluid. The fluid acted to slightly dissolve or soften the "ink."

As paper (preferably very smooth or coated) pressed against the drum and master copy, some of the "ink" was transferred to make the final copy. A spirit duplicator master was capable of making up to about 500 copies before the print became too faint to recognize.

The spirit duplicator was widely used in educational institutions for making all sorts of documents in small runs. Many students believed that inhaling the distinctive vapors given off by fresh spirit duplicator copies could provide a "high," a myth that (in my recollection) teachers did nothing to dispel.

DEAD MEDIA SIGHTING/DEMONSTRATION
Having spent my entire adult life around universities, I know how these institutions are often the last to hang on to their dead media technologies.

Everyone I know has a story about using punched card readers as late as the 1980s, or knows somebody still using a manual typewriter.

Well, about a month ago one department finally cleared

out the last of its pre-Xerox copying machines, plus some old printing equipment. In November, 1998, on a routine visit to the Rutgers University surplus store, I noticed a trove of dead print media—a small and very used offset lithograph printing press (way too big for my apartment, unfortunately) a pallet full of very filthy electric mimeograph machines, and a solitary Heyer spirit duplicator.

I speculate that this vintage early-1960s machine shows so little wear and tear because it is hand cranked rather than electric. College professors are not known for their willingness to do manual work, right?

Ten bucks and it was mine.

I picked up a couple of books on office equipment (I highly recommend these for discovering the details of how all sorts of obscure office technologies actually work) and learned about spirit duplication.

Ah, memories of my youth flooded my mind like a “ditto” induced high. The only problem was where to get the supplies. To operate the beast, one needs a goodly quantity of “spirit duplicating fluid” and a few “master units,” the latter being the blank forms on which master copies are made. I did not even bother calling Staples or Office Depot on this one.

One of the few benefits of living in New Jersey is the close proximity to so many of the crumbling bastions of industrial age manufacturing. In this case, the Repeat-O-Type Manufacturing Corporation in Wayne New Jersey, near Newark indicated that they had plenty of supplies in

stock.

Off I went to buy the stuff. The company itself is something of a dead media exhibit. Located in an early 20th century building, these people have apparently been there forever.

Piled in one corner are remnants of the early days of the personal computer—stacks of yellowed IBM PCs. Getting dusty but apparently still in use is an Osborne "portable."

Peeking out from behind stacks of new toner cartridges and copier supplies are—get this—boxes and boxes of carbon paper, typewriter ribbons, correction fluid, and other reminders of an era now gone. Although my spirit duplicator supplies were close at hand, it had been so long since they sold any that the sales rep had trouble figuring out what to charge me.

Did I hear snickering as I left the building? Back at my office, I find to my great dismay that—in the tradition of Coca Cola—some evil capitalist has changed the formula of my beloved duplicating fluid, which is now quite odorless. Nonetheless, whiffing up a nose full of this stuff is quite painful and not recommended.

"Contains methanol" it says. "If ingested, induce vomiting with a finger or the back of a spoon carefully inserted down the back of the throat" it says.

Now for the demonstration.

My plan to reproduce this semester's mid-term examination (for a history of technology class) on the "ditto" machine was almost thwarted by a last- minute

realization that my office no longer has a typewriter. Was I willing to write out the whole master copy by hand?

It had to be done. I created the master, attached it to the drum, filled the reservoir with fluid, filled the machine with copier paper, and turned the crank. Nothing. Unlike a Xerox copier, the spirit duplicator has about half a dozen adjustments to make before good copies will come out.

The magnitude of feed tension, the pressure against the drum, the flow of fluid to the wick, and miscellaneous other things all have to be fiddled with.

Finally, after much cursing, out they came: shiny, wet sheets covered with purple writing. Suddenly, it was 1975 again.

I was not able to get these into my students hands quickly enough for them to try to achieve that mystical “mimeograph high.

Source: M P Doss, Information Processing Equipment (New York, 1955) Irvin A. Herrmann, Manual of Office Reproduction (New York, 1956) W B Proudfoot, The Origin of Stencil Duplicating (London, 1972)

PHONAUTOGRAPH AND BARLOW'S LOGOGRAPH

From George Raicevich

PHONAUTOGRAPH

The ancient Greeks knew that sound as heard by the ear consisted of vibrations of air which, at certain frequencies, could even cause objects to vibrate. Records indicate that resonating panels were commonly used to improve the acoustics of Greek theatre.

Back in the year 18 BC even the Romans installed large metal vases in their amphitheatres, specially tuned to vibrate at certain frequencies.

But it was not until 1857 that the first instrument for recording these vibrations was patented by Frenchman Leon Scott. He called his invention the 'Phonoautograph'.

The recording medium was a piece of smoked paper attached to the surface of a drum which, when rotated, moved forwards along a helical screw. A stylus was attached to a diaphragm through a series of levers, which moved in a lateral direction when the diaphragm was vibrated by a voice. This caused a wavy line to be traced on the smoked paper. A barrel shaped mouthpiece was also included in the design.

This was purely a device for accurately displaying sound waves, and it was not the inventor's intention to playback a recording.

The Phonoautograph promoted a flurry of activity by

inventors in many countries, but it was another twenty years before Thomas Edison brought out his epoch making 'Phonograph' in 1897 which could record as well as play back.

Scott's smoked paper was replaced by tin foil, and the stylus was attached directly to the diaphragm to trace a recording of variable depth (hill and dale). In subsequent models the tin foil was replaced by a wax cylinder which continued to be used for many years, Edison cylinders were finally discontinued around 1928.

In 1857, Leon Scott invented the phonautograph. His design consisted of a barrel-shaped plastic speaking horn. The upper end was left open, while the lower end was fitted with a brass tube, across which was stretched a flexible membrane.

A stiff pig's bristle was attached to the outside of the membrane to act as a stylus or pen. A smoked-paper cylinder was rotated beneath the pig's bristle. When sounds were directed into the horn, both the membrane and bristle moved back and forth, tracing the waveform as a wavy line on the cylinder.

Nevertheless, this design CANNOT reproduce sound. Later, Thomas Edison's invention consisted of a membrane to which was fastened a steel stylus (that is, the needle in your question) and a cylinder covered with tinfoil. First, the membrane recorded sound as in Leon Scott's phonautograph, making a series of spiral "hill-and-dale" grooves in the foil surface.

When the stylus was made to travel over the grooves , it

made the membrane vibrate in response to the depressions in the grooves. Hence, the motion of the stylus can create the original sound.

Barlow's Logograph Articulate sounds are accompanied by the explusion of air from the mouth, which impulses vary in quantity, pressure, and in the degree of suddennes with which they commence and terminate.

An instrument which will record these impulses has been termed by its inventor, Lion Scott, a phonautograph, or phonograph, and by Mr. Barlow a logograph; the pressure of air in speaking is directed against a membrane which vibrates and carries with it a delicate marker, which traces a line on a traveling ribbon.

The excursions of the tracer are great or small from the base line, which represents the quiet membrane, according to the force of the impulse; and are prolonged according to the duration of the pressure, different articulate sounds varying greatly in their length as well as in intensity; farther, another great difference in them consists in the relative abruptness of the rising and falling inflections, which make curves of various shapes, of even or irregular shape. The smoothness or ruggedness of a sound has thus its own graphic character, independent both of its actual intensity and its length.

BARLOW'S LOGOGRAPH

…consists of a small speaking-trumpet, having an ordinary mouth-piece connected to a tube, the other end of which is widened out and covered wtih a thin membrane of gold-beater's skin or gutta-percha.

A spring presses slightly against the membrane, and has a light arm of aluminum, which carries the marker, consisting of a small sable brush inserted in a glass tube containing a colored liquid. An endless strip of paper is caused to traverse beneath the pencil, and is marked with an irregular curved line.

Source Knight's American Mechanical Dictionary, in Telephone, p.2514. (1880: Riverside Press, Cambridge American Journal of Science and Arts, August, 1874, pages 130, 131

SENSORAMA

From Aaron Marcus

At the National Computer Graphics Association conference in Los Angeles, CA, on 22 March 1990, I attended a special (informal) session about Virtual Reality.

Mr. Ted Nelson, noted inventor of Hypertext, was the first speaker. The second was Mr. Mort Heilig, or Los Angeles, who presented the history of his efforts to create Sensorama in the late 1950s and early 1960s.

Mr. Heilig was a Hollywood cinematographer who was experimenting with new media.

He commented that the old cycle of Hollywood cinema was this: conception He showed something he called the Periodic Table of the Senses, a diagram. He showed examples of Smellorama.

In 1955: he invented or showed a spherical room, a total environmental television. He also showed and explained a Telesphere Mask.

In 1960: he patented 3D Stereosound and smell using special glasses. He tried to show his invention to select groups to get it funded for mass production. He wanted to create a kind of kiosk multi-sensory experience.

The typical reaction was rejection. RCA ignored him (I believe he meant RCA Labs in New Jersey).

Investors could not imagine what it would be like, so he built a prototype. I believe he said he still had examples of

this equipment in his basement or garage. His demonstration prototype (he showed slides and films of the prototype) used four magnetic tracks to control the sensory displays and nine blowers to create a sense of air movement.

He filmed a motorcycle ride through New York City, which he showed parts of, and a belly dancer.

He also showed some documents of an exhibit and/or a publication from South America somewhere that had published extensive images and diagrams and text about his work and ideas.

He felt a little annoyed that no one in the USA had ever given him such attention.

He seemed to be pleased that this event had given him an opportunity to present a brief history of his work. Unfortunately, no audio or videotape documentation of the event was made.

Source: personal notes

CHRYSLER'S HIGHWAY HI-FI, PT. ONE

From Richard Kadrey

INVENTING IN SUBURBIA

"Dad," Peter suddenly blurted out. "Why don't they have adventure stories on the radio? Something you can put on yourself. This stuff can be so boring."

Well, why not? How many times has one felt the agonizing boredom on long trips, the irritating fights between brother and sister, as young minds and bodies start to feel cramped? I suppose I could have dropped the idea and gone on to the things that were of more immediate concern at CBS, but I kept thinking of my son's question.

When I got back to work, I started to wonder how much information one can put on a small record for use in a car without a changer. The answer, it turned out, is easy to figure.

To give us forty-five minutes of playing time on a side, as much content as both sides of an LP, and to give us a record small enough to fit with its mechanism inside the glove compartment, the record would have to be seven inches in diameter and would have to revolve at 16 2/3 rpm, one-half of the LP speed. In addition it required almost three times the number of grooves per inch as did the LP.

I talked it over with my colleagues. I never know whether they're affected by my enthusiasm or by the idea itself. I generally try to restrain the excitement that surges through me so that my associates won't feel they are

being dominated by my ideas, which I must admit sometimes may seem to go far beyond immediate realizations.

In any case they liked the notion of playing records in an automobile, and they seemed to mean it. So we got to work immediately. Our earlier experience with the LP stood us in good stead, and in just six months we developed the narrowest microgroove in the business, the ultramicrogroove. It was one-third the width of a human hair. The fidelity was superb. It was time to show it to Stanton. I told him I had a gift for him and installed a custom-designed player in the glove compartment of his jet- black Thunderbird. He loved it.

“I thought you’d given up the idea,” he said. Then he added, “I’m glad you didn’t.”

I thought that the ultramicrogroove record turntable might not only work in an auto, but also might become a standard in the record business if radio stations went into broadcasting pop music, which generally comprises short numbers. Remembering the earlier interest of Murphy and others at CBS in the seven-inch record, I proposed it to management.

Paley didn’t think much of this market; in fact, he didn’t think pop music was a market at all. He also felt that record players installed in cars might cause drivers to turn off the radio to listen to records, and thus CBS would lose listeners. I must confess that I didn’t think the world would suffer if car drivers occasionally turned off The Shadow and listened to Debussy.

Here is another case where I couldn't allow my enthusiasm to be dampened by management's negativism to new ideas. I decided to go ahead on my own and to see how far I could get with the automobile installation.

Since I was then driving a Chrysler, I thought the Chrysler Corporation might be interested in the device, and got in touch with a man named Kent, who was the company's chief electrical engineer. A ruddy-faced, middle-aged man who was then pioneering air conditioning in automobiles, Kent was interested in new ideas and invited me to Detroit.

When I arrived, I told him I had something in my car that he just had to see. Curious, he agreed to go with me to the parking lot. Inside the car, I turned on a switch. The music came pouring out of the loudspeaker of the car radio, clear, beautiful, and static-free. Kent was startled. I opened the compartment and showed him the setup. He looked at the strange, homemade tone arm on the player and shook his head.

"It's fine while you're parked," he said. "But what about driving on the road?" "You drive," I said, offering him the keys. He slipped behind the wheel, put the car in drive, and slid down the highway. The music continued to pour out faithfully. Then he turned into a lot and stopped.

"Do you mind?" be asked, pointing to a field ahead. I looked at a spot of land that must have been created out of an auto engineer's nightmare.

There were cobblestones, potholes, washboard earth formations, trestles, and almost any other strange

irregularity one could find. This was Chrysler's testing ground, he told me, where new models were jolted up before they were sent to distributors.

My heart sank. I consoled myself with the thought that if the machine is properly balanced, nothing can throw it off. Nonetheless, I couldn't help but worry. Kent shot the car over the trestles, but there was not even a waver in the sound. He ran over cobbles, skidded past wash-boards, climbed up and down small, jutting mounds.

Still the music came forth, loud and undisturbed. Kent was impressed and immediately said he would demonstrate the set to the president of Chrysler. One thing I learned later was that each set of cobblestones had its own frequency of vibration when in contact with the moving car, so I later had to design a filter that worked for more possibilities of vibration than I had ever thought of.

Several days later we went down to the Chrysler garage, where several people joined us. We all piled into one of the executive cars, which had been outfitted with one of my sets. Lynn Townsend, who later became president of the auto company, sat in back with me while the then president of Chrysler drove.

The executives gave the tone arm the same test as before-over cobblestones, around curves, over washboard roads, slowing down, speeding up, even emergency stops. The jolts were incredible. But so was the record player. Nothing could stop it from carrying out its appointed mission.

I, on the other hand, was getting sick. With music filling

the air, the president wheeled the car into the company garage. Townsend turned to me and said, “I must have it for the Chrysler.” Everybody else agreed and chanted, “Yes, we must have it.”

Actually I didn’t know until later that the timing for my innovation was right. Chrysler was then preparing for its annual face-lifting-a model change-and they wanted to focus their advertising on a new development. Our machine was glamorous, novel, and it wouldn’t add great expense to the cost of the car.

The Chrysler people named it ‘Highway Hi-Fi’ and designed it to fit under the dashboard with a two-way switch, one for radio and the other for records. We agreed that everything would be ready for the 1956 model. We made plans for a spectacular debut and a press showing.

“I thought that our new CBS Electronics Division (the Hytron-Air King addition) could manufacture the players and discussed it with Dave Cogan, head of the division.

“Sure, Pete,” said Cogan, waving a cigar at me. “Sure thing.” I wasn’t sure what that meant. Columbia Records was interested in supplying records, but only if Chrysler placed an order for 20,000 machines, so they could sell that many records to start with. Chrysler seemed to be willing to oblige. So CBS Electronics went ahead.

“All went well until two weeks before the press showing. I was summoned to the phone: emergency call from Chrysler. Something about the installation. I immediately flew to Detroit.

As soon as I arrived, the engineer put me inside a car and started driving with the record player on. It was incredible. The machine wheezed, fluttered, groaned, jumped grooves, and made noises I had never heard before. It did everything it was designed not to do.

What had happened?" And then I glanced at the dashboard and almost jumped out of my skin. The engineers of the Chrysler Corporation had installed my machine in Dodges and Plymouths. The characteristics of those cars are quite different from those of the Chrysler line. They were lighter and harder riding, for one thing, with different kinds of suspension. Obviously a record player installed in these cars needed a different kind of damping.

Here was a major corporate goof on the part of Chrysler's engineering department. I couldn't call it anything else. There was no reason to believe that any device geared to one type of car had a universal spirit in it that made it happily adjust to all cars.

Back in the laboratory we simulated the vibrational behavior of the Dodge and Plymouth and discovered what we had to do to fit them with our machines. The night before the press affair we were still feverishly at work, but by morning we managed to install our last hi-fl system in the last of several cars to be used in the display.

I must say that the press conference was a success, and CBS Electronics soon went into preliminary production with 18,000 units.

Somehow this nice cultural addition to American

autointoxication didn't take off with the kind of sales we had expected. Chrysler carried on interminable meetings with CBS engineers. There were complaints from both sides about the way the record players worked. But the chief underlying reason for the middling response, I think, lay in the fact that Chrysler and Columbia Records failed to do proper marketing by not advising potential customers how to obtain additional records. Dealers failed to stock them, and little or no attempt was made to see that they did.

Without this stimulus to buying, the car buyer didn't order the optional record player in the numbers that we envisioned. Columbia persuaded Chrysler to pay for the initial set of records and phonographs and then grew apathetic, leaving followup to Chrysler.

Seeing the slow sales, the auto company relaxed its promotion. Ironically, even though the business declined, the record-changer manufacturers were so enamored with the l6 2/3 that they included the new speed in their changers - "so you can take home your Highway Hi Fi" - even though there wasn't a 16 2/3 rpm record in sight.

As a spinoff from the new record technology I developed for the Library of Congress a seven-inch record that plays four hours of spoken word and rotates at 831 rpm. This came into being because of my association with Recording for the Blind, an organization that has brought the beauties of the spoken word into the homes of thousands of blind students. We used the identical tone arm as we did in the automobile, so that it could be

pummeled around a bit without distorting the sound.

My wistful hope is still to bring back the past glories of the radio days, so that one can listen to drama, comedy, and stories on one's own portable talking machine, and by so doing remind people that their senses are not related only to the primitive visual ones utilized in TV viewing.

Source: Maverick Inventor by Dr. Peter Goldmark; 1973; published by Peter C. Goldmark and Lee Edson; chapter nine (page numbers unknown)

DEAD BINARY DIGITAL COMPUTER (THE MANCHESTER SMALL SCALE EXPERIMENTAL MACHINE—THE BABY)

From David Galbraith

“Fifty years ago this past June, the Manchester Mark I prototype computer, also known as “Baby”, became operational. Baby was the first computer to store a program electronically, and was also the first computer to store instructions and data in the same memory. Because vacuum tube technology was too immature to store memory reliably, Baby was designed to test memory based on a cathode ray tube. Not much memory, mind you. Baby boasted a full 1K bits of memory, organized as 32 words (or lines) of 32 bits each.

“In celebration of the birth of the first stored program computer on June 21, 1948, the Department of Computer Science at the University of Manchester recently reconstructed Baby and ran a programming contest to write the most imaginative program for Baby.” The background section to “The Baby” web page concludes with: “The first program to run successfully, on June 21st 1948, was to determine the highest factor of a number. The number chosen was quite small, but within days they had built up to trying the program on 218, and the correct answer was found in 52 minutes, involving about 2.1 million instructions with about 3= million store accesses.

“F.C. Williams later said of the first successful run: ‘A

program was laboriously inserted and the start switch pressed. Immediately the spots on the display tube entered a mad dance. In early trials it was a dance of death leading to no useful result, and what was even worse, without yielding any clue as to what was wrong. But one day it stopped, and there, shining brightly in the expected place, was the expected answer.

It was a moment to remember. This was in June 1948, and nothing was ever the same again.' "With the Baby proving both the effectiveness of the Williams Tube and the basic stored-program concept, work was immediately started, with increased manpower, to design and build a more realistic, usable, computer based on the Baby. This was achieved between late 1948 and late 1949, in two or three incremental stages, with the Manchester Mark 1. This in turn was used as the basis of the design of the world's first general-purpose commercial computer, the Ferranti Mark 1."

Source: MacTech Magazine, September 1998

THE INVENTION OF ENVELOPES AND THE POSTAL SYSTEM IN ANCIENT MESOPOTAMIA

From Bruce Sterling

Around the time of Sargon (2334-2279 BCE) envelopes were invented; they were slips of clay formed around the [cuneiform] tablet. Envelopes protected the contents from damage and even fraud; that is, the envelopes safeguarded against someone moistening the clay and changing the numbers. Sometimes the text was repeated on the envelope and also sealed. In the case of a dispute, the envelope could be opened and the contents examined and compared. Sometimes envelopes opened in modern times have been found with information written on them different from that of the tablets inside."

"From the second millennium BCE onwards, rulers frequently corresponded by mail. Major archives have been discovered at Mari on the middle Euphrates and at El- Amarna in Egypt. More than three hundred letters were found at El-Amarna from Hittite, Babylonian, Assyrian, and Mitannian kings and from Egyptian vassals in Syria and Palestine. The language commonly used was Akkadian, the language of diplomacy."

"The Neo-Assyrian Empire (ninth-seventh centuries BCE) did little to improve the roads it inherited in conquered territories. A few roads were even abandoned. But the Assyrian empire made one major change: the central government took over the management of the roads.

Government maintenance brought about speedy messenger service to and from the capital and the rapid movement of troops against enemies within and without. The roads were kept in good repair, and exact information as to the terrain and distances was essential.

The principal roads were called 'royal roads.' "Official letters and legal documents referred to stations built along the royal roads, used as resting places for troops and civilian travellers and as way stations in delivering royal mail. A royal correspondent wrote: 'People at the road stations pass my letters to each other and bring them to the king, my lord.'

A regular postal service was provided by mounted couriers, with relays at each road station. The roads were measured with great precision, not only in 'double hours' but in smaller measures from 360 meters down to 6 meters. That is, the distances on the royal roads were based on actual measurements using surveyor's cords of standard lengths.

"Highways were well defined and sufficiently permanent to be named as boundaries of fields in documents of land sales. These were clearly recognized as permanent highways, maintained by the state. Kings Sargon II and Sennacherib had those segments of royal roads closest to their respective capitals, Dar-Shurukkin and Nineveh, paved with stone slabs and supplied with roadside stelae as milestones.

The roads were paved for a short distance outside the cities and then quickly degenerated into a track and

finally disappeared completely. This practice was subsequently discontinued until the Romans applied it, on a far greater scale, to their own imperial road network."
"How the news reached Nebuchadrezzar has been a matter of some speculation. In Old Babylonian times fire and smoke signals were used on the Euphrates in the Mari district."

Source: DAILY LIFE IN ANCIENT MESOPOTAMIA by Karen Rhea Nemet-Nejat, Greenwood Press, 1998, ISBN 0-313-29497-6 and D. J. Wiseman, NEBUCHADREZZAR AND BABYLON, Oxford University Press, 1985, ISBN 0-19-726040-3

CANADA'S TELIDON NETWORK; AUSTRALIA'S VIATEL AND DISCOVERY 40

From Geoffrey Shea

For three years during the early 80's I was involved with an artists' collective exploring the potential of Telidon, the Canadian version of videotex (Minitel is France's version).

Graphical, on-line, "interactive," just a decade ahead of its time, the whole thing didn't go very far. Several artists did create tentative works and some of these were included in an exhibition I curated with Paul Petro at A Space, and another one I prepared with Tom Sherman for some Venice Biennale, but which never got shown due to the ever-present "technical difficulties."

The whole medium was far too technology-dependent. Viewers had to use a dedicated decoder box and the hardware manufacturers were the only ones who really benefitted from these government-sponsored trials.

The artworks still exist on 8" floppies somewhere in a filing cabinet, but as far as I know there is not an existing operating decoder which can display them. (A friend of mine, Norman White, has an extensive computer museum of sorts with a couple of possibly salvagable ones).

Sure, some of the art is on slides, etc., but the actual works in their crude "interactivity" cannot be seen.

Dead as a doornail, that medium is.

SCRIABIN'S COLOR ORGAN

From Philip Downey

"Scriabin considered 'The Divine Poem' the turning point in his career. "This was the first time I found light in music, the first time I knew intoxication, flight, the breathlessness of happiness." His scores became peppered with such markings as "Luminously and more and more flashing." It might be that Scriabin also suffered from a rare genetic peculiarity known as synesthesia, in which sound is translated directly into color. People with synesthesia cannot hear music without seeing colors.

"Faubion Bowers relates in his biography of the composer, 'he overflowed with plans. He spoke of tactile symphonies. He called incense an art which joins earth and heaven. He described the 'Mysterium' [a work about which Scriabin had been thinking for many years). He explained this great final, cataclysmic opus as synthesizing all the arts, loading all senses into a hypnoidal, many-media extravaganza of sound, sight, smell, feel, dance, decor, orchestra, piano, singers, light, sculptures, colors, visions.'

"One work was the Fifth Symphony, which Scriabin named 'Prometheus: The Poem of Fire.' This had an elaborate program, ending with the world's beginning and a cosmic dance of the atoms.

In addition to the full symphony orchestra, 'Prometheus' used a piano, a chorus, and a color organ. It was Scriabin's first actual attempt to synthesize music and colors, and he

worked out a chart:

Note	Hz	Color
C	256	Red
C#	277	Violet
D	298	Yellow
D#	319	Glint of Steel
E	341	Pearly white and shimmer of moonlight
F	362	Deep red
F#	383	Bright blue
G	405	Rosy orange
G#	426	Purple
A	447	Green
A#	469	Glint of steel (for some reason, the same as D sharp)
B	490	Pearly blue

“Koussevitzky conducted the world premiere of ‘Prometheus’ in Moscow, on March 2, 1911. But there was no color organ; the instrument turned out to be impractical and was dropped..Scriabin spent a great deal of time working on the ‘Mysterium’—not composing any music, but thinking about its locale and the extramusical accompaniments to the spectacle. The ‘Mysterium’ involved the end of the world and the creation of a new race of man. At the climax of the ‘Mysterium’ the walls of the universe would cave in. ‘I shall not die,’ Scriabin said.

“I shall suffocate in ecstasy after the ‘Mysterium’.”.He wanted his ‘Mysterium’ to be performed in a temple in India, a temple hemispherical in shape. As Bowers describes the ‘Mysterium’:

‘Bells suspended from the clouds in the sky would summon the spectators from all over the world.

The performance was to take place in a holy temple to be built in India. A reflecting pool of water would complete the divinity of the half- circle stage. Spectators would sit in tiers across the water.

Those in the balconies would be the least spiritually advanced.

The seating was strictly graded, ranking radially from the center of the stage, where Scriabin would sit at the piano, surrounded by hosts of instruments, singers, dancers.

The entire group was to be permeated continually with movement, and costumed speakers reciting the text in processions and parades would form parts of the action.

The choreography would include glances, looks, eye motions, touches of the hands, odors of both pleasant perfumes and acrid smokes, frankincense and myrrh.

Pillars of incense would form part of the scenery. Lights, fires, and constantly changing lighting effects would pervade the cast and audience, each to number in the thousands.

This prefaces the final ‘Mysterium’ and prepares people for their ultimate dissolution in ecstasy.’

“Goodness knows how far Scriabin would have gone with the project. But Scriabin died while all of the Mysterium was in his head. He died in a ridiculous manner.

People like him should go up in a blaze of fire. Scriabin

died from blood poisoning, the result of a carbuncle on his lip."

[Philip notes: 1. He did compose a piece called 'The Poem of Ecstasy'. 2. For many years classical musicians debated whether the note 'A' should be tuned to 435 or 440 cycles per second. 440 won and is an almost universal standard today. It is interesting that Scriabin chose neither. Perhaps it somehow affected his color perception?]

Source: The Lives of the Great Composers, by Harold C. Schonberg. 1970. George J. McLeod Limited. ISBN 0 393 02146 7

VIRTUAL REALITY TECHNIQUES DURING THE FRENCH REVOLUTION AND THE EARLY 19TH CENTURY

From Thomas Weynants

The Fantasmagoria, or, Virtual Reality Techniques During the French Revolution and the Early 19th Century: Some Examples as Seen in Contemporary Experiments. by Thomas Weynants

The fantascope lantern and accessories used for the techniques described here were discovered seven years ago in a French castle called Chateau de Moisse. The site is located in the north part of the department La Creuse, 340km south of Paris.

Although an enormous family archive was discovered by the present owner, sadly, no information concerning the fantascope & accessories has been traced. This makes the date of purchase and origin of the apparatus difficult to determine. Possible manufacturers include Lerebours, Dubosq, Molteni and Chevalier. Even though this optical treasure looks more or less complete, I'm convinced that a lot of interesting accessories to the fantasmagoria (or phantasmagoria) have been irredeemably lost.

Fortunately, the Fantascope was found with three different lenses, each mounted on a wooden board, and named here after their respective purposes: Fantasmagoria lens, Megascope lens, and Dissolving view lens. The latter lens set (obviously double) will not be explained here since this article is limited to

fantasmagorie effects.

However, it is appropriate to note that the presence of a cat's eye on each dissolving lens (the only known example?) needs further research in order to reveal possible fantasmagoric use. Twenty-three wonderful hand- painted slides survived. Among them, ten depict beautiful fantasmagoria subjects such as a Skull, a Skeleton, a Devil, and the Bleeding Nun.

These are typical gothic horror subjects of the time. The theme of the nun, for example, was inspired by a character from one of the most famous novels in this genre, The Monk by Lewis Matthew (1796). Furthermore, great historic figures of the time were transformed into fantasmagoria subjects via these handpainted slides, for example two portraits of Bonaparte.

Such historically important figures illustrate another theme in the fantasmagoria. Other examples are portraits of Marat, Robbespierre, Louis XVI, Danton, etc., which were projected onto smoke curtains with the help of a hidden lantern. The technique of smoke projection is not dealt with here but will be the subject of future experiments.

A most intriguing and less expected projection accessory, is an animated marionette representing a skeleton opening his tomb.

The ultimate effect is a perfect animated projected image with movement, colour, and changing focal depth, in other words, cinema! For megascope demonstrations, the object, a skeleton, is hung upside down inside the lantern

house, and strongly illuminated from both sides. To obtain the best result, the background behind the skeleton is painted matte black to ensure there are no reflections, and hence no image on the screen without the presence of the marionette. The elements for manipulation are also darkened using the same paint. All objects and decors appear in total darkness, and the virtual image and screen become one.

Extra weak illuminants can play a role in the decor to obtain spectacular light-effects. A small light projected directly through the lens and out of focus will give the desired effect. This combination of indirect (reflected object) and direct (weak illuminant) projection enables us to create a real gothic horror scene. Thanks to these experiments, I realized that the use of a decor [such as a graveyard scene in which a skeleton (marionette) is digging with a scythe] in the megascope is an obvious improvement to the effect.

All of the described techniques are fascinating early (18 & 19th.Century) examples of an audio-visual performance in which all our senses are manipulated in order to create a personel and unexpected ghostly encounter, far removed from the events of daily life.

To enhance this experience, many sound effects where also created during these shows: thunder, heavy rain, stormy weather, the weird sound of a glass organ, funeral bells, and so on. Even different odours where produced to give the scene an unpleasant life-like, or even death-like, atmosphere. Understandably, I would never call these

effects simply forerunners of today's virtual reality techniques, because they where already full-grown!

For their time and context, the impact of these effects was far more radical (their very purpose was to create fear and panic) than that engendered by today's media. It was not uncommon for people to start screaming, lose consciousness and flee in panic from the scene! Unfortunately, due to the unfamiliarity of these effects today, knowledge of their potential is limited to a very few. [2015 NOTE: I've edited the original very long and detailed description of various Magic Lantern apparatus; the full description is on the deadmedia.org site]

Source: Servants of Light article by Thomas Weynants [Bruce Sterling remarks: Mr.Weynant, a continental member of the far-famed Magic Lantern Society, is rightly proud of his antique fantasmagorie discovery, and has seen fit to share his expertise with the Dead Media list.]

RENE DAGRON, PIGEON POST MICROFILM BALLOONIST

From Bruce Sterling

[Bruce Sterling remarks: It would appear that Rene Prudent Dagron, the central figure in French communications during the Seige of Paris in the Franco-Prussian War, has not been entirely forgotten by his grateful nation. The Siege of Paris, with its bizarre deployment of pigeons, dogs, floating copper balls, hot-air balloons, microfilm, postcards, money orders, and telegraphy, is the most dramatic and unlikely Dead Media tale of all time.] “Rene Dagron est ne en 1819 a Beauvoir, devenu Aillieres- Beauvoir depuis. Il part s’installer a Paris et en profite pour etudier la physique et la chimie. Il invente un microscope et travaille sur la mise au point de photos microscopiques.

“Il presente ses inventions a l’exposition de 1867, en particulier une photo microscopique d’un millimetre de cute sur laquelle est ‘gravee’ le portrait des 450 deputes de l’epoque. Son procede est d’abord utilise pour la decoration de bijoux.

“Lors du siege de Paris pendant la guerre de 1870, la capitale est coupee du reste de la France et en particulier de Tours ou se retranche le gouvernement provisoire.

“Des le 18 septembre 1870, la capitale est encerclee par les Prussiens. Pour communiquer, Nadar qui constitue dans l’urgence une compagnie de ballons.

“Il envoie, des le 23, un premier ballon qui quitte

Montmartre en transportant 125 kg de depeches. Pendant les cinq mois du siege, 64 ballons quitterent Paris. Il etait possible de faire sortir des ballons de Paris, mais au gre du vent, les faire revenir dans la ville etait impossible. Nadar repensa a Rene Dagron qu'il avait vu a l'exposition de 1867. Aussitut, Dagron fut emmene hors de Paris par ballon pour perfectionner son procede photographique. Sur une pellicule de collodion de quinze centimetres carres, ultra legere, il reussit a faire tenir 3 000 depeches. Les pellicules ainsi constituees etaient ensuite acheminees vers Paris par pigeons voyageurs.

"A l'arrivee, les volatiles etaient liberes de leur precieux fardeau et les pellicules projetees sur un agrandisseur, recopiees et distribuees. Sur 355 pigeons partis de Paris en ballon, seulement 57 rentrerent a leur colombier. Mais il transporterent au total un million et demi de depeches, le record etant detenu par un pigeon qui transporta 18 pellicules soit 54 000 depeches. La carriere des micro-films venait de commencer."

[And now, an unintentionally comic machine translation, courtesy of AltaVista's "Babelfish" service.] In English: "Rene Dagron was born in 1819 in Beauvoir, become Aillieres-Beauvoir since. He leaves to settle in Paris and benefits from it to study physics and chemistry. He invents a microscope and works on the development of microscopic photographs.

"He presents his inventions to the exposure of 1867, in particular a microscopic photograph of a millimetre on side on which is 'engraved' the portraits of the 450

deputies of the time. His process is initially used for the decoration of jewels.

“At the time of the head office of Paris during the war of 1870, the capital is cut remainder of France and in particular of Turns where is cut off the provisional government. As of September 18, 1870, the capital is encircled by the Prussians. To communicate, Nadar constitutes in the urgency a company of balloons.

“He sends, as of the 23, a first balloon which leaves Montmartre while transporting 125 kg of despatches. During the five months of the seige, 64 balloons left Paris. It was possible to make come out of the balloons of Paris, but with the liking of the wind, to make them return in the city was impossible.

“Nadar reconsidered to Rene Dagron whom he had seen with the exposure of 1867. At once, Dagron was taken along out of Paris by balloon to improve his photographic process. On a collodion film of fifteen centimetres square, ultra light, he succeeds in making hold 3 000 despatches.

“The films thus made up were then forwarded to Paris by carrier pigeons. On arrival, the birds were released from their invaluable burden and the films projected on an enlarger, recopied and distributed. On 355 pigeons left Paris in balloon, only 57 re-entered to their dovecote. But it transported on the whole a million and half of despatches, the record being held by a pigeon which transported 18 films is 54 000 despatches. The career of the microfilms had just begun.”

[2015 note: Shall we see how machine translation has

improved in 15 years?] “Rene Dagron is in 1819 Beauvoir, Beauvoir became Aillieres- since. He went to live in Paris and used it to study the physics and chemistry . He invented a microscope and is working on the development of microscopic photos.

“ he presents his inventions was the 1867 exhibition , particularly a microscopic picture of a cute millimeter on which is ‘ engraved ‘ portrait of the 450 deputies of the time. METHOD first is used for jewelry decoration .

“During the siege of Paris during the 1870 war , the capital is cut from the rest of France and particularly Tours or subtracted the provisional government.

“ From September 18, 1870 , the capital was encircled by the Prussians. To communicate, Nadar which is in urgent balloon company.

“ It sends the 23 , a first ball leaves Montmartre carrying 125 kg of mails . During the five months of siege , 64 balloons quitted Paris. It was possible to make out balloons in Paris, but at the option of the wind, saut√© in the city was impossible . Nadar thought back to Rene Dagron he had seen in the exhibition , 1867. Aussitut , Dagron was taken out of Paris by balloon to improve his photographic process. on a collodion film fifteen centimeters edges, ultra mild , he succeeds in 3000 to fit mails . the films thus formed were then sent to Paris by carrier pigeon .

“ upon arrival , the birds were freed of their precious burden and projected films on an enlarger , copied and distributed . 355 pigeons left Paris in a balloon, only 57

returned to their loft. But it transported a total of one and a half million mails , the record being detained by a pigeon that carried 18 films to be 54,000 mails . The micro- film career had begun.“

THE KROMSKOP, VICTORIAN COLOUR PHOTOGRAPHY

From Marcus L. Rowland

The Kromskop (the “o”’s are accented) was a colour separation stereoscope, combining light from six monochrome transparencies, through various coloured filters and mirrors to produce a “Kromagram,” a coloured stereo image.

It was invented by Frederic Ives of America, and slides and viewers were available in Britain from 1897 onwards. It is described in the article below, from Pearson’s Magazine December 1897 (which incidentally contains the last installment of the magazine serialisation of the War of the Worlds).

The article was accompanied by a picture of Ives and pictures of a Kromskop (viewer) and two Kromagrams, and with some experimentation it is possible to combine the images in a graphics program to replicate the effect. Unfortunately there seems to have been some distortion in their reproduction, and results are poor.

I am attempting to produce better results. Incidentally, versions of the beam-splitter technology used to produce Kromagrams were used for colour cinematography up to the 1960s; Technicolour and Cinerama used separate negatives for the primary colours, combined in printing the film. For Technicolor, a “beam splitter” was used ‘the three “cameras” were mounted in one huge assembly, with a common lens, splitter and also common mechanics

to ensure synchronisation. The Cinerama rig consisted of three of these “triple-strip” cameras.

from Pearson’s Magazine, December 1897 THE NEWEST MARVEL OF SCIENCE Being the Invention of an Apparatus which will Photograph Objects of every Description in their True Colours

By Wm. H. Ward

“For many years photographers, amateur and professional, of a scientific turn of mind, have been trying to solve the problem of colour photography.

“But to reproduce the actual colours of Nature by any process at all similar to that employed in black and white photography is physically impossible, and like the problem of perpetual, motion, might as well be once and for all abandoned as insoluble. For consider for one moment the composition of a photographic print, whether silver or platinum.

It is simply a deposit of the metal in a finely divided state, distributed according to the light and shade of the original object. Such a metallic deposit can only have its own peculiar monochromatic (one colour) tints, and cannot under any circumstances assume the varied colours of the rainbow.

“Many attempts have been made in other ways to obtain by mechanical means photographs in colour, but, till the coming of Mr. Frederic Ives from America, very little success had been attained. This gentleman, however, has perfected a method of photography, or, rather, of

recording by means of photographic films the actual colours of the objects before the camera. Through the agency of the Kromskop, an optical instrument designed by Mr. Ives, these records can be so arranged that when viewed through the instrument the objects photographed are presented to the eye in their natural colours, with the added realism of stereoscopic relief. In fact,they are absolutely lifelike. They may be exhibited at any time, and are permanent for all time.

“The value of this invention is at once apparent. Travelers in foreign lands can bring back permanent records in colour of scenery, flowers, plumage, the costume of the inhabitants and other features of interest, which in the ordinary photograph, for want of colour, lose half their charm.

“Exact reproductions of all the noted pictures of the world may be made with very little trouble and at comparatively trifling expense; a National Gallery in miniature may thus be set up in every village; and in a thousand other ways the possibility of obtaining a fixed record in colour of any desired object will prove most valuable.

“In any but a purely scientific magazine, it would be out of place to enter into the technicalities of the construction or the-working theories of the camera, by which the natural colours of the objects are recorded, or of the Kromskop, through which these photographs are exhibited. just a general outline must here suffice.

“The theory of colour-vision promulgated nearly one hundred years ago by Professor Young, and elaborated

more than half a century later by Helmholtz and Clark-Maxwell, forms the scientific basis of the system to the perfection of which Mr. Ives has devoted many years.

“By this theory the eye sees all colour by means of three distinct sets of organs, sensitive respectively to red, green, and blue light, or to the rays which produce the sensation of red, green, and blue. When all three are excited equally, the result is white; when mixed shades are reflected to the eye, the organs are excited unequally; where black exists in the field of view, no light is reflected and such parts are seen as black by contrast.

“Light, when analysed by the prism, is seen to be made up of many colours, but there are three particular kinds of rays, red, green, and blue, which equally combine to produce white, and these correspond to the three fundamental colour sensations of Young’s theory.

“All the varied hues in Nature can therefore be obtained from mixtures in various proportions of the three simple colours, red, green, and blue; and if more or less of one or other of these colours be admitted, it is possible to produce every shade and every delicate graduation of colour.

“How, then, is the Ives colour photograph made? “By the aid of a special camera, fitted with an arrangement of mirrors, prisms, and light filters, three pairs of images of the object are thrown on the sensitised plate at the same time. One pair is made by the red and such other rays as excite the red sensation on the eye, all other rays being excluded from this pair of images from the filtration of the

light through specially tinted glass and other transparent substances; another pair is made in the same way by the rays which excite the green sensation, and the third by the rays which excite the blue sensation.

“A pair of images of each colour, it may be explained in passing, is taken, so that in the viewing instrument-the Kromskop-the colour photographs may be observed with both eyes, and the picture consequently seen with the relief and perspective familiar to ordinary vision.

“The sextuple negative having been made and developed in the ordinary way, a photographic dry plate is put in contact with it, exposed to gas light for a few seconds, and developed in the usual manner. The positive when dry is cut into three parts, and mounted in a folding cardboard frame, thus forming the Kromogram.

“The three images of the Kromogram, which are similar in appearance to ordinary lantern slides, represent, by differences in their light and shade, the distribution and proportions of the three simple colours in the object photographed. These three transparencies, therefore, though themselves of no colour, form a true colour record, just as the wax cylinder of the phonograph, although emitting no sound itself, preserves the record of sound, and the Kinetoscope or Kinematograph ribbon contains the record of motion.

“The cylinder must be placed in the phonograph before the sound recorded can be reproduced, the ribbon with its myriad images must pass through the Kinetoscope in order to visually reproduce the moving scene, and in like

manner the Kromogram must be seen in the Kromskop in order to reproduce in colour the object photographed, which it does so perfectly that all suggestion of photography vanishes, and the object itself, be it flowers, fruit, portrait, landscape, or a work of art, seems to be actually before the eyes.

“This wonderful effect, which must be seen to be fully appreciated, is obtained by an ingenious arrangement of mirrors and coloured glass screens in the Kromskop, so fitted that the three images, illuminated respectively by red, green, and blue light, are blended in such a way that the observer at the viewing lenses of the instrument sees the object in all its perfect reality of colour.

“Our illustrations show the form and general appearance of the Kromskop and of a Kromogram. In the larger representation of the Kromogram images, the upper pair shows the amount of red, the middle the amount of blue, and the lower Pair the Proportion of green, which combine to produce one of those brilliant iridescent blue Brazilian butterflies.

“There is no kind of colour which is not reproduced. in the Kromskop; the bloom of grapes, the velvet of the peach, the shiny red cheek of the apple are all faithfully rendered; while the iridescence of glass, the delicate shades of the opal or mother of pearl, the dull gleam of gold or silver, all of them tints most difficult to reproduce, are displayed with perfect naturalness. Nor will any colour recorded by the Kromskop ever fade. For time has no effect on the images of the Kromogram and light is

always the same.

“No special scientific skill or tedious training is required in taking the colour photographs. The operation is as simple as ordinary photography, and the development is just the same. Some practice will, of course, be necessary, but any amateur who understands the art of photography will quickly acquire the skill to successfully carry through the new colour process.

“Before long there is every probability that the invention will be extended to life portraiture. The only obstacle at present to this development is the length of exposure required for port- raits-about a minute in a good light. Unfortunately but few mortals can keep perfectly still for so long a period as sixty seconds, but Mr. Ives is quite confident that sufficiently rapid plates can be prepared, and it will then be’ possible to have photographs of one’s family and friends in the true colours of Nature and in all the reality of life.

“The Kromskop and Kromograms can be obtained from the manufacturers, 121, Shaftesbury Avenue, London, but the camera is complicated, and will not be obtainable just yet. When certain difficulties in its construction have been overcome, simplifying its operation, and making it possible to produce the camera at a popular price, careful amateurs will be able to make their own colour photographs, and a new pleasure will at once be attainable by all who are familiar with ordinary photographic manipulation.”

Source: Pearson’s Magazine, December 1897

THE BIRTH AND DEATH OF MEMORY

From Bruce Sterling

"The Birth and Death of Memory" from "The Future of Memory" Conference International Center for Semiotic and Cognitive Studies Republic of San Marino May 21-23, 1999

Hello, my name is Bruce Sterling, I am a writer and journalist from distant Texas. My speech today concerns "The Birth and Death of Memory."

This part is the birth of my speech. Very soon, I promise you, we will have the death of my speech. In between, I hope to say something memorable.

So, let us begin with the birth of memory. When was memory born? I am a writer, I am not a neurologist.

My interest lies in forms of memory that can survive the death of the individual brain. Not memory within consciousness, but memory's lasting traces in the physical world. In other words, symbols: Records. Archives. Language. Media.

Therefore, I re-phrase our question. When was media born?

The earliest physical evidence of symbolic records are found in bones. These prehistoric artifacts are prepared sections of animal bone, about the length of one's hand. These bones have grooves cut into them.

These are deliberate, intentional, symbolic marks: long, careful rows of parallel cuts. Microscopic analysis of these

cuts shows that they were not made all at once. They were not decorations. They were accounts.

These grooved bones are records. We do not know what they were recording. There have been many speculations, of course. They might be phases of the moon, astronomical records. They might be calendars, records of days passing. Perhaps they are economics: days spent in some kind of labor, or accounts of gifts, or accounts of services.

This is all theory.

All we know is that these notched bones are, by far, the longest-lived system of records that the human race ever created.

These bones were born about 100,000 years ago, and they died about ten thousand years ago. This bone technology was very widespread and successful.

Notched bones of this type have been found in prehistoric excavations all over the planet. The technology never advanced, and the technology never decayed. The notched bones always looked very similar, no matter where they were found.

This practice lasted ninety thousand years. This much is well-attested.

But were these bones were the true birth of media? I fear we underestimate our ancestors.

The bones are fossil media, but the fossil record is untrue to the past. Time does not preserve reality: time preserves only what time fails to destroy. The Stone Age

left us a lot of evidence in stones, but this does not mean that stones were the core technology of the Stone Age. If you study the lives of contemporary Stone Age people, you soon come to realize that their world is not made out of stones.

Their world is made out of wood, bark, fiber, bone, shell, juices, poisons, toxins, drugs, thorns, hide, leather, string, skin, hair, fruit, seeds, roots, meat, and feathers. These are all organic materials. They rot easily, they decompose, they are very temporary. Time does not preserve them.

The very first records created by human beings probably did not survive. And what were these original physical records? Perhaps we can look to the apes.

An American scholar named Susan Savage-Rumbaugh studies the bonobo apes in the African Congo. These chimpanzees live in tribes of about a hundred apes. Every morning, the large tribe breaks up into small family groups, and they go out in the jungle to forage for food. They sometimes use primitive tools, such as the famous chimpanzee termite-stick.

Chimpanzees have also been known to use stones as tools. The small groups of apes separate all day, and they wander over many miles. At night, however, without fail, the small groups always gather together again, into the large tribe. But they do not gather where they started. No, they gather in a different place. The question then arises: how do the apes know where to go at night?

Susan Savage-Rumbaugh says that the answer is simple: the apes mark the trail. Certain trails, you see, are already

written into the landscape through the passage of animal bodies. Animal trails are a proto-medium, a physical record of intents, and needs, and resources.

Even an ant knows that following a trail will lead you to something good and useful. Some animals can track each other through scent, but chimpanzees have a bad sense of smell.

So they mark the trail, they tear up the landscape. They bend and break branches, they tear off big leaves and place them carefully on the ground, to point the way they have gone.

The apes that follow read these symbols, and they follow them. So, these apes leave symbolic messages by deliberately changing the vegetation. Unfortunately for them, they're not very good at it.

Bonobo chimpanzees have never gotten beyond the left bank of the Congo River. The other side of the Congo River is a lovely place, but they have never gone there.

The same might be said for a proto-human stock, the extinct species we call Homo habilis. The Homo habilis species never left the nurturing landscape of Africa. But another extinct species, Homo erectus, exploded out of Africa, and travelled all over the world. Homo erectus crossed rivers, explored over mountain ranges, crossed great plains and deserts.

You might ask how this pre-literate, pre-human group of animals managed this great feat of travel, which no previous ape could perform. Perhaps they were just

hardier than other apes. Or perhaps, they knew where they were going. In Australia, pre-literate humans knew where they were going, because they had a system of marking trails.

These were the legendary “song-lines” of Australia, and they were set up in a very deliberate, very poetic fashion. Great chunks of bark would be ripped from trees, leaving huge scars on the tree. Or branches would be stripped of bark and tied together with strips of hide. After a few months, the branches would grow together permanently, creating an artificial, human-made sign in the natural landscape. With this system of signs came a system of poetry.

Children were taught to sing the landscape. When they understood the songlines, they could sing their way from landmark to landmark, over thousands of kilometers.

The passage of time would erase this medium. But it was still a communication system of great power, because it might allow small groups to migrate with purpose and intelligence, to a known destination.

Imagine that starvation is on the land, and that you, Homo erectus, know the songlines, but that Homo habilis, your older brother, does not know. Your advantage over him is spectacular; you will survive, he is doomed. Media becomes a matter of evolutionary life and death.

My suspicion, therefore, is that media was born about two and half million years ago. Media is much, much older than the human race. The thing I like about this media origin theory is its missing link. A marked trail is a

missing link between unintentional marks, the tracks and trails that an animal body leaves naturally, as it moves through the landscape, and intentional symbols, a sign hacked into a tree, a human sign that is given a mythic, religious, poetic meaning.

We have no record of this theoretical prehuman medium. A marked trail is temporary by its nature, it could not survive the passing of its landscape. But prehistory has many such concepts, mostly unsupported by evidence. We have no record of the entity we call "protolanguage," which is the theoretical state of language between the grunting and gestures of apes, and the human world of syntax and grammar.

But we believe in the concept of protolanguage anyway, because it's very hard to believe that human grammar sprang up suddenly out of nothing at all. In today's world, there is no such thing as a "primitive language." Primitive people have extremely complex languages.

The only primitive languages we have belong to brain-damaged people. Or, to the spaces between established languages, the broken world of pidgins and creoles. Even a new-born pidgin, the halting two- word communications of refugees, conquered peoples and prisoners, cannot stay primitive.

In a generation at most, it becomes a creole, and in a few generations, it becomes a thriving mongrel vernacular, like English. The deep past is full of theoretical phantoms. Let us consider the imaginary language "Nostratic," which is said to be the ancestral language stock of the Indo-

European family of languages.

“Nostratic” is at least ten thousand years old, possibly much older. Interestingly, the marks of landscape seem to be preserved in Nostratic. Some of its root words seem to be involved with mountains, rivers and rushing streams, the paleolithic world of the south Caucasus and eastern Anatolia.

If media arose from attempts to mark the landscape, perhaps the Nostratic language, too, arose from attempts to name the things in one’s own immediate surroundings. To name the plants and animals is to know them. To know them, gives you the ability to use them, to survive. So perhaps we can say that languages of the Stone Age rose up from their region, that they grew there, like fine vintage wines.

A human language is a giant memory system, an intricate creation of millions of people, over thousands of years. Every human language has a regional version of reality. Each language cuts reality at some different angle. Even a humble dialect takes a chip from the broken stone of reality.

This brings us to the melancholy topic of the death of memory. Because across the world today, small, local languages are dying.

Along with the mass extinctions in the natural world, the postindustrial epoch is bringing us mass extinctions of languages. It is difficult to quantify what we are losing by this, but we are definitely losing something of importance.

People cheerfully die for the sake of their native language.

When a language has died, what have we lost? Some vital aspect of the memory of a people. My own native language is English, which is the great, globalized language primarily responsible for crushing all the other languages.

English crushes those languages under its feet, like grapes in a global tub. I know this is true. I admit it to you. I feel all the pain one feels at a sad event which causes one to benefit very much.

I am an author of English-language books, so every death of a small language suggests more readers for me. I would point put, however, that the noble Italian language is also far from guiltless in this regard.

Let me refer you to the very interesting and extremely morbid "UNESCO Red Book of Endangered Languages." There are hundreds of dying languages around the world, so we will concentrate on Europe. UNESCO's Red Book numbers 94 languages on the European continent.

Europe has forty-three Indo-European languages, twenty-five Finno-Ugrian languages, six Turkic languages, plus Kalmyk, Cypriot Arabic, Basque, Romani, seven Jewish creoles, and nine diaspora dialects. Fifty of these 94 European languages, more than half of them, are considered endangered languages by UNESCO.

Since I speak in the ancient and honored Republic of San Marino, I must point out that the local language, "Emiliano Romagnolo," is one of those endangered languages. Italy

is crammed with endangered languages.

They are all being crushed like grapes by the televised Italian broadcasts of great media businessmen, like your former Prime Minister. It presents a great moral difficulty for an English speaker like myself to even publicly recite the names of these victim languages.

My Italian accent is so horrible that it will probably make this list of victim languages sound unintentionally comic.

But despite all this, as a gesture of respect, just to show that I am paying attention, let me publicly recite the names of: Cimbrian, Algherese Catalan, Provencal, Ladin, Friulian, Molise Croatian, Gallerese Sardinian, and the native tongue of San Marino, “Emiliano Romagnolo.”

English is not killing these languages. Italian is killing them. The mighty Italian language, the unifying force of a Group of Seven advanced industrial nation. I am not a linguist. I prefer engineering to syntax. If you looked at the paper I distributed to accompany this lecture, you will see that I am an amateur historian of media technology.

My interest in the subject of the death of memory came about through studying new media. Many of us here at this “Future of Memory” conference are deeply involved with new media, with historical databases, the social impact of television, digital libraries, information agents, and so forth.

The reason I myself am among you is that I discovered that no one was keeping track of the new media that did not work.

Everyone in the industry of creating new media wants to promote and sell new media, but most new media do not work. They fail and they die. They do not become the next dominant medium.

New media do not carry civilization forward in safety, handing the torch the culture to the next generation. On the contrary, they mostly become dead media. Any memory entrusted to the care of these dead media becomes a dead memory.

The Internet in particular, the great titan of new media, is a fiendishly efficient device for destroying local languages, and local heritage, and local memory. Broadcast television was also very good at this.

I give television every credit for enforcing national character, and destroying local character. I have seen this happen in my own region: the effect of national American television on regional cultures like Acadian Louisiana and the Texas-Mexican border has been absolutely astonishing. These backward, impoverished areas were almost obliterated by television in a single generation. But the Internet is even more powerful, because it encourages the user to talk back and take part. Television merely floods the landscape from a central source, like a kind of paint. People under television are the oppressed; people on the Internet are collaborators.

The Internet appears at the user's fingertips, and seductively asks him to take part in the global world, to become a global citizen. A global citizen has very little time or motivation to learn preindustrial regional

languages.

In my own case, these languages would be Comanche, Tonkawa and Lipan Apache. Comanche, Tonkawa and Lipan Apache are the languages spoken two hundred years ago in my home town of Austin, Texas.

I am sure these languages have many valuable pieces of data about how to skin bison, dig roots, and live off the land of Texas in huts made of leather. I can guarantee you that I have no intention whatsoever of learning to speak these languages. UNESCO cannot make me learn them.

A moral crisis cannot make me learn them. I bluntly refuse to learn them. I am far, far too busy surfing the Internet. Why? Because the Internet sends electronic mail inviting me to go to conferences in distant San Marino.

Mastery of Comanche, Tonkawa, and Lipan Apache will never give me these valuable things. I do not defy the global Net. No, I choose to be here with you.

By that very choice, I carry a message of doom. For the third part of my speech, let me turn to the subject of archival memory, or the collected history of the human race.

Why do archives die? There are many possible causes.

First, entropy. The passage of time. Natural decay. The elements. Insects. Fungus. Fire. Flood. Earthquake. Undergraduates. Paper can last for centuries if it is well cared for, but it can also turn to mush in a matter of hours.

Second, mnemonicide, or the deliberate killing of

memory. Human malice. This happened to the Mayans when their libraries were burned. It happened to the Incas when their knotted strings were burned. It happened in China at the command of the first Emperor. It happened under Stalin in the Soviet Union. It is happening in the Balkans today.

The third reason is obsolescence. Indifference. Loss of interest. Civilization does not break down, there may be no foreign invaders, but the media of one's ancestors goes out of vogue. The archives are no longer seen as possessing any value.

Cultures change. People lived under the stone monuments of Egypt for hundreds of years with no idea how to read them.

The Babylonians built their homes out of broken cuneiform bricks, the clay records and accounts of the past. One recalls the legendary words of doom: if these books deviate from the Koran then they are blasphemous; if they agree with the Koran, then they are superfluous.

In the contemporary epoch this might be rephrased: If it's on the Net then we have it already, and if it's off the Net, then obviously nobody wants it.

Digital data is easy to reproduce, but it still has no archival format. There is no permanent way to store digital data. This is a great and terrifying scandal. There are problems in the hardware, problems in the coding schemes, problems in the formats. It would be a simple matter for our civilization to create digital archives of tremendous, unparalleled scope: if we had the money and

the political will. We have money. We have no political will.

My great fear for the "future of memory" is that history will become part of the culture industry. Culture as we have understood it since the Renaissance could dissolve into the stream of media, like salt in water. All memories will be for sale. Any memory without a commercial value will not be supported or sustained. This is a nightmare vision, but nightmares can be useful things.

One imagines a version of Orwell's 1984 where Winston Smith is not a political ideologue, but a software salesman.

No return on investment? Into the memory hole.

What does this nightmare look like in detail? It looks like this. Our heritage is no longer the heritage of mankind, but a commercial part of the heritage business. An old castle is no longer an old castle, but a painted simulacrum for the tourist trade.

Universities become non-governmental organizations, or, even scarier, post-governmental organizations. We no longer sympathize with the thinking of the past, but merely try to retail its commercially attractive aspects.

Memory becomes a commodity. Cultural identity becomes a consumer choice. Bad archives are deliberately favored by the market, because they are the culture-industry's version of planned obsolescence.

A computer that swiftly breaks and decays can be sold to us again. We will buy the same music again and again, in

different formats, on tape, vinyl, CD and DVD.

In this media-saturated world, the archives of the twentieth century might still be visible, like scratch marks on old bone. But the motivation behind them would be lost, no longer understood.

There would be no past and no future, just the flow of data and the rise and fall of the market. In that imaginary society, in that dystopia of commodity totalitarianism, the media of liberal democracy would have no meaning.

Just as we ourselves see no meaning in the long-lost media devices of Athenian democracy, such as the kleroterion, the ostraka, and the clepsydra.

Would history end? No. History does not end.

But speeches must end. This speech has ended. Thank you for your attention.

DEAD UK VIDEO FORMATS

From Trevor Black

My dad's announcement, in the early 80s, that he had signed up for the Open University was a truly joyous event - because it meant our house got a video recorder.

The time he spent at the kitchen table doing sums was fully exploited by his kids - showcasing our newly-rented video to the world. Friends gaped in wonder as we knowingly pushed massive buttons on its 'remote' control, nonchalantly stepping over the yards of flex attaching it to the machine.

The excitement of being able to make screen people walk backwards and forwards at high speed was of the Christmas morning variety. A short time later, being allowed to take possession of the video rental club card to hire a film was the height of playground sophistication.

The burning question on everyone's lips was: 'Have you got VHS or Betamax?' Already, ownership of one or the other was a test of cool. The garage, after all, had five or six shelves of VHS tapes - and only one of Betamax.

A couple of years earlier, they might also have asked about the third format to chance its arm in the home video market.

Philips' Video 2000 uniquely required the user to turn the tape over half way through its eight hour play time, just like an audio cassette. But despite its innovation and high quality, the V2000 was the first casualty of the Format Wars.

The battle for video recording machine supremacy is as synonymous with the early 80s as cerise lipstick and Miami Vice. Nick Thomas of Philips, says: “It is often said that VHS won the day because of its software, but that’s rubbish.

“I lived through it all, and what really happened was that some Japanese manufacturers could produce far greater quantities of video recorders.

“The dealers were desperate to get their hands on video recorders, and so took them from anyone who could supply them.

“What people like JVC then did was to say, yes we’ve got 80 video recorders, but you’ll have to take 100 of our TVs as well. It also represented a sea change in the high street electrical industry.

“At the time, names like Pye and Bush were still well-known and respected, but the Japanese grip on the electronics market came off the back of video recorders.”

The video recording adventure had in fact kicked off a couple of decades before the height of the format wars. In 1956, the American company Ampex produced a machine called the Quadraplex. Standing at 6ft tall, the Quadraplex was intended for the professional market, but it represented a revolution in recording - its tape could be recorded over again and again.

It was another 10 years before manufacturers attempted to market machines for the home - Sony had a model called the CV2000 for sale in 1965 - but they were

expensive and complex and they flopped. A couple of years before that, even, a small valve company in Nottingham produced a reel-to-reel system called the Telecan, which could manage to tape 10 minutes of low-resolution black and white TV. It never went on sale, although a similar system later did.

By the end of the decade, however, the push was on. TV manufacturers could see the possibility of the bottom falling out of their market, and needed to be able to produce new consumer items.

Philips is generally regarded by enthusiasts as the producer of the first true home video recorder. Other video recorders had been made for use in colleges and institutions - but were complicated and hugely expensive. But Philips' N1500 model, complete with an analogue clock like a cooker timer, was relatively small and had its tape enclosed in cassettes.

At £750-£800 - at the time, roughly the price of a new Mini - they were far from cheap, however, and did not sell in any great volume. Laser disc recorders put in an appearance. Sony, meanwhile, were marketing the ultimately doomed Betamax machines.

Lauded by enthusiasts for their quality, their manufacturers are thought to have spent too much time thinking about perfecting their product, and not enough about making a lot of them. Joint curator of the virtual video recorder museum, Total Rewind, David Browne, explains: "As the Japanese formats arrived in this country, the Thorn-EMI group backed VHS and flooded their many

high-street TV rental shops with low-cost VHS machines.

“Sony, meanwhile, were concentrating on quality, and so Beta became a format to buy while VHS was the format to rent. Unfortunately, most people preferred to rent, particularly when the simplest machine cost around ÔøΩ700.

“This process was then self-reinforcing, because the presence of two formats made people reluctant to commit to one and risk picking the eventual loser - and so they rented and waited to see what would happen.

“By 1980, out of an estimated 100,000 homes with VCRs, 70% were rented.” From all camps, model followed model - until VCRs became the video victors in the late 80s. The old machines are now becoming collectible - and the video adventure looks set to continue. Mr Thomas said: “We are working on VCRs which will be able to understand spoken commands.

“And they will be able to work in an anecdotal way as well, so you will be able to say to the video recorder - ‘you know that film with Charlton Heston and chariots, can you record it please?’ and the machine will be able to work out that you mean Ben Hur.

“It could talk back to you. But we have to be led by what people want, and people want to be in control, they don’t want machines bossing them around, which is fair enough.

“That is one of the main thing video achieved for people - it put them in control of television for the first time.

“We are approaching a point where people will be able to have My TV, a completely personalised video recording system which will learn what the individual likes to watch. Consumers may not see anything in real time ever again.” So a video/TV combo which uniquely records Open University programmes could be just around the corner.

Source: BBC News, Friday, April 16, 1999 Published at 11:21 GMT 12:21 UK

DIVX: STILLBORN MEDIA

From Bruce Sterling

DIGITAL VIDEO EXPRESS, LP TO DISCONTINUE OPERATIONS Herndon, Va., June 16, 1999 -- Digital Video Express, LP announced today that it will cease marketing of the Divx home video system and discontinue operations...

The museum of failed consumer products is filled with exhibits such as the Betamax videocassette player, the eight-track tape and New Coke. And now there's Divx video-rental technology. Circuit City Stores Inc. and its partner conceded yesterday that their plan to replace videocassette rentals with video disks that don't have to be returned was a resounding failure. From the start, Divx has been mired in problems. In a battle much like the one in the 1970s and early 1980s between the Betamax and VHS formats for VCRs, Divx competed with the standard DVD format for consumers looking to play digital video disks.

Although Divx, unlike Betamax, was able to play videos encoded in its rival's format, it met the same fate.

The Divx format was designed to be a solution to the hassle of returning videos to the store. A Divx disk, which looks like a CD and whose quality of picture and sound is superior to that of a videocassette, costs $4.50 for unlimited viewings during a 48-hour period. After that, the disk won't play unless it is "recharged" for another two days at the cost of $3.25. Billing is done through the

phone line that connects to the Divx player. And that, as it turned out, was a major consumer complaint.

“That was the main thing: I did not want someone keeping track of what I watched and when,” said Christopher Blount, an Air Force electronics technician who lives in San Antonio. The Divx technology ran into resistence from movie studios, even though Richmond-based Circuit City’s partner—the Los Angeles law firm Ziffren Brittenham Branca & Fischer—specialized in the entertainment industry. Retailers also balked.

“Despite the significant consumer enthusiasm, we cannot create a viable business without support in these essential areas,” said Richard Sharp, chief executive of Circuit City. But attempts to woo retailers were doomed even before they started, said analyst Kenneth M. Gassman Jr. of Davenport & Co. in Richmond.

“Why didn’t more retailers carry it, especially Best Buy?” Gassman said.

“The answer is: Would you put profits in the pockets of your arch competitor?” In the spring, rumors that Divx had inked a deal with Viacom Inc.’s Blockbuster video unit in which the movie-rental firm would rent its disks sent shares of Circuit City stock soaring.

A company official familiar with the discussions said the agreement was quashed at the last minute. Blockbuster, he said, wanted to purchase the entire Divx business. But two movie studios, whose approval was required to seal any deal, nixed the idea. They “said no because they thought Blockbuster was already too powerful,” he said.

Industry observers expressed skepticism about a possible deal between the two retailers.

“It’s like mixing oil and water,” said Mark Mandel, a retail analyst with the brokerage ABN Amro in New York.

“The Divx technology was really an affront to the rental model.”

The intense emotional response to Divx has surprised many industry observers.

Over the past two years, the video format has inspired jeers, intense hostility and a host of Divx-bashing Web sites. Consumers who bought the first DVD players were upset because the standard players do not play Divx disks.

“The reaction has been consistent from the start, and it was consistently negative and visceral,” said Mark Fleischmann, senior writer with Etown.com, an Internet site that follows consumer electronics issues.

“I have never seen such a negative to any new consumer electronics product since I began writing about this in 1980.” Consumers just didn’t like Divx as much as the competition. Often, DVD offers extra goodies such as director commentary, mini- documentaries about the film’s creation and wide-screen format, customers said.

“If you’re going to market this new concept, at least make it competitive,” said Tom Longo, a retired Foreign Service officer who lives in Ocean City. Longo and other consumers who purchased Divx players won’t entirely lose out, because the machines were built to also

accommodate DVD disks, Divx officials said. Additionally, Circuit City is offering $100 rebates to consumers who have recently purchased Divx players.

Source: Washington Post

THE ACOUSTIC TELEPHONE

THE ACOUSTIC TELEPHONE. The Willard acoustic telephone was an instrument invented and patented by Henderson Willard, and in November, 1880, The American Private Line Telephone Company was organized in this city for its manufacture and sale. It is not electric; is used only in short, independent lines, and depends upon molecular vibration for the transmission of sound. Thomas W. Peck was President, E. F. Harrington Vice President, and M. S. Crosby Secretary and Treasurer of the Company. It has not been pushed. The management was afterward placed in the hands of C. R. Brown, of St. Ignace. “

DAMAGED, OBSOLETE UNDERSEA CABLES

Old Phone Cables Open Sea Bed to Science
Making use of thousands of miles of discarded telephone cables, scientists have begun to wire remote regions of deep ocean floor to create an undersea network of geological observatories.

The old cables will serve as deep-sea extension cords running thousands of miles from land-based power stations to sensors, some of which are already sending back continuous flows of data from the ocean floor.

One such line is a coaxial cable (similar to the cable that carries television programs into private homes) that was laid across the deep Pacific Ocean floor by AT&T in 1964 from San Luis Obispo, Calif., to Makaha, Hawaii—a distance of nearly 3,000 miles.

At the time, it was among the most advanced phone lines in the world, equipped with powered vacuum-tube repeaters every 20 miles to refresh the telephone signals as they traveled along it.

The cable, called Hawaii-2, could simultaneously carry as many as 138 conversations. But in 1989 a fishing trawler working in shallow water near the California coast accidentally cut the $30 million cable.

The telephone company could probably have repaired the break, but decided instead to abandon the cable; by then, optical-fiber cables had come into use, and the new cables could carry up to a half million conversations with greatly

improved sound quality.

AT&T announced that it would make the abandoned coaxial cable available to scientists who could find a use for it.

HOW I BECAME THE FIRST FOREIGNER TO OPERATE THE PRAGUE PNEUMATIC POST

From JC Herz

“I Got Root on the Prague Pneumatic Post

In Prague, there is a fully functional municipal pneumatic tube system, the only one still in operation (the one in Paris was shut down long ago). It runs underneath the entire city, five trunk lines, 55 kilometers of tubes, switches, and relays snaking underground from the main post office in Old Town, south to New Town, which was constructed in the 14th century, across the river on the underbellies of three bridges, and all the way up to Prague Castle.

It takes eight minutes for a pneumatic tube to reach the furthest point on the network. An air blower starts at the point of origin, and a vacuum starts at the destination. On longer lines there is a relay network of air pumps which switch from vacuums to blowers once the tube passes, sort of like booster stations.

The first message was sent in 1899. On March 4, 1999, the system was 100 years old. Originally, it was for wire telegrams. They came in, were rolled up and sent by pneumatic tube to the most important buildings in the city. After that, the system was used for telexes, which had to be centrally controlled so that the communist secret police could inspect everything.

The telex room is in the same building: half an acre of ceiling-height shelves, like library stacks except it's not books, it's wiring, feeding into the same Cold War telex machines, still ticking.

The 1960's were a big decade for the Prague pneumatic post.

Big traffic in the '70s, when the government-run Czech Press Agency was run out of same building, they distributed all approved international information, news, and government propaganda to the newspapers, magazines, television and radio stations via pneumatic tube.

That ended in 1989, when the Velvet Revolution entitled news providers to get their information wherever they wanted. But instead of fading into obsolescence, the Prague Post stubbornly reinvented itself as conduit for financial documents. Banks.

When you need an original document within minutes, the pneumatic tube system beats a bike messenger. The system is actually being expanded now, at the behest of the financial sector. And the poetry is that it's owned and operated by Czech Telecom.

They have to keep it running because the pneumatic tube lines run alongside the gas lines and if they shut down the system there might be a hazardous build-up and possibly explosions, and it's cheaper to keep it running than to dig it all up.

The system loses about $70,000 a year, but at that price

it's a relatively inexpensive early warning system for gas leaks.

I set up an appointment with the Pneumatic Post Supervisor, since the system isn't open to the public. And he gave me the whole history and the grand tour. And the whole time there were these tubby ladies with gloves, who've probably been working there since the wire days, intercepting and redepositing these pneumatic cylinders, which arrive with a big rattle and a horrendous thud.

These tubes are moving ten meters per second, and they're metal, and when they land they hit hard. When he'd finished explaining, one of the red lights in this pipe organ of pneumatic tube conduits began to blink.

And so I asked, "Can I? Can I do it? Can I put one of the messages in?"

The tubby ladies eyed me suspiciously but the supervisor agreed. So, poised over the iron and brass console, I opened one of the small, circular hinged doors. And there was an enormous whoosh of brownish smoke and a scary noise and so I threw the capsule into the hole and quickly closed the little door.

There was more rattling and banging, and a light went on, and I turned to the supervisor and said, "I think I just broke your 100-year-old pneumatic tube system."

But he said no, and got one of the maintenance guys to dislodge the capsule with a broomstick, whereupon it zoomed off to its intended location. Most of the tubes have automatic air shut-off, he explained.

This one was manual and I wasn't quick enough. One of the tubby ladies nodded smugly. But still, he said, "You are the first foreigner to operate the system. You should get a certificate."

Being eight years old inside, I immediately seized on this. "Can I? Can you make me a certificate? Do you have letterhead? Can you type a certificate for me? It would really. I mean, it would really mean a lot."

And I actually marched the man into his office and made him type out this certificate on Czech Telecom letterhead: "I hereby certify that Ms. J. C. HERZ has been the first foreigner who personally PUT a Pneumatic Mail System Cartridge into the appropriate aperture of the single and unique Prague Pneumatic Mail System." Signed, Jiri Hak, Managing Director.

This piece of paper is now one of my most prized possessions. How often can you go into a country and be the first foreigner to do something? As far as I'm concerned, this is my claim to fame.

MICRONESIAN STICK CHARTS

From Allen Varney

EXCERPT "The low elevation of the [Marshall Islands] and the distances between the atolls make them particularly difficult to sight from the sea. In travels between islands, early inhabitants learned to read the patterns of the waves by watching for swells which would show when land was ahead. "Stick charts were used to teach the secrets of navigation. They were made by tying flat strips of wood together in designs which imitated the wave patterns. Shells were then attached to these sticks to represent the islands.

"Three kinds of charts were used. The mattang showed wave patterns around a single island or atoll and was used first to teach the basic techniques. The medo showed patterns around a small group of atolls and the rebilit mapped an entire chain, showing the relationships between the islands and the major ocean swells. "All the information contained on the stick charts was memorised and the charts themselves were not actually taken on journeys. Not many present-day Marshallese understand how to read stick charts, though due to their popularity as souvenirs many islanders can still make them."

Source: Lonely Planet's MICRONESIA travel guide, by Glenda Bendure and Ned Friary (3rd edition, 1995, page 71)

NEWSPAPER VIA RADIO FACSIMILE

From Chap and Andrea Godbe

The idea of sending newspapers et cetera through radio has been used for many years for more than newspapers; it's widely used even today for weather broadcasts at sea (where I pick them up) and still is used for some older newspapers such as North Korea's happy little house organ, which I would be happy to read if I spoke Korean and had a high tolerance for old style Communist rhetoric. I'd put this one in the 'undead' category.

CYCLORAMA

From Stefan Jones

Home sought for massive depiction of Battle of Gettysburg

Rolled up and tucked away in a warehouse in North Carolina is an artistic gem, big as a football field, depicting the glory and carnage of the Civil War's pivotal battle. State Sen. Ham Horton, a Civil War history buff, is leading a campaign to find a home for what he says is the original Gettysburg cyclorama, predating the one displayed at the southern Pennsylvania battlefield.

It also may be one of the largest oil paintings in the world. The 376-by-22-foot panoramic painting would require a cylindrical-shape building about 150 feet wide to be properly displayed.

Horton said the cyclorama was painted by 16 people between 1880 and 1882 working under the direction of Paul Philippoteaux. Philippoteaux visited the battlefield and interviewed soldiers who fought there so that he could accurately depict the battle, Horton said.

The same painter in 1884 completed the 360-foot-long work displayed in the Cyclorama Building at the battlefield. The three-day Battle of Gettysburg in July 1863 was a bloody defeat for Southern troops who had invaded the North. Coinciding with the Union victory at Vicksburg, Miss., the battle marked the South's last major offensive of the war, which ended in April 1865.

The warehoused cyclorama was displayed in Chicago and

other cities decades ago, but had been in storage for years when Joe King, a Winston-Salem artist, brought it to the city in 1964. When King died in 1996, he left it to Wake Forest University

Source: Associated Press, 1999

TELAUTOGRAPH

For a a long time Telautograph had the handwriter messaging market to itself. In the late 50's however Comptometer introduced the Electrowriter which offered a compact system, especially a transceiver (transmit/receive in one box), which directly challenged Telautograph's cumbersome large units.

Telautograph came back with a two piece unit using liquid ink (Model DE). Later Telautograph introduced a ball point system, allowing duplicate copies at the receive end which Electrowriter with its liquid ink could not match. However the two systems continued to compete fiercely in the market place and also in recruiting each others personnel.

The primary market for both was hospitals and clinics. The ability to simultaneously inform multi departments of discharges, diet changes, and patient "expirations" made the units a sine qua non for all hospitals with over 300 beds.

The Air Force used the unit for weather dissemination to squadrons (weather symbols not available on keyboards). Security systems in prisons when visitors could not be verbally announced.

Parking garages to retrieve automobliles was another lucrative market.

Hotels of course was the basic applications (Housekeeping to front desk and back to advise of "ready" rooms) which really gave handwriters their impetus in

the early 1900's continuing until well into the 1980's.

Most of the units for both companies were rented, thus creating a substantial cash flow especially since the units were on long term automatically renewing leases. Eventually Electowriter (later known as Info Link) was purchased by a lone individual who milked the revenue base until it dissapeared.

Telautograph continued with variations of its units which could actually send messages on the telehone lines, but that application never really took off. The installed base of Telautograph units eventually dwindled to nothing, but if you were to talk to an old time Head of Housekeeping in major hotels, you would get a nostalgic sigh expressing a yearning for the units' superiority to the computer.. Telautograph's history in the facsmile market is another fascinating bit of history.

Source: Personal experience. The author was an employee of Telautograph from 1967 to 1983, when then were sold to Danka.

CASH CARRIERS (INTRA-BUILDING)

From Stephen Herbert

“Cash carriers”, these are still talked of fondly by an older generation in Britain, (were used at least until 1940). Cash inside small cylinders (not cars, exactly) suspended by screw tops was whisked along wires to a central cashier, who sent the change back by the same route. I suppose this was so that, of the many attendants in a large store, only a very few were given the responsibility of dealing with cash. Saved on not having numerous cash registers around as well, I suppose. Can occasionally be seen in action in old British movies.

[Bruce Sterling remarks: I also received a number of helpful comments referring to the Marx Brothers film “The Big Store” as a film that displays a cash carrier in action. So far, we would appear to have no less than five cash carriers: the Brown system (whatever that may have been), the “light aerial railway,” the cotton-cord conveyor belt, the British wire-and-cylinder system, and a weird pneumatic variant that blew paper around without a container. Not to mention that Marx Brothers device. It seems clear to me now that there was an entire class of mechanical transfer systems, perhaps best classified as “private mail systems?”, that were once used to convey cash, receipts, and other business documents. I eagerly await the discovery and documention of yet more dead “cash carriers.”]

CASH CARRIERS (INTRA-BUILDING)

From Rick Inzero

I've seen one. there was one in operation as late as 1996 in a store in Schenectady, NY. (I don't know if it was a "Brown's Cash Carrier.")

There was an ancient hardware store named "Wallace Armer" on Erie Blvd. in Schenectady. They were in business I presume since the 1800s, along what was then the Erie Canal. Until 1996, when they went bankrupt, they were still using such a cash carrier. It was an overhead cord-and-pulley system with an endless loop of cotton cord that traversed a route around the entire store, going to each check-out area (there were maybe five of them), and then up to a "crows nest"/office in the upper back corner of the store.

The checker would write up your items, take your cash, fold it up, and put it inside a small shiny rectangular metal box, I'm guessing from memory, approximately 2.5"x4"x1.5" in size.

The checker would also flip something on the box, like metal flaps (a code of some sort, I presume), that uniquely identified the "address"/location of the office. Then the checker would reach up, and hook the box onto a line-mounted metal attachment. In a second, the ever-moving endless cotton cord would pick up the cashbox, whisk it off, and it would zoom around the store overhead (maybe ten feet off the ground), bypassing all the other "stops" along the route, and go up to the cashier in the crows-nest

office.

The cashier would make change, write “paid” on your bill, stick it all back in the box, and attach the box back to the moving cord. The box would zoom around the store, again avoiding all the other possible stops, and like magic, derail off the cord at the correct check-out. This conveyor system had a perpetual distinctive soft clickey-clack sound, since the cord had little metal hooks or grabbers on it every few feet (I never knew exactly what caused the sound, as I never saw it idle).

There was a looped black metal wire-frame cage at each sales area that I suspect was somehow “hard coded” with the address. When derailed, the cashbox would zoom off the cord, and onto the metal wire frame. The cashier would reach up, take down the box, open it, and give you your change and receipt. I used to love going to that store as a kid, just to see them use this device.

SEEBURG 1000 BACKGROUND MUSIC SYSTEM

From David Forbes

Back in the late 1950s, the jukebox manufacturer Seeburg produced a background music system for offices and retail establishments to provide some competition for Muzak.

They invented a new vinyl record format and player to allow 40 hours of music to be played endlessly over the office PA system with no attention from the staff. The systems were installed by jukebox operators all over the country (and presumably the civilized world).

A new set of records came out every 3 months, so that the hapless listeners wouldn't have to murder anyone from hearing the same cheery song too many times.

The records were owned by Seeburg and presumably destroyed after being returned to the factory (subject to a $1 fee per disk), so they are not exactly easy to find.

The initial player made by Seeburg looks like a microwave oven, complete with window. Instead of the food rotating slowly on the turntable, however, is a stack of twenty-five 9-inch microgroove records revolving at a leisurely 16.66 RPM. The player plays both sides of each record in the stack with a double-sided tonearm, then lifts the stack of records and starts over.

The later version that I have, the BMC-1, is in a boring sheet-metal box with no window. Naturally, Seeburg had

to provide a source of records as well as the player. They created a company called Seeburg Music Library Inc., whose purpose was to provide recordings of the sort that would inspire workers to work harder and happier.

Vocals are not present, but Top 40 hits and old standards are. Even the mellowest of mellow hits was re-recorded to a state of syrupy sweetness. I have tried to locate the Seeburg company.

They seem to have been bought by Williams, the pinball and video game maker. No trace remains. The system is mentioned in Joesph Lanza's wonderful book Elevator Music.

Source: Personal Experience

DEL MAR CARDIOCORDER

From Trevor Blake

[Trevor Blake notes: Recently I have been diagnosed with ‘tachycardia’ - for no particular reason, my heart begins to beat very fast... A surgical remedy is available and I hope to have it within the next few months — wish me luck. But for now, please allow me to share the high point of my experience: wearing the Del Mar CardioCorder, Model 459. Part of my diagnosis included wearing a heart monitoring device that is an honest to goodness dead media. This description of the Del Mar CardioCorder is based on personal observations, Web research and conversations with the fellow who put it on me]

The Del Mar CardioCorder Model 459 is the size of a larger, first-generation Walkman. It is a tape recorder, using normal c60 tapes, but on a single side recorded all my heartbeats for 24 hours - so the thing runs slowly! There was a port like the kind computer network cables use that ran to the sticker pads that were patched on me. There was an ‘EVENT’ button and a ‘TEST SOCKET’ (small audio plug size) but I don’t know what they do. It had three channels, but I don’t know what that means either. And LCD display was likewise not instructive to me. I did, however, understand the 9 volt battery that powered it. The manufacturer was “Del Mar Avionics / 1601 Alton Ave. / Irvine CA 92714-4878.” There was no date on this model but the plus-four postal code is a hint. The hospital I was tested at is replacing these cassette-based recorders with digital ones, and even Del Mar isn’t manufacturing

this model any more. A dead media may have saved my life!

Source: Personal Experience

RADIO SHACK TRS-80 MODEL 100

From Tom Jennings

The Model T of Computers

"Watch this," says Rick Hanson. He stands up, holds his laptop in front of him at shoulder level, and let's go. It drops and bangs on the floor of his office, a tidy room in his California home crammed with computers, scanners, printers, fax machines, model-car kits, hot rod posters, videos, and a small, orderly electronics workbench. The computer bounces and clatters to a rest. Hanson picks it up and switches it on. It's ready to go instantly, without warming up.

"If that was a modern laptop," he says, "I just lost $5,000." It is a Radio Shack TRS-80 Model 100, the world's first laptop, from all the way back in 1983,and it looks like an oversize calculator with a keyboard. It came with 32 kilobytes of RAM—about a 1000^{th} as much as its typical counterpart today—a 40-charcter-by-8-line liquid-crystal display, and no disk drive whatever, hard or floppy. Many hand-held calculators are more powerful nowadays, but Rick Hanson is one of several thousand people who still swear by the little machine—and is the founder and head of their informal organization, Club 100.

"The Model 100 is simple and rugged. Newspapermen loved it—and some still do. If an elephant steps on it, it still works. It runs on four AA batteries. It's plain text is compatible with everything, and it has a built-in modem, so you can file from anywhere. It has been on space

shuttles, on U2 spy planes, on oil rigs." Hanson, 49, is a professional website designer, and he actually writes some of the html for his clients on his Model 100 while sitting at the counter of Ann's Sunshine Cafe, near his home in Pleasant Hill, California.

"The genius behind this machine," he says, "was none other than Bill Gates. The software for it was the last code Gates ever personally wrote himself. He was so far ahead of everybody, even then, that he was inventing the laptop when the personal computer was still a crazy idea. He even gave it a port for connecting to barcode scanners, for use in manufacturing. That's how far ahead of the curve he was.

"Gates took it to Radio Shack, and they said, 'Well, we'll make a thousand of them, and if we can't sell them, we'll just find some use for them.' But at about $1,000 apiece, it was instantly a big hit. I fell in love with it right away.

"I went to Homebrew, the original computer club, in 1971, after I came out of the service. In 1979, when I was online, I realized that people who are online always go snobbish. You had to be on CompuServe to be part of the Model 100 community, so I started Club 100 as an outfit that gave support by catalog, hone, mail and bulletin board." In 1986, the Model 100 was replaced by the 102, which was only superficially different, and a couple of years later a Model 200 came out. By 1989 they wee discontinued—ancient history. Today the remaining users of the Model 100 may number in the tens of thousands. Hanson's Club 100 has a Model 100 website

where you can buy and sell the machines (they go for up to $250), order peripherals, and download free software, and it gets about 1,500 visits a day. Its address is [2015 update: http://www.club100.org/]

“Newspapermen are still the core users,” he says. He points to a couple of 100s he has cleaned up and refurbished so they look new.

“This one here I’m fixing up for a reporter in San Diego. This one’s for a medical student, to take notes in the library. They like it because you just turn it on and start writing. Press one key to save what you’ve written. Press three or four to modem to somewhere. For writing and saving and sending, it cannot be beat.”

“The numbers of users is dwindling, but recently the Model 100 has found a second life. Brendan Murphy, a New York financial journalist has founded an outfit called Computers for Africa, dedicated to getting reporters to donate the Model 100s in their attics—typically the first computers they owned—to send to journalists in Mali and Senegal who write their dispatches by longhand and send them in by putting them on a bus. How long will the Model 100 hold out in the United States? “The secret is that technology changes, but people haven’t advanced,” Hanson says.

“This is the Model T of computers. Model T’s last a long time. For me, I can’t ever see getting rid of it.”

OLD HARD DRIVES

From Richard Kadrey

[Richard Kadrey notes: Does dead media has consequences in the real world? Ask yourself this: how much information about you is stored on old, discarded computers being sold off for parts, or simply discarded?]

MCCARTNEY'S BANK RECORDS FOUND ON DISCARDED COMPUTER

An obsolete computer, sold by a London bank, contained 108 files containing private information about the movement of money in Paul McCartney's bank accounts, the London Daily Express reported Tuesday. An expert hired by the newspaper said that it was "embarrassingly easy" to pull the data off the hard drive and that there had been no attempt to delete it. The Express said that similar security breaches have occurred on "millions of computers" that have been discarded without the hard disks being erased.

PRE-DIGITAL CROWDSOURCING

From Philip Downey

“The Post Office told rural mailmen to gather the names and addresses of all those farmers along their routes who wanted to sell their produce by mail. Those lists were given to city mailmen, who delivered them along their routes, so interested customers could get in contact with interested farmers directly.

“Because customers wanted to know what kind of produce each farmer had to sell, local postmasters began including merchandise information on their lists, essentially creating a farm-produce mail-order catalogue.

“A California merchant named David Lubin proposed a scheme whereby a farmer would pick up colored cards from the post office—white for eggs, pink for chickens, yellow for butter—mark each card with his prices, and mail the cards back. If he had three chickens that week for a dollar each, he would mail three pink cards to the post office.

“There they would be put in a pigeonhole with all the other pink cards. Customers could come by and comparison shop, pick out the cards they liked, write their address on these cards, and have the postal clerk mail them back to the farmer. It was a pre-digital eBay. The scheme was adopted in and around Sacramento, and Congress appropriated ten thousand dollars to try a similar version of it on a large scale.

“At about the same time, an assistant Postmaster General,

James Blakslee, had the bright idea of putting together a fleet of parcel-post trucks, which would pick up farm produce from designated spots along the main roads and ship it directly to town. Blakslee laid out four thousand miles of produce routes around the country, to be covered by fifteen hundred parcel-post trucks.

“In 1918, in the system’s inaugural run, four thousand day-old chicks, two hundred pounds of honey, five hundred pounds of smoked sausage, five hundred pounds of butter, and eighteen thousand eggs were carried from Lancaster, Pennsylvania, to New York City, all for $31.60 in postage. New York’s Secretary of State called it ‘an epoch in the history and the world.’

“Only it wasn’t. The Post Office had devised a wonderful way of communicating between farmer and customer. But there is more to a revolution than communication, and with a few years the farm-to-table movement, which started out with such high hopes, was dead.

‘The problem was that Blakslee’s trucks began to break down, which meant that the food onboard spoiled. Eggs proved hard to package, and so they often arrived damaged. Butter went rancid. In the winter of 1919-20, Blakslee collected a huge number of orders for potatoes, but, as Wayne Fuller writes in his wonderful history of the era, ‘RFD: The Changing Face of Rural America,’ the potatoes that year ‘were scarce, and good ones even scarcer, and when Blakslee’s men were able to buy them and attempted delivery, nothing but trouble followed.

‘Some of the potatoes were spoiled to begin with; some

froze in transit; prices varied, deliveries went astray, and customers complained loudly enough for Congress to hear. One harried official wrote Blakslee that he could "Fill the mails with complaints from people who have ordered potatoes from October to December.".Some people had been waiting over four months, either to have the potatoes delivered or their money refunded.'"

Source: The New Yorker, Dec 6, 1999. pg. 115. "Clicks and Mortar" by Malcolm Gladwell.

CARMONTELLE'S TRANSPARENCY

From George 'Jake' Tringali

"Carmontelle's Transparency In 1996, the Museum aquired a monumental transparency created by Louis Carrogis de Carmontelle. This work, Figures Walking in a Parkland, will be displayed at the Museum for the first time in a new exhibition, Carmontelle's Transparency: An 18th-Century Motion Picture. Among the forerunners of the modern motion picture, the transparency was a pictorial narrative that suggested animation when rolled through the aperture of a hand-cranked optical viewing box. Illuminated with jewel-like watercolors, the Getty's 12-foot transparency shows people strolling at leisure through a park rich in monuments, temples, and amusements. A viewing box like those used by Carmontelle also will be shown, as well as other drawings of the period."

Source: This information is from the J. Paul Getty Museum monthly flyer, 2000

THE ECHO CANNONADE OF 1825

From Candi Strecker

A cannon-fire relay communicates and celebrates the opening of the Erie Canal.

"In 1825, the first boat bound for New York City left Lake Erie and entered the newly completed Erie Canal. Observers at the point where the canal met the lake saw

the boat and fired a cannon.

“Some miles to the east, people heard the shot and fired a cannon there; when sound of that shot reached a cannon farther east, someone fired that one; and so on, in a sequence of hundreds of cannon placed at intervals along the canal route, down the Mohawk River, and down the Hudson River all the way to New York City.

“At the final shot, an hour and twenty minutes after the first, the sequence was reversed, from the city all the way back to the lake. The Echo Cannonade (as people called it) announced the opening of the canal and began a big celebration in the city.”

Source: Ian Frazier’s “Family,” 1994

UNDEAD MEDIA - THE EDISON STOCK TICKER

From Bill Burns

The Stock Ticker Company is reproducing the 1870s era Universal Stock Ticker, with an Internet connection to print current stock quotes. From their introduction: “The Heartbeat of Wall Street Returns Old meets new in one of the most ingenious ideas to celebrate our financial and innovative heritage—a handcrafted, working, museum-quality reproduction of the original Universal Stock Ticker. The Universal connects to the Internet to print your live stock quotes, and personal messages.”

Source: stocktickercompany.com

THE TOY ARTIST DRAWING AUTOMATON

From Dan Howland

[Dan Howland remarks: In a nutshell, this toy was capable of storing simple line drawings as replacable dual cams. The engraving shows a seated doll in a clown suit, with his right arm holding a pencil lead to an easel. Behind him, on the base, is a crank.]
The Artist still exists, along with the Scribe and the Musician. These are three mechanical figures built by Pierre Jaquet-Droz, around 1772. They’re in the Neuchatel Historical Museum in Switzerland, and they

still work. They're operated once a month.
I've seen the Artist and the Musician working there; the Scribe was dismantled for maintenance. All are cam-driven. The Scribe has the most sophisticated mechanism, because it is programmable to write different texts.

There's a big stack of cams, with one stack level for each character, arranged to slide like an idler shaft in a gearbox. A wheel with slots for character plug-in blocks controls the shifting. The Scribe is thus programmed by putting in the right character blocks for the desired message.

They're beautiful bits of clockwork. The works actually fit inside the doll figures, which are about 2' high.

Source: Mark Rosheim's "Robot Evolution", ISBN 0-471-02622-0

MECHANICAL MEMORIES (ROTATING DISK, MOVABLE PINS)

From John Nagle

Built by A.D. Booth in post-WWII, mechanical memory "...consisted of a series of rotating disks, each of which contained a tiny pin which was allowed to slide back and forth through the hole, and as the disk rotated, a solenoid was used to push the pins so that they protruded from one side of the disk or the other." Mechanisms like that date back much further than post-WWII. They were a common storage mechanism in jukeboxes back to the 1920s. T

he oldest one I know of is a destination-sign controller in the London Transport Museum, London. This device consists of a 4-bit rotary encoder, a 4 bit x 10 shift register, and a 1 out of 16 decoder. But it's all 19th century technology. The shift register is a drum with pins, and it's huge; the thing looks like a drive system for a tower clock, standing about three feet high and powered by a weight, cable, and crank, just like a big clock. As of 1985, it was still working.

Source: Personal observation

THE EPHEMERAL NATURE OF MAGNETIC DOMAINS ON ROTATING PLATTERS

From John Spragens

The cold, cold ground may preserve historical data more effectively than computers, according to a BBC report. The Beeb cites a University of York study that looked at records of scores of archeological digs between 1991 and 1996 -- stored in computer databases.

It will come as no surprise to necronauts that the data had deteriorated much faster than the archeological artifacts had while they were underground. The list of problems ranged from corrupted floppies to obsolete physical media formats and database files that can't be read by current programs.

"Kept on standalone computers or on disks in a shoe box, data from sites will be of less use to tomorrow's archaeologists than if the site had not been excavated in the first place," the BBC says.

For some reason, the reporter has greater faith in the Net: "Servers can go down or will need upgrading, but in theory, information on the internet will last forever." Well, in theory...

PRE-CINEMA MOVING PICTURES (ELECTROTACHYSCOPE)

From Didier Volckaert

The Elektrischer Schnellseher (also called Electrotachyscope) was build by Ottomar Anschtz (Germany) in 1887.

The machine powered (by electricity) a circle containing 24 photograps printed on glass. The images were made using the Muybridge technique. This is important because therefor the 24 images were truly a photographic mathematical fragmentation of a reality in motion. (Most pictures used by other devices at that time were just actors posing before the camera and 'faking' motion. A 'filmcamera' - a device that could take at least 16 images a second - did not excist till 1892 (Le Prince).

The unique matter of this device is that the image was not projected onto a screen but instead the viewer looked to the glass pictures itself. These were lit from behind for a fraction of a second by a Gleisser-bulb every time one of the glass plates passed the lamp. Using this technique Anschltz avoided the main problem of all other devices, the fact that the pictures were always moving and therefor could not provide a sharp image.

THE NAZI VOLKSEMPFANGER RADIO

From Bruce Sterling

“The industrial rationalization that took place under the Third Reich embraced everyday objects, as well as architecture, art and armaments.

“The National Socialist regime used form in a very precise way and applied its aesthetic ideas to all areas of production, using them as instruments of political and cultural propaganda. The radio receiver, like other products, was closely studied to see how it could best fulfil its role at the heart of totalitarian government: namely to infiltrate every house in the Reich.

“Walter Maria Kersting was one of the pioneers of German industrial design. In The Living Form, published in 1932, he described how the task of the designer was to create ‘simple and cheap objects, which must not appear to be more than they are. and which can be bought anywhere.’ Their mechanisms must be obvious so that they can be understood by people ‘who do not have a technical mind,’ and should be designed such that they are ‘foolproof in the event of mistreatment.’

“Kersting didn’t realize how pertinent his comments were: in 1928 he designed a radio receiver several hundred thousand of which had been manufactured within five years. His original design only underwent one modification before mass production started: the addition of the swastika on the front.

“The radio was designed according to Kersting’s

functionalist principles, which led to what was at the time an innovatory fusing of concept, form and materials. An ancestor of today's 'black box' hi-fi designs, its cubic cabinet, moulded from plastic, incorporated the radio's components. The buttons had been so well thought out in the initial design that the same configuration was adapted for the manufactured version.

The set was 'foolproof' to use and Hitler was careful to ensure that its range was limited to Nazi frequencies, fearing that English, French, and Bolshevik transmissions would be picked up and interfere with his political broadcasts."

[Bruce Sterling remarks: This is the Volksempfanger's "dead media" aspect: the Volksempfanger was a medium specifically designed to be "all-Nazi, all the time."]

"What was, during 15 years of Nazi rule, a formidable Nazi propaganda device, was transformed, at the end of the war, into a terrible trap for the Germans, who were unaware of the advance of allied troops through their already devastated territory.

"After the Second World War, Walter Maria Kersing denied that he had designed his radio receiver for political ends, despite the fact that this standard and very cheap product (it was subsidized by the government) had been of enormous service to the Nazi regime for propaganda purposes.

"The idea of mass producing radio receivers in which all foreign transmissions were censored was subsequently taken up by East European countries. For 25 years in

Czechoslovakia the Telsa company manufactured radios whose only frequency spread communist propaganda and whose form was reminiscent of the Volsempfanger.”

Source: INDUSTRIAL DESIGN, REFLECTIONS OF A CENTURY, edited by Jocelyn de Noblet, Director, Centre de Recherche sur la Culture Technique Flammarion/APCI, 1993 ISBN 2-08013-539-2 page 168, written by Eric Mezel

CLAY TOKENS

From Matt Norris

The aforementioned Professor Denise Schmandt-Besserat teaches art history at UT Austin. Her book details her theory regarding the origin of Cuneiform, the earliest known form of writing.

To summarize (very loosely: I was a poor student); about five or six thousand years ago people (in Mesopotamia) were begining to make the switch from nomadic hunter-gatherers to permanently settled settled cultivators.

The first manmade “permanent” structures were not human shelters, but rather storage units for things like grain and oil. In excavating these earliest settlements, archeologists continually found small, simple, clay artifacts called, for lack of any idea of there origin or use, tokens.

These artifacts came in numerous different shapes: balls, cones, rods, et al. They are roughly formed and bear the signs of being fired in an open fire rather then a kiln. Prof. DSB’s theory is that these items were used to signify business transactions; the comunal nature of the storage facility demanded an accounting system. In theoretical practice, one would show up at a storage facility, deposit one’s stuff, and recieve in exchange clay tokens which signified one’s stuff and could be used at a later time to redeem one’s stuff.

At some point a clever person in need of a means of insuring that a transaction conducted by proxy could not

be tampered with came up with the idea of sealing clay tokens up in a clay ball, to be busted open upon delivery (these have been recovered from sites also).

The only drawback; you can't tell what's inside until it's broke. In response to this some other clever person came up the idea of incising marks on the outside of the clay ball to signify what was within. Obviously, this rendered the original tokens inside redundant and they quickly fell to disuse.

Source: The Origin of Writing by Denise Schmandt-Besserat

PAUL ALLEN REVIVES CINERAMA

From Richard Kadrey

Microsoft co-founder revives 1950s movie technology

Think of it as virtual reality, 1950s-style. Seattle billionaire Paul Allen, who helped found software giant Microsoft Corp., has put his riches to work reviving a nearly extinct technology—the Cinerama movie. Allen, through his Vulcan Northwest holding company, has enlisted a team of Cinerama buffs to help retrofit his Cinerama theater in downtown Seattle to once again accommodate the spectacular ultra-wide format it was originally meant to show.

“The hallmark of true Cinerama is a 96-foot-long curved screen that is 50 percent bigger than screens used today. Three giant projectors cast three images side-by-side. When the curtain goes up at the theater Friday, it will be the world’s only Cinerama theater capable of actually showing Cinerama movies, which have recently been seen only in a Bradford, England museum.

“People have not seen a Cinerama movie inside a Cinerama theater for some 35 years,” Jeff Graves, Cinerama project manager, told reporters Thursday.

“It’s just a great opportunity to show this fantastic format.” The Cinerama revival is short-lived, however. Working with the Seattle Film Festival, Allen’s theater is showing movies Friday only: “This is Cinerama”, the format’s debut flick, and the frontier epic “How the West Was Won”. The Cinerama idea was born in 1939 when

inventor Fred Waller wowed the World's Fair in New York with a rig that used 11 different projectors and a giant, domed screen.

"The U.S. military modified the technology during World War II, using a five-projector system to create combat simulators for aircraft turret gunners. Waller further streamlined the package to three cameras and added a dazzling seven-channel audio system, premiering the first Cinerama movie in 1952. The result set the stage for vast 70mm features, surround sound and the big-screen IMAX system, said Larry Smith, president of the Cinerama Preservation Society.

"When you're going down a canal in Venice (in a Cinerama film), you feel like you can reach out and touch the walls. In 'How the West Was Won', with the horses galloping and kicking up dust, you want to cough," Smith said.

"It's a virtual reality system." Only seven films were ever made because of the difficulty and cost of dealing with the cumbersome and tricky equipment.

"The camera weighed a thousand pounds and was very difficult to move around and get shots," Graves said.

"The shots they did get were breathtaking, but it wasn't easy." Although the Seattle theater still boasts its original three projector rooms, Allen's team had plenty of work to do to before the movies could be shown. Workers pieced a giant screen together from nearly 2,000 vertical strips. Laws of geometry and optics mean that a screen made out of a single giant sheet warps the image too much. The

massive projectors with their 34-inch reels were painstakingly restored, with some replacement parts coming from such unlikely places as Lima, Peru.

“We took every screw out, every bolt out, repainted and did a fantastic job. So we basically have brand-new projectors, brand-new from 1952,” Graves said. Very few of the films survive, and the Seattle copies were pieced together from scraps by John Harvey, a 63-year-old enthusiast who kept Cinerama alive in the U.S. by screening the movies in his Dayton, Ohio, home for years. The project has stirred excitement in film circles. Daryl Macdonald, director of the Seattle Film Festival, said fans from as far away as Australia were flying in for Friday’s shows.

“This is probably the most exciting thing we’ve ever been able to be involved in in our 26 years,” Macdonald said. In the end, the project hope to persuade the powers-that-be in Hollywood to take up the Cinerama cause, Graves said, so latergenerations accustomed to tiny multiplex screens can experience the three-screen wonder of Cinerama.

Source: Reuters

RUNIC TALLY STICKS

From Jonathan S Farley

Runic Tally Sticks were sometimes plain, sometimes elaborately carved sticks of wood. On these sticks were engraved Runes. Generally, they are considered to be merchant's labels which were then tied or stuck to goods at market in order to identify the seller, and subsequently the purchaser of the item.

Most historians dismiss these items at this point. It is likely however, that some of these sticks were in fact a great deal more than merely merchant's labels. It is possible that some were simple messages or letters, and records of stored information covering anything from memorable events to tax receipts.

The word "Rune" itself derives from the Anglo-Saxon "Runa" meaning 'mystery', or 'secret'. The origin of the word book, is disputed, but is generally thought to derive from the Anglo-Saxon Root "bc", or literally beech tree.

Most historians believe that sticks of beech were used to write upon with a pen or brush, some believe that the beech bark was stripped from the tree and used as a kind of paper.

If the etymology of the word "Write" is examined however, the Anglo-Saxon source word "Writan" in its earliest use means 'to scratch' and only later on does it come to mean writing as with a pen. It is no surprise that the majority of these tally sticks are made of beech, and that the Runes or secrets were scratched or "Writan"

upon them. These sticks may therefore be the etymological precursor of the present day book.

Source: Diringer, David; The Book Before Printing; Dover Reprint 1982 Page, R I; Reading the past, Runes; University of California Press 1987 Elliott, R. W. V.; Runes; Manchester University Press; 1987

COLOR MOVIES FROM BLACK-AND-WHITE FILM: THOMASCOLOR

From Howard Fink

The caption on the photo says it all: Richard Thomas, the inventor, demonstrates his color lens mounted on a standard 35-mm. camera. By means of this lens, both movies and stills taken with ordinary film are reproduced in full color. Thomas used a set of lenses, “optical systems” to fold the path of the light, and four colored filters to produce four images in each frame of the film. He used red, green, blue, and violet filters.

This produced four channels of gray images on panchromatic film. Projecting the film through a similar lens created a full-color image. The registration was exact because his lens system was built with an accuracy of .0001.” Besides full-color movies available only an hour after exposure, (because of the ease in developing black-and-white film) Thomas proposed using different filters in projection to analyse military photos.

“By changing filter combinations, certain colors may be held back and others accentuated, thus enabling the viewer to spot enemy installations that are invisible to the eye and to other color processes.”

Source Popular Science, August 1944, pp196-199

TOTENROTEL, THE MEDIEVAL WIKIPEDIA

From Dave Bruckmayr

Totenrotel: The word “Rotel” stems from the Latin and means “Roll”.

Originally it was understood as every wisdom printed on a pergament scroll. The special form “Totenrotel” developed out of a popular contract of praying assistance between monasteries of a holy order.

The most important news to medieval monks was news about the death of a brother. This kind of news was distributed on a special scroll called “Totenrotel”. Whenever a monk passed away his name was registered on the scroll to let other monasteries know for whom to pray.

The scroll was taped to a round wooden stick and carried by a “Rotelbote” from monastery to monastery. The scrolls could be rather long, some have been as long as ten meters.

The arrival of a “Rotelbote” was always a very special moment for the monks. It meant news, suspense and a pleasant change of the daily routine. The messenger was happily given food, wine and a place to sleep.

The ritual: After everybody was set at the big table, the abbot of the monastery would invite the “Rotelbote” to let them know who had died at the brotherly monasteries and whose souls needed their praying assistence.

The messenger would stand up, silence the audience, open the pergament scroll and start reading the names of the dead. He would tell details about their character and their life and death as monks. Everytime he was finished with a dead brother the monks would start a collective prayer for the soul of the passed away. This ritual could go on for quite a while depending on the number of dead monks on the “Totenrotel”.

When all the naming and praying was done, the messenger closed the scroll and gave it to the abbot. The abbot would then register his own dead monks on the pergament scroll and write down name and arrival date of the “Rotelbote”. Finally, on one of the following days the messenger would move on to the next monastery and there the ritual was repeated.

“Rotelboten” were not members of an holy order, they were secular people. No monk could be considered to work as a messenger beause their holy orders forced them to live secluded from the unholy” world and never to leave the monastery.

“Rotelboten” went on foot, by horse or coach.

Source: “The Medieval Totenrotel-Messenger, the Scrolling of a Webpage and the Proposal of the HyperScroll-Messenger” / Paper by Dave Bruckmayr / Prepared for the Popular Culture Association Conference 2000, New Orleans, USA, For more about “Totenroteln” see: “Totenroteln, Rotelboten, Rotelbilder des Benediktinerklosters zum heiligen Kreuz in Scheyern” Konrektor i. R. Werner Vitzthum, Singenbach Archiv fr Postgeschichte in Bayern, Deutschland

NON-HTML HYPERTEXT AUTHORING SYSTEMS, CIRCA 1993

From Jennifer Godwin

Written in 1993, this page reviews of "commercially available software" for authoring hypertext.

The systems include:

DOS: Dart, Folio VIEWS, HyperPad, HyperShell, HyperTies, HyperWriter!, Knowledge Pro, LinkWay, Orpheus

Windows: FrameMaker, Guide, Knowledge Pro, PLUS, SmarText, ToolBook, Windows Help Compiler

Apple: FrameMaker, Guide, HyperCard, PLUS, Storyspace

Source: http://jefferson.village.virginia.edu/elab/hfl0140.html [2015 note: This web page is still alive]

NASA TECHNOLOGY COULD SAVE VANISHING NATIVE AMERICAN LANGUAGES

From Paul Nasenbeny

NASA TECHNOLOGY COULD SAVE VANISHING NATIVE AMERICAN LANGUAGES

The most up-to-the-minute language-instruction technology, used in the space program, may come to the rescue of some venerable old languages and cultures. Native American educators are looking at technology from NASA's Johnson Space Center, Houston, TX, in their efforts to preserve and teach their peoples' languages.

Johnson's Language Education Center, one of the largest and most advanced of its kind, teaches astronauts, Russian cosmonauts and others English, Russian and Japanese. Vernon Finley and Johnny Arlee, language instructors at Salish Kootenai College on the Flathead Indian Reservation at Pablo, in northwestern Montana, recently visited the language center. Arlee teaches the Salish Cultural Leadership Program at the college. The program's goal is to pass cultural leadership on to future generations by developing leaders to replace the elders.

"Most who still speak the Salish language are elders," said Arlee, who at 59 is among the youngest of the fewer than 100 who still speak their native Salish language. Finley, 46, teaches Kootenai.

"While there have been language preservation efforts,

they have not produced many fluent speakers," said Finley.

"Unfortunately, the Kootenai are even fewer in number than the Salish, with fewer elders to speak and teach the language." Both cultures view language fluency as a vital part of the development of future leaders. The teachers' visit to Johnson verified that they are moving in the right direction. Although they are concerned that they must produce many of their own materials, the center provides models that they can use in developing their tools.

"I believe the two visitors have seen technology and methodology that will help them teach and preserve their languages. It was a very productive visit, " said Tony Vanchu, director of the Language Education Center.

Source: NASA press release

PRIMORDIAL INTERACTIVE TELEVISION (OR WINKY-DINK REDUX)

From Julian Dibbell

Long-time list subscribers may remember the early experiment in interactive television called Winky-Dink and You. Many months after that was posted, I was contacted by the daughter of one of the show's creators, who put me in touch with her father. My interview with him, along with a patch or two of my original note to this list, formed the basis of the following essay.

WINKY-DINK IN THE WASTELAND

THERE'S A RUMOR going around—you may have heard it—that television as we know it is soon to be swept up and utterly transfigured by some digital-age thing they're calling interactivity. Pay it no mind. Television has always been interactive, and if you doubt that, just consider the list of the "Top 2000 Best Things About Television" compiled not long ago by the good people at cable's TVLand channel.

The list meticulously ranks shows, characters, commercials, genres, catch phrases, theme songs, clich√∞s, news events, and other televisual phenomena, barely distinguishing between world-historic moments like the fall of the Berlin Wall (the 1,409th best thing) and such crumbs of nostalgia as the "little dot of light when turning off old sets" (1,289th). You may argue with the rankings—did the top-rated series, for instance, have to be I Love Lucy? Was Andy Warhol's guest appearance on

The Love Boat (950th) really a lesser thing than the phrase "I'd like to buy a vowel" (543rd)? But in its general approach the list gets its subject dead right: This is definitively how we make sense of TV. Not by attending to the coherence of the individual work, as with novels or paintings or films, but by dipping into the flow—pulling out some floating bauble now and then, some fragment that catches our eye but doesn't quite signify until we set it amid the bricolage of other fragments we've assembled in our heart's vitrine. TV would mean nothing without the active, organizing affections of its viewers; we shape it at least as much as it shapes us.

Interaction, in other words, lies at the heart of television as a cultural form—and always has. And if you're still not convinced, then I'll ask you to consider one last aspect of the TVLand Top 2000, an item that can be found just three notches above Tyne Daly and eleven below the phrase "Book ' em Danno." I refer, of course, to the 1,388th best thing about television: the classic, underrecognized children's program Winky-Dink and You.

FIRST BROADCAST ON CBS from 1953 to 1957, and later revived for a season or two of syndication in 1969, the highly rated Winky-Dink was the earliest experiment in explicitly interactive television—and given the subsequent competition, from Warner Brothers' mid-seventies QUBE flop to the still-tentative WebTV of today, it remains by far the most successful.

Its success is all the more impressive for the fact that the enabling technology was approximately as sophisticated

as a stone hand ax. Packaged as a "Winky-Dink Magic Television Kit" and sold through the mail at fifty cents a pop (later also marketed through toy stores in a deluxe $2.50 edition), the core elements were a transparent sheet of blue-green plastic, a box of crayons, and a rag. The plastic sheet clung to the television screen, allowing viewers to draw directly on the TV image, erasing with the cloth. And draw they did. Winky-Dink, an adventurous cartoon boy with a dog named Woofer, invariably got himself into jams involving pirates, floods, sharks, and other mortal dangers, and invariably the only way out was for the boys and girls at home to draw him a ladder, or a rocket ship, or a bridge across some gaping chasm. Typically, the show climaxed with a secret message, a block-letter word transmitted in two parts—half the strokes first (just the diagonals, say), and then the other half—so that only viewers who had traced both sets of lines in crayon would know what the secret was.

"That killed the little bastards," recalls Edwin Brit Wyckoff, chuckling. Together with the late Harry W. Prichett, his mentor and longtime business partner, Wyckoff created Winky-Dink, and he would like the record to show it, since he has often seen his invention carelessly credited to the show's host and producer, Jack Barry. Barry, of course, went on to better-known, though hardly better, things: as host-producer of the fifties game show Twenty-One, he was at the heart of the contestant-coaching scandal later dramatized in the movie Quiz Show. Postscandal, Barry spent several years in the exile of Canadian television, returning to something like

redemption later in life with the long-running Joker's Wild. But he probably rued till his death the day CBS canceled the original Winky-Dink, his first and finest hour in the mass-cultural spotlight.

For Wyckoff, though, the dream never died, and he markets it still. Five years ago, he and Prichett licensed the rights to a Nashville production company, planning to bring Winky back to broadcast TV and into the multimedia age, with CD-ROMs, a Web site, and streaming video in the works. So far, all that's really come of the deal is a half-hour pilot, available for $9.99 on videocassette—with a Magic Television Kit—from online toy suppliers Bennysmart. Harry Prichett was still actively involved in the project when he died last February, lauded in his New York Times obituary for the brilliance of Winky-Dink but still shy of the kind of recognition one last revival might have won him.

Wyckoff presses on, however, buoyed in part by the conviction that media culture has at last caught up with his and Prichett's innovation.

"With all immodesty, Winky-Dink was seminal," he says, and in a sense he's right. Where early television in general failed to understand itself as anything but a medium of the masses, Winky-Dink showed from the start that viewers felt a deeply personal connection to the medium, a connection that the right technology could easily exploit. Long before the niche markets of cable brought the phrase "I want my MTV" into the lexicon, and even longer before the rampantly personalizing Internet

littered the media landscape with MyYahoos, MyMP3s, and other such monuments to self-regard, viewers already had the inchoate but deeply held feeling that some little part of the broadcast flow was their own, and Winky-Dink literally gave them a way to get their hands on it.

By latter-day definitions, of course, the show's interactivity was essentially bogus: Some young viewers, for instance, were dismayed to discover that when they failed to draw that rope bridge in time, Winky walked across the chasm anyway. But, for most, the illusion sufficed—and spurred them to a far greater level of activity than the one-click pizza ordering dreamt of in most digital-TV philosophies.

"It was really anti-couch-potato long before the term couch potato," says Wyckoff. With only a few seconds to draw before the action set in—and as little time to erase before the next drawing was called for—Winky adepts moved at a furious, giddy pace: "Come on, draw this! Now erase this! Oh, for gosh sakes, the pirates are coming! Quick! Run up and build a box so they can't see him... It was always a kind of urgency," Wyckoff recalls.

"The way a game is an urgency."

At so fast a clip (and with so young an audience), the drawings were necessarily crude—a stringy squiggle, a simple circle, the outline of a small canister held up by Winky for tracing. But the visual tricks that brought those drawings to life could startle and delight: A simple shift of perspective turned the canister into a rocket ship, a fast-

moving background turned the circle into a cannonball—which in turn morphed into a tennis ball when framed by a racket. Between drawing, watching, and drawing again, the dynamic that resulted was a broadly engaging one.

“You can call it interactive,” says Wyckoff, “but the point is it involves your hands, it involves your little rear end as you wiggle around, it involves your soul, it involves your imagination, and it involves your surprise.”

Above all, he adds, it involved your sense of authorship. Your circle became a cannonball, the cannonball became part of the story, but its identity, Wyckoff explains, remained linked to your own: “Something happened to my cannonball. Not your cannonball—screw your cannonball—my cannonball.” Stripped to its essence, says Wyckoff, this was the defining reaction to the Winky-Dink experience:

“That’s mine.”

PERHAPS THIS INTENSELY PERSONALIZED experience explains why, today, those just joining the growing ranks of Winky nostalgists sometimes seem astonished to discover that the show had any other viewers at all.

“Since no one I have meet [sic] in the last forty years knows who Winky-Dink is, I have begun to think of this memory as more of a dream,” wrote Tom Dollard recently to the classic-television Web site TV Party, having come upon the pages set aside there for Winky-Dink and You.

“I am glad to see that I am not alone.”

Indeed he is not. Messages from at least two dozen other

people are quoted on TV Party's Winky-Dink pages, and second only to memories of getting busted by parents for drawing on the TV screen before the magic kit arrived, the theme that most recurs is the suspicion, in later years, that the show never in fact existed.

"I ask this question," writes Ron Davis from Missouri: "Why do so many of us think we hallucinated the whole 'Winky-Dink' thing? What was it about that show that made it at once vivid and almost too surreal for accurate recollection?"

Doubts about the program's existence are getting harder to entertain, however. Aside from the testimony of ordinary fans like the TV Party reader-respondents, material evidence of the show turns up with increasing regularity in vintage toy stores and on online auction sites. Check out eBay any given week and you'll likely find some half a dozen Winky-Dink items for sale.

According to Ed Wyckoff, the show generated over thirty items of merchandise, including records, coloring books, Little Golden books starring Winky, Winky T-shirts, Winky pillows, Winky masks and costumes, Winky phonographs, and Winky-Dink Secret Laboratories, and most of these have traded hands on eBay at one time or another.

But the staple commodity, of course, is still the Winky-Dink Magic Television Kit itself, as heady a packet of postmodern madeleines as ever emerged from the media marketplace: the crayons, the scruffy cloth eraser, and above all the plastic sheet, whose distinctive acrid-sweet

smell was apparently unforgettable and whose adhesive properties were still somewhat mysterious to an age only recently acquainted with Saran Wrap.

Probably more than anything else, though, what has raised Winky-Dink's profile in recent years is the ascendance of late-boomer celebrities who caught the second incarnation of the program in their youths and now occasionally give it a name check. Rosie O'Donnell, for one, has been known to sing Winky-Dink's theme song on her own program, the 1,019th best thing about television. Bill Gates, too, has deemed it hip to acknowledge his low-tech predecessor in the field of interactive TV. And now the show can even lay claim to a certain ghetto fabulosity, its praises having fallen from the lips of none other than rapper Ice T, author of "Cop Killer" and other street-life serenades:

"I watched cartoons like Winky-Dink where you had to get a special screen to stick on your TV and when Winky-Dink got stuck in a hole, you'd have to draw him a rope," Ice T told an interviewer a couple years back, talking about his L.A. childhood.

"It had a song: 'Winky-Dink and you, Winky-Dink and me, always have a lot of fun together.' Winky-Dink, man! Winky-Dink was some O.G. shit."

THE QUESTION REMAINS, however: Why does Winky-Dink even need celebrity endorsement to confirm its cultural heft? Why, really, has the show not long since ascended into the canon of iconographic Americana, right up there with Marilyn Monroe, the Apollo 11 moonwalk,

and disco shoes?

In one of the Winky-Dink memories gathered on the TV Party site, a man recalls (with what unspoken erotic frisson we can only guess) the spanking he received for drawing on the TV glass with his mother's lipstick; another remembers that one day the secret word kids were asked to trace was the surprisingly arcane sabotage. How is it that such ripe ingredients have escaped the eye of a DeLillo or a Pynchon? How is it that nowhere in postwar fiction do we find a scene in which, sometime in the same year the Rosenbergs were executed, or the same year Joe McCarthy's witch hunts came to a head, a mother comes home to find the word sabotage scrawled blood-red in a stranger's hand across the face of her TV set, itself a strange new addition to the domestic landscape? Ed Wyckoff, it seems, is setting his sights low. Instead of angling to recommercialize his baby as the new-media application it always was, he should be working the crowd at PEN functions, lobbying for Winky's rightful place in the next great American novel.

And frankly, I wish he would. Because having paid my $9.99 for the videotape version, I have seen the commercial future of Winky-Dink, and I'll tell you this much: The future isn't what it used to be.

Admittedly, my expectations may be a bit inflated here. A late boomer myself, I also witnessed the second coming of Winky-Dink in 1969, but unlike many of my young peers (or the college students who, in a brief campus craze of the time, cut classes to Wink out), I possessed neither the

magic kit nor the gumption to play along without it. My apprehension of the game was almost pure fantasy, therefore, and seductive as only pure fantasy can be. The instant I figured out how the "magic" was supposed to work, I was under its spell, yearning to touch the screen and pierce the barrier between the mundane world and the televised one I was already, at the age of six, spending hours of every day in. But after that first viewing I never watched again and did not bug my mother for a kit. I'm not sure why. Perhaps I feared even then that the real game couldn't live up to my dream of it.

In any case, by the time I finally got my hands on an official Winky-Dink kit, three weeks ago, the magic had decidedly faded. I smoothed the plastic sheet onto my TV screen, popped in the video (three five-minute cartoons from the 1969 production, plus some fresh-made studio filler), and after all these years got to draw a cannonball of my own into Winky's world. And what can I tell you? Watching Winky-Dink on videotape in the year 2000 wasn't anything like watching it on broadcast television in 1969.

The problem, I can assure you, isn't that I've outgrown the childish yearnings that first attracted me to the show. Nor is it, as some might argue, that media themselves have outgrown Winky-Dink, rendering it hopelessly crude in comparison to the three decades of evolution in digital video games that followed. There's some truth to the point, but in the end it founders on its assumption that media evolve in a single straight line—that Winky-Dink, that is, was really just a rough draft of Pong and all that

followed. It may look that way in hindsight, but as I peeled the plastic sheet off my screen I realized, finally, that what Winky-Dink had long ago promised me was an exquisite intimacy with something newer technologies in fact come not to build upon but to bury.

By that I mean television itself. And by television I mean, of course, what the good folks at TVLand mean—the sweeping, oceanic flow from which we pick and choose a meaning that is at once uniquely personal and vastly public. Television in this sense is not something you can summon by popping a video in the VCR or clicking a mouse or even surfing through the cablesphere. Its warm, communal glow dissolves into a thing at once colder and cozier when refracted through these newer technologies, all of which have tended toward an ever greater privatization of the viewing experience. Winky-Dink offered a kind of privacy too, to be sure, but it was closer to the privacy of prayer—a solitary communion with something great and universal and anything but solitary itself. And, as I discovered watching Winky-Dink on my VCR, that something doesn't come when new media call. It can't be time-shifted or stored-and-forwarded or tailored to your individual needs in any way. It's simply there when you turn it on, and when you don't turn it on it's still there, immutable, immense. The digital-age thing they're calling interactivity will never touch it, or let you touch it. But Winky-Dink did, once upon a time.

Source: Feed Magazine

UNDEAD MEDIA: THE FRENCH MINITEL SYSTEM

From Julian Dibbell

A Mini Yahoo

There will be an unusual union in Paris this week. Yahoo, the quintessential Web company, will launch a service for customers of Minitel, a national computer system in France, which uses old-fashioned technology that was supposedly made obsolete by the Internet.

Yahoo has not yet announced the service, but it's set to begin quietly operating this week, making Yahoo the first top-tier international portal to create a site for Minitel.

Initially, Yahoo will provide e-mail accounts for people who use Minitel terminals located in homes and offices across France. Later, it plans to introduce other content, such as news and online chats. Yahoo's move is much more than another content deal.

It counters widespread and inaccurate perceptions of Minitel as an antiquated system. Ever since vivid graphics appeared on the Web six years ago, Minitel has been regarded as a technological relic.

Its "dumb terminals" can present information only in text format. That means no charts, no photos and none of the cool graphics that have become mainstays of the Web. But that is only half the story.

Launched in 1982, Minitel was intended to replace phone books and to allow access to information services. It

quickly grew into the world's first electronic marketplace.

Thanks to Minitel, France is the only country in which both executives and farmers have been banking and transacting online for almost 20 years. An estimated 25 million people - nearly half the French population - currently use the 9 million Minitel terminals to buy train tickets, check stock quotes, access news, send e-mail messages or enter chat rooms.

All those activities generated more than $1.8 billion in revenues last year. A key attribute of Minitel is its billing scheme. Users sign in at the various terminals and pay for the time they use the system at rates up to $20 per hour. In most cases, the invoice comes along with a person's phone bill - and France Telecom (NYSE:FTE - news) takes a lofty commission as the collector.

The prevalence of Minitel gives French people a way to conduct their business online and has slowed Internet adoption there. On the other hand, the network has created a high level of online literacy in France, in turn creating opportunities for Internet companies.

Yahoo, for example, generates more revenue from classified advertising on its regular Web site in France than it does in many other countries.

"People here have been familiar with online classifieds for years," says Philippe Guillanton, managing director of Yahoo France. So, why did Yahoo wait until now to create a customized site that is accessible from Minitel terminals? Guillanton says at first the company didn't want to tinker with its user interface, which is an

important part of the company's success. But that taboo was removed when Yahoo recently created a modified site for people using mobile phones to access the Web.

Once that happened, the company decided to create another customized site for Minitel. Like other Minitel sites, Yahoo will collect usage fees via France Telecom. Other prominent Internet companies may follow. Even if they don't, Yahoo already has validated the much-maligned Minitel. Minitel may use outdated technology, but it's an online service with a solid business model. That's more than most Internet companies can say.

Source: Industry Standard magazine

THE UNEXPECTED SURVIVAL OF TELEX

From Tom Jennings

Call of the telex: “I’m not dead yet”

Like the pneumatic tube, messenger pigeons and French, this aging medium is here to stay.

The first time I knew for sure I was looking at a telex machine, a magnificent cabinet-sized workstation of a beast, was in the early ‘70s sci-fi film “The Andromeda Strain” I watched on my mother’s black-and-white television.

“The Andromeda Strain” was a bit like the Dustin Hoffman film “Virus,” only 20 years earlier and much more fun. This was back before the grunge and clutter of “Bladerunner” or “Alien”—back when the future was still futuristic.

They had all the great equipment. There were secret underground government laboratories with squeaky white curving corridors, flashing lights, a big impressive computer that never went down and, of course, a telex machine.

In a crucial plot development, a telex to Washington goes unnoticed because a loose scrap of paper jams the telex machine’s ... bell.

A rather puritanical little boy at the time, I was seriously offended by this. What was a mechanical bicycle bell doing in the middle of all this gleaming high-tech stuff?

And why didn't those white-coated ones simply link their big, impressive computer up to Washington's big, impressive computer with—you know, a wire?

Of course, in reality, the white-coated ones were linking up computers with wires—the phone system—back at this time in the '70s. They were creating the Internet; they just weren't telling Hollywood (or me) about it.

Somewhere between "The Andromeda Strain" and my adulthood, the telex lost its place in the gleaming futurism of the popular imagination. Which is to say: People forgot about it. And that's why I had a sense of vertigo—of traveling through time—when people at the fringes of Europe started giving me business cards with telex numbers on them.

And not just the fringes of Europe, either. A quick perusal of German commercial Web sites, for example, reveals a surprising number of telex addresses, right up there alongside the phone number, e-mail and street address. That's right, Web sites that give out telex numbers. This, of course, is pure German thoroughness: Fax if you have fax, phone if you have phone, and if you have telex, then, telex. Naturlich.

This is mighty considerate of those Germans, considering that for most of us, telex remains about as obscure and cumbersome a means of communication as, say, the ham radio. But just as the ham radio is kept alive through the enthusiasm of its aficionados, so the telex keeps on telecommunicating—thanks to a combination of convenience, economy, protocol and just plain inertia that

may keep it going into the next century.

Sometimes it can be awfully hard to kill off an old medium. Not so long ago telex was the very epitome of the up-to-date, the ruthlessly new. The wonderfully crisp, minimal black-on-white Reuters logo of decades of yore (simply the word Reuters written in the black holes of the punched tape some teleprinters use) perfectly echoed the utilitarian authority of the machine that delivered no-frills, up-to-the-second information.

Then, suddenly, telex started to look square, and, in the mid-'90s, Reuters made an awkward shift to today's hesitant, tinted version of its logo, with more dots and a fussy little bi-colored disc. The new Reuters logo hints at the unspoken fear that news agencies may soon look as outmoded as punched tape.

We should relax. Though telex use may not be quite as robust as it was in the days of yore, it still holds a place among the ways we communicate with each other. Viva telex.

Next page | Is Telex the French of communication technologies? 1, 2, 3

If a fax is like two photocopiers connected via phone line, telex is like two typewriters. Type in your message on one end, and the person at the other end reads just that, printed out from the teleprinter on their end.

Telex is not, by and large, about packet-switching—the process by which little chunks of labeled data, as in e-mails, make their way across the network to reassemble

at the other end. Like telephones in their plainest form, telex opens a line, two machines at each end greet each other and text is transferred.

The popularity of telex predates that of the fax machine. Fax technology became prominent in the ‘70s, when Japanese manufacturers began using it for their domestic market.

Speakers of Japanese and Chinese aren’t the world’s most ardent typewriter users. You wouldn’t be either if you had a written language with 5,000 word symbols. You’d want to be able to scribble a quick note by hand and send a photocopy of it down the phone. So the Japanese made fax technology happen.

But outside Japan, telex just kept on working. Why? People liked it. Or they were just used to it. Or, maybe, there are a few things about telex that other technologies just don’t offer.

Like telephones, telex is capable of a few clever tricks. Just as some lines can support 60 phone conversations at once (where each sweet nothing is chopped up into little slices, squashed smaller to fit down the line in real time and then separated and unsquashed in numbered order at the other end), similar things can be done to make telex waste less network capacity. As most of it is more one-way than phone talking, telex is even easier to shoehorn into spare blips of bandwidth than telephone chat in the same way.

And there’s the answerback code. Telex machines give senders confirmation—with rather more certainty than

fax machines—that they got your message at the other end.

But why even bother with telex when we have e-mail?

1) Lots of companies do not have a computer or a modem. The world is bigger than we thought.

2) Telex is easy and familiar. Most companies have a computer with a modem, but that doesn't mean employees are comfortable with them.

3) Telex is the status quo. Some business sectors are still grouped around networks of firms with established routines of sending and receiving telexes each day. This penalizes any individual firm that tries to upgrade ahead of whatever ponderous association decides things by consensus for that industry.

Last year at Manchester Airport in Britain, I missed the last train home to my mother's village because of flight delays. Air France agreed to pay for my taxi across the north of England, but before I could be sure of its reimbursement, the handling agent and I had to sit two hours in the airport until 1 a.m. waiting for Air France in Paris to send him ... a telex.

Last month an American building consultant friend in Budapest was baffled to get a fax from DHL asking him to send a telex to Hungarian Customs to release a package. He had to go to a hotel to send one.

4) Inertia. Could telex be to electronic media what the French language is to international diplomacy?

Look at how long people have continued to take French

seriously as an international language, almost two centuries after France lost North America and Egypt. No one really knows why French is still on the list. It just stays there, wasting the time of generation after generation of English-speaking schoolchildren who could instead be learning Chinese, Arabic or Japanese.

French clings on, popping up on your postage coupons, at the Olympics, in the United Nations.

And so it is with telex. Having been red-taped into some of those very same international protocols, telex may have inherited the survival skills of French.

But does telex have any actual advantages? Does it deserve, for any technical reasons, to have survived this long?

1) No one sends junk mail to telex addresses.

2) Telex is rarely hacked. It could be, but most hackers don't find doing so particularly interesting. Telex viruses? Nope.

3) Once installed, telexes are robust and simple. Telex takes up less bandwidth and breaks down less frequently than fax, for example.

4) On the same principle, since most telexes in use have been in use for eons, they're cheap to use, and were paid down years ago.

5) In the kinds of places where the telex machine still looks new (think Mongolia, Chad, Paraguay), it may be the simplest, most direct means of communication.

(Note to international business people: When trying to reach an exotic location—a nickel mine in Siberia, a ministry in Morocco—always try sending a telex. That office may only get two telexes a week, and if your telex machine helps justify someone's job, you've done a good thing. Plus, as a Westerner, you probably stand alone in using telex. Most of your competition won't bother.)

6) Telex messages are concise and to the point—not unlike text messages between mobile phones, known as SMS, for "Short Message Service."

In Europe in 1999, 12 billion SMS messages were sent between mobile phones. SMS is primarily a cellphone capability, but why not broaden our technological horizons a bit? Telex and SMS would be natural friends if they only got to know each other.

Both are for very basic, short, functional text messages. They both use an austere, even spartan, character set. Both carry messages like:

MEET ME AT 12 EST ANDY

And in neither medium does anyone whine that the capital letters mean you are "shouting" or showing inadequate "netiquette."

So it would be bundles of fun if people started to send SMSs to telex machines (what some people in the poor world have instead of mobile phones) and telex messages to mobile phones (what some people in the rich world have instead of telex machines).

As long as you know the callback code and the telex

address, it is certainly possible to send an e-mail to a telex terminal on some systems. Since people already use mobile phones to contact e-mail addresses, it's just a step away from sending SMSs to the only other place where no one blinks at getting single-line messages with bad grammar—telex machines.

When's the last time you received telex spam? 1, 2, 3

And who would ignore such a thing? On the same principle that Western Union followed when it placed a picture of a telegram in a newspaper and challenged readers to ignore the message, a telex or an SMS rarely goes unread.

So telex has a rich world role too: It's a good way of getting through the incoming-mail filters that more and more busy people need to employ.

Spam, sent laboriously, in a way inconvenient to the sender, is not spam.

An e-mail from someone unknown? Virtual trash can. A fax from someone unknown? Real-world trash can. A telex from someone unknown? Someone sent me a telex? People still use those? I have to see this.

Recently, I sent a telex to a colleague at a German publishing firm. Later, he described his amazement upon receiving the telex sent down to his floor from some forgotten technical backroom in a dusty corner of his building.

"I thought our office got rid of telexes years ago!" he told me in wonderment.

Of course, gateways linking clunky teleprinters to trendy mobile phones will eventually soil this spam-free Eden of messaging innocence. But all devices have the right to speak to each other, if only for the sake of symmetry and neatness.

But perhaps the real explanation for telex's tenacity is a dusty old protocol in the rulebooks of the International Telecommunication Union.

According to Telexnet, a supplier of e-mail-to-telex software, "Telex still remains the only legally recognised form of data transmission."

What makes telex the only legitimate mode of communication for thousands of diplomats, lawyers and other international paper pushers? The answerback code. When it comes to official business, people need to know for sure that messages reached their destination. Like the equally underutilized registered letter, the telex may have a firm place among our growing media options.

Technologies only a little deader than telex have a powerful appeal for aficionados of the poignantly obsolete, the Dead Media List.

They've been nibbling round the edges of telex for a long time. Pictures-by-telex, home telegraphs, the telegram boy—media bygones like these are arcane enough to have received a proper goodbye from information technology's museumologists. But telex hasn't joined the ranks of the obsolete yet.

But one does have to wonder if a Dead Media obituary for

this predecessor to the Internet is imminent.

Dead Media's founding necronaut, Bruce Sterling, is careful not to sound the death knell too soon, highlighting quaint survivals: the French Army's still-functional messenger-pigeon unit, or Prague's fully operating citywide network of pneumatic postal tubes. We may not need telex as much as we used to, but that doesn't stop us from taking it out of the closet every now and then. If the Dead Media hearse hasn't yet come to take telex away, perhaps we ought to give it another chance at greatness.

http://www.salon.com/2000/12/05/telex/ [2015 note: Still alive]

OLD MUSIC RECORDINGS, EFFECTS ON MUSIC

From Sally Shelton

How music went on the record

As a new history of recording shows, the artistic implications of the process are vast and disturbing. Has it changed our musical universe for better or worse?

When the celebrated 19th century pianist and conductor, Hans von Blow, first heard himself playing a Chopin mazurka on one of Edison's primitive cylinder phonographs, he is said to have fainted. As well he might, for the advent of sound recording was arguably the most radical development in the history of music since the invention of music printing, if not since the evolution of notation itself. For the first time ever, it was possible to hear again a specific performance of a specific work, its every exact nuance (not to say, every mistake), a potentially unlimited number of times, and to reproduce it in a potentially unlimited number of copies. As at least a few musicians dimly realised from the start, the artistic, social, economic and even philosophical implications of the new technology were likely to prove vast, and not a little disturbing. And so it has turned out.

"A century of recording has changed the way we listen to music and the way music is performed as well as what we listen to to an extent we are only just beginning to grasp," remarks Timothy Day, curator of Western art music at the sound archive of the British Library, in his engrossing

new survey, A Century of Recorded Music: Listening to Musical History. Yet, as he ruefully adds, “music historians, classically trained musicologists studying the concert traditions and opera and liturgical music of Western Europe, are reluctant to investigate discs and tapes and to study these phenomena.”

No doubt part of that reluctance initially sprang from the primitive quality of early cylinders and discs. The evolution of recording, from Edison’s first acoustic “talking machine” of 1877 to the arrival of electric recording in the mid-1920s, is pretty well-documented, but Day recounts it with many a vivid instance: tenors with heads plunged deep into recording horns; tiny studios heated to 90 degrees to keep wax discs soft and malleable; sublime masterpieces cut by two-thirds in order to fit on to three or four 78-rpm sides.

No wonder the alternative medium of the reproducing piano with its punched paper rolls held its own against the gramophone until the late 1920s. The real wonder is that at least a few musicians such as Elgar and Rachmaninov actually seem to have enjoyed the early recording process.

While electric recording allowed at last for more spacious orchestral and operatic acoustics, works still had to be registered in uneditable four-and-a-half minute chunks and put out on noisy-surfaced shellac discs, until the emergence of tape-editing and the vinyl LP around 1950, enhanced by stereophony from 1958 and by the cheaper alternative of audio tape from 1963 only to be sideswiped

by the advent of digital recording and the virtually undegradable CD from the early 1980s.

Yet Day's main concern is not so much with the mechanics of recording as with the manifold ways in which the process has increasingly influenced the evolution, reception and understanding of music itself. Admittedly, this happened more gradually than in the early dissemination of jazz, or the way post-war pop was recording-driven from the start. No one imagined that the recording of operatic arias that comprised much of the early acoustic discography offered any real alternative, let alone threat, to the experience of live opera, while the first two decades of electric recording were largely devoted to catching up on the standard classical repertoire.

Only since the emergence of the LP has recording come to play a more central role in musical developments in the rediscovery of early music, for instance, or the promotion of new music (electronic music, not least). And only with the vast expansion of the recorded repertoire over the last couple of decades has something approaching the entire history of Western music been restored to present consciousness a phenomenon which, interacting with comparable expansions in the availability of pop, world music, and so on, has so powerfully contributed to the relativistic, pick-and-mix culture of so-called post-modernism, which we are all now enjoying, or suffering from.

The benefits of recording, as a means of preserving past

greatness, of reaching vast new audiences, of restoring unjustly neglected music and promoting the new, are obvious enough.

Yet Day quotes a Spectator editorial of as early as 1888, warning that the accumulating products of mechanical reproduction could threaten “the free growth of our posterity” and comparable doubts about recording have continued to surface ever since: the notion, for instance, that the edited perfection of discs has increasingly inhibited live performers from taking spontaneous risks, has become a critical commonplace.

Though an inveterate record-maker himself, Benjamin Britten evidently felt that the gramophone somehow violated the “holy triangle” of composer, performer and listener, and lamented that records allowed great works to be misused as mere background music.

Hans Keller went so far as to argue that our growing reliance on recordings as the primary source of musical experience, plus the ubiquitous curse of muzak, have tended to foster an “infinite postponement of concentration”, progressively degrading our powers of focused listening his own included.

Since Day’s declared purpose is to stimulate and source further thought and research into the history and repercussions of recording, he is more concerned to raise such issues than to resolve them. In any case, he has his work cut out to reduce the vast array of evidence and commentary that the recording process has thrown up to something like an orderly plan. This he has partly

contrived through a deft choice of case histories: the influence on taste of Walter Legge as a recording executive; the role of David Munrow in the early music discography; the shifts in performing style preserved in successive recordings of the works of Webern, and so on.

Occasionally the sheer pressure of material reduces Day's prose to portmanteau syntax and breathless lists. But it remains a lively and provoking read. As a historian, he is, of course, more concerned to understand the past than to speculate about the future. Yet it could be argued that at least one basic development in recording technology is long overdue and could go part of the way towards reconciling those who regard recording as a deadening substitute for live musical experience. Sound recording may have changed out of all recognition since Edison; what has not is the simple fact that, every time a disc is played, it remains exactly the same.

Yet how easily one could imagine something called, say, the "variable disc" upon which an artist such as Alfred Brendel had recorded perhaps a half dozen slightly contrasting interpretations of a Beethoven sonata which the playback mechanism then crosscuts differently each time to provide the illusion of perpetual spontaneous performance.

Or the "transformational disc", enabling purchasers to modify the tempi, dynamics and nuances of a Bruckner symphony to create their own ideal performances. Or, maybe not. For however the rest of us might profit from such extravagancies of "interactive" recording technology,

to the systematic archivist-historian they could well prove the ultimate nightmare.

Source: A Century of Recorded Music: Listening to Musical History by Timothy Day

CONTOURA PORTABLE NON-XEROGRAPHIC PHOTOCOPIER

From Andrew Reid

The “contoura” is a remarkable example of the clever use of relatively straightforward technology.

The machine is what you might call a “photographic copier”, if you wanted to distinguish it from the xerographic implications of the modern term “photocopier.”

I am unable to date the machine with any precision, but it has the utilitarian simplicity I associate with late-1940s or early-1950s hardware. It is an electrical device, but has no Underwiter’s Laboratories or other consumer safety data plates, and addresses and phone numbers in the documents lack ZIP codes and numeric prefixes, respectively.

Physical description: The unit itself is basically a light box, about 5 cm thick, and about 10 inches by 8 inches for the “research model”, and 14.5 x 9.5 inches for the “legal model.” My example is evidently a “legal model,” and has 10 15-watt incandescent light bulbs in two rows of five, wired in parallel. A thick (4 mm) frosted glass plate covers the array of bulbs, which are activated by a simple pushbutton switch. The unit also comes with a translucent plastic air bladder, resembling a modern courier envelope, 2-3 cm thick when inflated and somewhat larger than the face of the light-box. One side of the air bladder has a glass plate glued to it. Also provided

is a piece of thin, translucent paper the same size as the face of the light box, which the instructions call the “paper mask.”

Judging from a careful reading of the instructions, I believe my example is complete except for necessary photographic supplies. Use: According to the instructions, the unit is supposed to be accompanied by one of two types of “Contoura Contact Paper”, photographic paper with a very slow-speed emulsion which allows it to be handled briefly in ordinary indoor lighting conditions.

“Type C” paper is recommended for copying written and printed material, and “Type Y” is used for photographs or half-tones. Presumably these papers differ in their contrast sensitivity.

To actually make a copy, the user first places the photographic “Contact Paper” face down on the document to be copied, then places the inflated air bladder, glass-side down, on the contact paper, then the “paper mask”, and finally the light box itself.

Users are cautioned against attempting this in direct or strong light, but the instructions emphasize that no darkroom is required. The box is activated for approximately ten seconds, and the exposed contact paper is developed by “ordinary” photographic processes, either right away if the chemicals are available, or later on, if the exposed contact paper is promptly placed in a black envelope.

Processing is as for photographic prints, except that, as

previously mentioned, no darkroom is needed, although subdued light is recommended. For a developer, the instructions recommend “Eastman Dektol” or equivalent, an optional stop bath, and then “Eastman Acid Fixing Bath”.

Readers familiar with amateur darkroom techniques will recognize these names, and the ordinariness of this print-development process is further emphasized by the claim that users can, if they wish, have their copies developed by “a photographer or local developing service.”

Special features: The instructions imply that the “paper mask” provided with the unit evens out the brightness of the light bulbs, and recommend that, if a light bulb burns out, your return the unit to the distributor for a new set of bulbs and a new paper mask.

The paper mask accompanying my unit has dark spots corresponding to the light bulb positions, so the claim is plausible, but the means of producing the paper mask is unknown. (The frosted glass plate appears to be uniformly thick.) From the promotional literature, it’s clear that the principal practical advantage of the machine is its portability (“Fits in briefcase!”) and convenience (“less than 7 lbs!”) and literal flexibility—the plastic cushion allows the photographic paper to “match the contour of the material being copied” (emphasis original), hence, presumably, the name “Contoura”.

This, coupled with the error-free nature of photocopying, makes quite a sales pitch. The documents produced are, of course, negatives, and additional copies must be made

to get positives. Transparencies can be copied by placing the paper emulsion-side-up underneath the original.

Source: Working example with instruction sheet and promotional brochure

V-MAIL, MICROFILMED MAIL OF WWII

From Harald Staun

Mail communication with one's family and friends has long been a critical factor in maintaining servicemen and womens morale during wartime. Military commanders acknowledge that frequent contact between families separated during war helps strengthen fortitude, makes loneliness endurable and provides needed reassurance. Of course, all those letters take up space. During World War II, the military and Post Office Department looked for a way to reduce the bulk of mail, conserving badly-needed space.

The answer was V-mail, pre-printed envelope sheets that could be photographed and transferred to microfilm for shipping. V-mail originated in England where it was used for exchanging personal mail with British armed forces in the Middle East. The system was adopted by the United States Post Office Department and put into practice on June 15, 1942. V-mail ensured that thousands of tons of shipping space could be reserved for war materials. The 37 mail bags required to carry 150,000 one-page letters could be replaced by a single mail sack. The weight of that same amount of mail was reduced dramatically from 2,575 pounds to a mere 45. The blue-striped cardboard containers held V-mail letter forms.

V-mail consisted of miniaturized messages reproduced by microphotography from 16mm film. The system of microfilming letters was based on the use of special V-mail letter-sheets, which were a combination of letter and

envelope. The letter-sheets were constructed and gummed so as to fold into a uniform and distinctively marked envelope. The user wrote the message in the limited space provided, added the name and address of the recipient, folded the form, affixed postage, if necessary, and mailed the letter. V-mail correspondence was then reduced to thumb-nail size on microfilm. The rolls of film were sent to prescribed destinations for developing at a receiving station near the addressee. Finally, individual facsimiles of the letter-sheets were reproduced about one-quarter the original size and the miniature mail was then delivered to the addressee.

The first large Army operated V-mail station overseas was opened on April 15, 1943 at Casablanca, North Africa. Hastily set up in a field following the Allied invasion of North Africa, this makeshift station continued to operate until September 15, 1943. Between June 15, 1942 and April 1, 1945, 556,513,795 pieces of V-mail were sent from the U.S. to military post offices and over 510 million pieces were received from military personnel abroad. In spite of the patriotic draw of V-mail, most people still sent regular first class mail. In 1944, for instance, Navy personnel received 38 million pieces of V-mail, but over 272 million pieces of regular first class mail.

During the latter years of World War II, V-Mail became a popular way to correspond with a loved one serving overseas. V-Mail letters were written on forms that could be purchased at five and ten cent stores or the post office. These special forms were photographed, put on film, flown across the world and then reproduced at the mail

center closest to the recipient's position. The development of the V-Mail system reduced the time it took a soldier to receive a letter by a month - from six weeks by boat to twelve days or less by air. However, the main advantage of V-Mail was its compact nature. Reduction in the size and weight of the letters translated into more space for crucial military supplies on cargo planes; one advertisement explained that 1,700 V-Mail letters could fit in a cigarette packet, while reducing the weight of the letters in paper form by 98%. Transport of the letters by plane minimized the chances that the enemy would intercept the letters, although writers were reminded to delete any information that might prove useful to the enemy in case some V-Mail was captured. Americans on the home-front were encouraged by the government and private businesses to use V-Mail.

Letters from home were compared to "a five minute furlough," and advertisements that instructed how, when, and what to write in a V-Mail reached a peak in 1944. Letters were to be cheerful, short, and frequent. V-Mail made it possible for servicemen halfway across the world to hear news from home on a weekly basis.

During World War Two, mail and morale were one and the same, and early in 1942 the military devised a simple method to deliver millions of pieces of very important news from home to the servicemen serving in the ETO. It was called V-Mail, and, of course, the V meant Victory (The hyphen in the phrase "V-Mail" was printed as three dots and a dash as at right Morse code for the letter "V") It was a simple photographic system.

The letter writer wrote the letter on a V-Mail form, a one-sided, regular-sized piece of paper with a box on the top for the receiver's address. The letter was sent in, and after it was cleared by the censor, the mailroom photographed the page onto 16-mm black and white camera film. The reel of V-Mail film was then flown or shipped to a processing center in the addressee's general location where a copy of the letter was printed onto a piece of 5" x 4" black and white photographic paper.

This then was folded, slipped into an envelope and dropped into a mailbag for delivery. The V-Mail system was necessary because mail had to vie with food, fuel, ammunition and supplies for precious overseas cargo space, and V-Mail allowed thousands of letters to fly from America to France in the place of only a few hundred bits of regular mail. During the war over 1.5 billion (yes, b as in baker) V-Mail letters were processed.

In Steven Spielberg's Saving Private Ryan, one of the more poignant images of World War II is that of a GI laying in the middle of a street. He is alone, dying in the rain, holding out a letter to his dad and calling out to his buddies who are still under sniper fire. Later that night, the medic transcribes the GI's letter onto a clean, unbloodied V-Mail form with detached, quiet emotion. V-Mail is an important part of postal history, and a remembrance of the 20th Century's pivotal years. V-Mail carried the thoughts and dreams of privates and generals to those back home, and brought comfort to those at the front. Books and movies can help bring the past to life, and mementos of that past help revive the memories of

our history. This is especially true in the case of V-Mail. Today it helps us to preserve their memory.

OBSOLETE TV-TYPE REMOTE CONTROL TECHNIQUES

From Philip Downey

The remote control, which turns 50 this year, has become one of the more indispensable pieces of gadgetry in the modern American home

“Today on ‘Oprah’” Click.

“the courts in Florida must decide whether a hanging chad” Click.

“Yo! Wazzzzup” Click.

“The clicker,” “the zapper, “the changer” - whatever we choose to call it, the television remote is the granddaddy of all gadgets, nearly as indispensable to the family room as the TV itself. It has been blamed for ballooning waistlines, shrinking attention spans and strained relationships. This year the remote control is 50 years old. We can hardly remember life without it - especially when television-watching is at its height, as during holidays. But as with other modern devices - from microwaves to cell phones - its origins and workings remain largely unknown to people who expect the apparatus to work without fail. The idea for the television remote began with Eugene McDonald, the founder of Zenith Radio Corp. The year was 1950, a time when you could count the number of channels in any city on one hand. McDonald, an eccentric former military man known as “the Commander” by his employees, was thinking not about convenience but about commercials. Specifically,

McDonald was thinking how much he despised ads. He considered commercial-free, pay TV a better business model for the industry.

“He thought advertiser-supported television would never fly,” says John Taylor, Zenith’s corporate historian. Until events might prove him right, McDonald wanted to offer customers who bought Zenith TVs a way to avoid commercials.

The result was a device called Lazy Bones: “Prest-o! Change-o! Just Press a Button to Change A Station!” said an early ad. Lazy Bones was pricey - about $355 in today’s dollars - and primitive: Its two buttons could flick the TV on and off and change channels. It was tethered to the television by a thin cable, so the device could be dangerous: It’s tether often turned into a trip wire.

McDonald ordered his engineers to try again. A young Zenith engineer named Eugene Polley hit on the idea of using light to control the television. Tinkering with spare parts lying around his laboratory, he created a souped-up flashlight fashioned to look like a gun “so people could shoot out the commercial,” says Polley. The device was dubbed the Flash-Matic.

It came with a specially-equipped television that had light-sensitive areas embedded in each corner of the set. Zap one corner with the Flash-Matic and the television flickered on or off. Aim at another and the channel flipped. It was Polley who devised what might be the most beloved feature of all: the mute button.

“It makes me think maybe my life wasn’t wasted,” Polley

says today.

“Maybe I did something for humanity - like the guy who invented the flush toilet.” Zenith sold nearly 30,000 gun-shaped Flash-Matics after the product’s launch in 1955, and gave Polley a $1,000 bonus for his efforts. An early ad promised, “Shoot off annoying commercials from across the room with flash of magic light.”

But, as some customers soon learned, the Flash-Matic left room for improvement. People couldn’t remember which corner of the screen controlled what.

But the big problems came from the light sensors, which turned out to be sensitive not only to the remote control but sunsets and ill-placed floor lamps. Zenith physicist Robert Adler, who helped run the company research department, was handed the task of improving Polley’s design. The Zenith marketing department gave Adler’s team an additional design requirement: The remote couldn’t use batteries, to prevent a customer from thinking his TV had broken if the remote’s batteries went dead. Adler and his team of engineers considered using radio waves but abandoned the idea because the waves could travel through windows and walls.

“Radio waves worked fine,” Adler once remarked. But they also worked fine for your neighbor.”

Then the engineers found a solution: ultrasonics, high-frequency sound waves inaudible to the human ear. The Zenith researchers built a remote-control device containing four aluminum rods, each slightly different in length. Pressing one of the remotes’ four buttons caused a

small spring-loaded hammer to strike its corresponding rod like a tuning fork, emitting ultrasonic sound waves. Since each of the rods was a slightly different length, each vibrated at a different frequency, which a microphone and receiver in the TV could distinguish.

The device was named Space Command. The first one emerged from the assembly line in the fall of 1956. The technology added $100 to the price tag of the set, so sales were slow to take off.

But by 1959, ultrasonic remotes became the industry standard for top-of-the-line TVs. According to Zenith, more than 9 million ultrasonic remotes were sold during the next quarter-century. The noise made by these early mechanical remotes also lent the device its enduring nickname - “the clicker.”

Beginning in the 1980s, ultrasonic remotes were replaced by devices that relied on low-frequency pulses of infrared light invisible to the human eye. These devices are cheaper to make and can control a larger number of functions, giving rise to the 50-button remotes seen today. Just who should gets credit for the invention of the remote control has been a sensitive issue for Eugene Polley, who watched Robert Adler on the Jay Leno show a few years ago claim credit for the device.

“We’re feuding,” says Polley, a spry 85-year-old who rides around the golf course near his home outside Chicago wearing a cap that reads “King of the Remote Control.” In his attic, he has a few early Flash-Matic prototypes and Lazy Bones devices.

“I think the feud is way overblown,” says Zenith’s John Taylor.

“One invention lasted one year, the other 25 years. The industry generally considers Bob Adler the father of the remote control.” In 1997, Zenith won an Emmy for its work on the clicker; this year, Adler, who has said he prefers radio and watches only about an hour of TV a week, was inducted into the Consumer Electronic Association’s Hall of Fame for his work. The average household has at least four remotes, according to the Consumer Electronics Association. Most are for TVs and stereos. But others control air conditioners, window blinds, ceiling fans, gas fireplaces, house lights and car doors. The Lazy Bones and its successors have “totally revolutionized” the medium of television, says Robert Thompson, director of the Center for the Study of Popular Television at Syracuse University. It has not only changed the way we watch, but also the way TV and film writers work.

“Possession of the device means that you have a choice to make every second. Is this dull? Am I bored yet?” writes James Gleick in “Faster: The Acceleration of Just About Everything.” “Now every television programmer works in the shadow of the awareness that the audience is armed.” But while it gave rise to couch potatoes and channel surfing, the technology doesn’t always make life easier.

“Watching television isn’t as relaxing as it used to be,” says Thompson.

“There’s this pressure, this really irritating voice in the

back of your head that keeps telling you, ‘You’re missing something on another channel.’ “It makes you wish you could go back to the old days.”

Source: Baltimore Sun, November 22, 2000. The Couch Potato’s Best Friend by Michael Stroh.

DEAD ARCHITECTURAL (AND DRAFTING) MEDIA

From DeVries

In the years from 1975 through 2000, architectural drafting and reproduction media changed profoundly.

As student, intern, and architect, I witnessed the revolution. The following comes from memory, various texts, and antiques in my bottom desk drawer.

1975 Vellum (paper, not calf hide) was standard with ink and pencil. Equipment consisted of: high drafting table and stool; adjustable lamp (fluorescent, incandescent, or both); T-square or parallel bar; scales; triangles; curves; lettering guides and templates; compass sets; tape; technical pens; lead holders; erasers; and such exotica as Pounce.

As a student (Syracuse University School of Architecture), studio standards were: high drafting boards of oak (old) or gray steel (new), unpadded, backless, drafting stools, and parallel bars. Perhaps a quarter of the students used T-squares.

For construction drawings, pencil on vellum was usual, sometimes ink because it printed better. Mylar sheets were newly available, with a “frosted” surface to take ink. These printed best - because of Mylar’s transparency - but were expensive. Colored pencils and pastels were used for renderings, though colored markers were most popular, and ink wash - in the Beaux Arts tradition - lingered. Reproduction was by Diazo process - using

ammonia - so prints had a potent perfume. Blueprints were archaic - bluelines read better. Sepia prints were used for reproducibles (to spare original drawings from the print machine). Blacklines were for presentation, sometimes colored by marker or pencil.

1980 As an intern (Dallas, Texas), standards for a professional architect's office were: low drafting board (metal-legged or classic, slab door on sawhorses); secretarial swivel chair (arms were a perk); drafting lamp; and parallel bar. (Old-fashioned firms were just switching from the T-square). Drafting was changing from pencil-on-vellum to ink-on-Mylar. Most firms had Diazo. The last professional draftsmen were nearing retirement. In the '80s most states changed licensing laws to require college degrees. (Until then, in New York State, for example, one could pass the licensing exam after working 13 years - an apprenticeship which produced incompetents like Frank Lloyd Wright.)

Mid '80s Rapid change. To improve drawings and reproduction, new techniques were tried. Drafting machines (existing in the '60s) were briefly popular. Pinbar drafting was introduced. Various drafting aids were adopted. Large format photocopies became available - though expensive - used to create reproducibles from fragile drawings, where sepia printing would be illegible or too damaging.

1990s Computer Aided Drafting - CAD - became more and more common. Early cumbersome network systems (the one at GM in 1968 is enormous), were replaced by the

mid ‘90s with entirely PC based CAD. Diazo printing declined as CAD plots grew common.

2000 CAD is universal. Allied engineering fields (structural, mechanical, and electrical) now demand CAD base drawings. Few architects draw by hand, few even have drafting boards. T-squares have virtually disappeared. Commercial bluelines are used for bidding or construction sets; in-office sets and presentations are now normally CAD plots. Sepia and blackline prints are rare and blueprints nostalgic. Renderings may be any media, but markers are passe, while 3-D CAD virtual walk-throughs are progressive.

Source: Personal recollection

CZARIST-ERA RUSSIAN COLOR PHOTOGRAPHY

From Alan Wexelblat

Yes, you read that right. One mad scientist, a train car with a darkroom, a three-exposure process, and a permit from the Tsar.

Sergei Mikhailovich Prokudin-Gorskii figured out an ingenious method of taking three pictures in rapid succession, one each with a red, green, and blue filter.

He'd then project all three images together back onto a screen and end up with full color images.

EXCERPT: The photographs of Sergei Mikhailovich Prokudin-Gorskii (1863-1944) offer a vivid portrait of a lost world—the Russian Empire on the eve of World War I and the coming revolution. His subjects ranged from the medieval churches and monasteries of old Russia, to the railroads and factories of an emerging industrial power, to the daily life and work of Russia's diverse population.

In the early 1900s Prokudin-Gorskii formulated an ambitious plan for a photographic survey of the Russian Empire that won the support of Tsar Nicholas II.

Between 1909-1912, and again in 1915, he completed surveys of eleven regions, traveling in a specially equipped railroad car provided by the Ministry of Transportation.

Prokudin-Gorskii left Russia in 1918, going first to Norway and England before settling in France. By then,

the tsar and his family had been murdered and the empire that Prokudin-Gorskii so carefully documented had been destroyed. His unique images of Russia on the eve of revolution—recorded on glass plates—were purchased by the Library of Congress in 1948 from his heirs.

For this exhibition, the glass plates have been scanned and, through an innovative process known as digichromatography, brilliant color images have been produced. This exhibition features a sampling of Prokudin-Gorskii's historic images produced through the new process; the digital technology that makes these superior color prints possible; and celebrates the fact that for the first time many of these wonderful images are available to the public.

Born in St. Petersburg in 1863 and educated as a chemist, Prokudin-Gorskii devoted his career to the advancement of photography. He studied with renowned scientists in St. Petersburg, Berlin, and Paris. His own original research yielded patents for producing color film slides and for projecting color motion pictures.

Around 1907 Prokudin-Gorskii envisioned and formulated a plan to use the emerging technological advancements that had been made in color photography to systematically document the Russian Empire.

Through such an ambitious project, his ultimate goal was to educate the schoolchildren of Russia with his "optical color projections" of the vast and diverse history, culture, and modernization of the empire. Outfitted with a

specially equipped railroad car darkroom provided by Tsar Nicholas II, and in possession of two permits that granted him access to restricted areas and cooperation from the empire's bureaucracy, Prokudin-Gorskii documented the Russian Empire around 1907 through 1915. He conducted many illustrated lectures of his work. Prokudin-Gorskii left Russia in 1918, after the Russian Revolution, and eventually settled in Paris, where he died in 1944. [On the Karolitskhali River]

MAGNETIC DISC AUDIO

From Angus Gulliver

Reading about the 1954 Timex Magnetic Disc Recorder, which Bill Burns suspects was never put into production, I can say with certainty that an earlier magnetic disc recorder, which is similar to the description of the Timex except it does not play 45's, was put into production as early as 1950.

I recently acquired a Recordon, which was made by Thermionic Products of London. Capacitors inside are dated April 1950 and seem original, so I assume that the machine was built circa 1950. It was made under licence from the Brush Development Company of the USA, and the circuit is a fairly simple three valve (tube) affair not disimilar from simple tape recorders.

There is no power amplifier, the Recordon is clearly intended as an office dictation device with remote control and headphone level playback both available via the microphone with a foot switch as an extra option.

I received my Recordon without a mains cable, but a quick inspection of the circuit allowed me to construct a cable. The machine fired up immediately and after giving it a few minutes for the (original Cossor) valves to warm up I was able to replay a recording made on the machine almost 50 years ago.

The only disc I have, which was attached to the machine when I purchased it, contains a recording of a doctor dictating medical certificates to his secretary.

One is dated 27th January 195? (a dropout muffles the final number) but other information on the disc (he mentions a flu epidemic) leads me to conclude that it is the early 50's.

It seems somewhat remarkable, but the magnetic recording has survived almost 50 years in such good condition and with so few dropouts that the contents can be easily heard and understood today.

Apart from that last digit in the date every word can be discerned. The disc runs for about five minutes, and the fidelity is not very good - adequate for dictation and other voice recording but not suitable for music. The recording runs from the centre out towards the edge, with the quality getting better the closer to the edge the pickup gets.

The discs have 'fold here' dotted lines on them suggesting they can be mailed (as with the Timex discs) or stored in the machine's lid. I have not tried the recording function because I do not wish to damage the information already on the disc. All in all it is a fascinating machine, but must have had a short production life once dictabelts and dictaphones hit their stride.

Source: Author's personal experience

DECODING DEAD MARTIAN DATA FORMATS

From Tim Pozar

USC neuroscientist finds signature of life on Mars in decades-old data

Experiments done more than two decades ago on Martian soil collected by the Viking Landers 1 and 2 provided evidence that life might exist on the Red Planet, says Joseph Miller, Ph.D., associate professor in the Department of Cell and Neurobiology at the Keck School of Medicine of the University of Southern California.

Miller recently did a re-analysis of data collected by the landers, and found that something in the collected soil was apparently metabolizing nutrients-and doing so with a distinct biological rhythm that, he says, can only be found in a living cell. Miller presented his findings today at an astrobiology symposium held during the International Society for Optical Engineering's 46th Annual Meeting.

In August and September of 1975, the Viking spacecraft were launched from Cape Canaveral. After travelling for nearly a year, each reached the atmosphere of Mars and the landers were deployed to the planet's surface. Once there, they performed a series of experiments-including one in which a robotic arm scooped up samples of soil and deposited them in petri dishes, along with a drop of a nutrient solution that had been labeled with radioactive carbon.

The idea, explains Miller, was that if there were any living organisms in the sample, they would take up the carbon-labeled nutrients and process them, eventually releasing the radioactive carbon in a gas form. A radiation detector was set up near the covered dish, connected to it by a tube through which any released gases would travel.

And travel they did, says Miller. When the data were collected, the original researchers involved with the Viking expedition-Patricia Straat and Gilbert Levin-found definite evidence of gas release. It seemed they had indeed found life on Mars-but other scientists suggested that the release might be better explained as the result of chemical reactions with highly reactive compounds like superoxides and peroxides. Unable to prove that the gas was definitely being released by living organisms, the NASA scientists let the matter drop.

And so those tantalizing data sat, more or less undisturbed, until 1999. Miller, who had worked for NASA in the early 1980s, studying the effects of zero gravity on circadian rhythms in squirrel monkeys, began writing a proposal to NASA to do biology on future Mars expeditions. It was then that he saw a figure in a geophysical journal taken from the data from the Viking Lander 2 experiment-a figure that showed highly periodic gas release in Levin and Straat's experiment.

Although the science of biological clocks hadn't been advanced enough at the time of the Viking experiments to help the researchers make their case, it had come a long way in the intervening years. And Miller immediately

knew he had something potentially exciting on his hands.

“I immediately got interested,” says Miller.

“So I asked NASA if I could look at the data.” It took a number of calls-and a good four months-to uncover what Miller was looking for. And when NASA found it, there was a problem.

“The data were on magnetic tapes, and written in a format so old that the programmers who knew it had died,” Miller said.

Eventually, NASA was able to recover the data from printouts, luckily preserved by Levin and Straat-and so, Miller was able to pore over the numbers. There were a lot of them-in fact, their analysis is still underway. But even after having crunched just 30 percent of the experiment’s data, Miller was able to find something remarkable-something, he says, that went unremarked-upon in the original papers.

“The signal itself not only had a circadian rhythm,” declares Miller, “but it had a precise circadian rhythm of 24.66 hours-which is particularly significant, because it’s the length of a Martian day.”

More specifically, says Miller, the fluctuations in gas emissions seem to be entrained to a 2 degrees C fluctuation inside the lander, which in turn reflected not-quite-total shielding from the 50 degrees C fluctuation in temperature that occurs daily on the surface of Mars. Temperature-entrained circadian rhythms, even to a mere 2-degree C fluctuation, have been observed

repeatedly on earth.

As for the original concerns of the dubious chemists, who thought the same sort of signal could simply be coming from highly reactive, non-organic compounds in the soil, Miller says such a scenario would be almost impossible to imagine.

“For one thing,” he explains, “there has since been research that shows that superoxides exposed to an aqueous solution-like the nutrient solution in the experiment-will quickly be destroyed. And yet, the circadian rhythms from the Martian soil persisted for nine straight weeks.”

“There is no reason for a purely chemical reaction to be so strongly synchronized to such a small temperature fluctuation,” he adds.

“We think that in conjunction with the strong indications from Mars Observer images that show water flowed on the surface in the recent past, a lot of the necessary characteristics of life are there. I think back in 1976, the Viking researchers had an excellent reason to believe they’d discovered life; I’d say it was a good 75 percent certain. Now, with this discovery, I’d say it’s over 90 percent. And I think there are a lot of biologists who would agree with me.”

Source: University of Southern California press release

THE MASTER LIST OF DEAD MEDIA

From: Bruce Sterling, January 1997

DEAD PRELITERATE MEDIA

Prehistoric etched-bone mnemonic devices and lunar calendars.

Preliterate clay tokens of Fertile Crescent area.

The Luba Lukasa mnemonic bead-tablet.

The Inuit Inuksuit. Inuit carved maps.

String and yarn-based mnemonic knot systems: Incan quipu, Tlascaltec nepohualtzitzin, Okinawan warazan, Bolivian chimpu, Samoan, Egyptian, Hawaiian, Tibetan, Bengali, Formosan; American wampum, Zulu beadwork.

DEAD SOUND-TRANSFER NETWORKS

Drumming, stentor shouting networks, alpenhorns, whistling networks, town criers.

SMOKE DISPLAYS AND NETWORKS

Signal fires, smoke signals (still in use by Vatican), fire beacons. Skywriting.

DEAD PHYSICAL TRANSFER NETWORKS

Egyptian, Babylonian, Assyrian, Persian, Mongol, Roman and Chinese imperial horse posts. Extinct mail and postal

systems: Thurn and Taxis (1550 AD), Renaissance Italian banking networks, early espionage networks, German butcher's-post, Chinese hongs, Incan runners, US Pony Express, etc etc.

Balloon post (France 1870-1871) American guided missile mail (1959), Styrian, Tongan, German, Dutch, American, Indian, Australian, Cuban and Mexican rocket mail. Russian rocket mail (1992).

Pneumatic transfer tubes: Josiah Latimer Clark stock exchange pneumatic system London (1853); R.S. Culler/R. Sabine radial pneumatic telegraph/mail system London (1859); Paris pneumatic mail system (1868)

Norwegian mountainside transport wires.

Pigeon post: Egyptian Caliphate 1100s, Mameluke Empire 1250's, military sieges of: Acre (11--?), Candia 1204, Haarlem 1572, Leyden 1575, Antwerp 1832, Paris 1870-1871; Reuter's pigeon stock-price network 1849, military pigeoneers of World War 1.

Chinese kite messages, 1232 AD

DEAD OPTICAL NETWORKS

Roman light telegraph; Polybius's torch telegraph ca 150 BC Moundbuilder Indian signal mounds Babylonian fire beacons Fire signals on the Great Wall of China

Amontons' windmill signals (1690)

OPTICAL TELEGRAPHY

Johannes Trithemius's Steganographia (ca 1500?)

Dupuis-Fortin optical telegraph (France 1788)

Chappe's "Synchronized System" and "Panel Telegraph" (France 1793)

Claude Chappe's French Optical Telegraph (France 1793) T

he Vigigraph (France 1794) Edelcrantz's

Swedish Optical Telegraph (1795)

British Admiralty Optical Telegraph (1795)

Bergstrasser's German Optical Telegraph (1786)

Chudy's Czech Optical Telegraph (the Fernschreibmaschine) (1796)

Van Woensel's Dutch system (1798)

Fisker's Danish Optical Telegraph (1801)

Grout's American Optical Telegraph (1801)

Olsen's Norwegian Optical Telegraph (1808)

Abraham Chappe's Mobile Optical Telegraph (1812)

Parker's American Optical Telegraph (ca 1820)

Curacao Optical Telegraph (1825-1917)

Watson's British Optical Telegraph (1827)

Australian Optical Telegraph (Watson system) (1827)

Lipken's Dutch system (1831) O'Etzel's

German Optical Telegraph (1835)

Schmidt's German Optical Telegraph (1837)

Ferrier's optical telegraph (1831)
Russian Optical Telegraph (1839, Chappe system)
Spanish Optical Telegraph (ca 1846)
San Francisco Optical Telegraph (1849)
Ramstedt's Finnish Optical Telegraph (1854)
Heliography: The Mance Heliograph (Britain 1860s)
The heliostat, the heliotrope, the helioscope.
The Babbage Occulting Telegraph (never built)

Semaphore and flag signals:
Byzantine naval code (Byzantium AD 900)
Admiralty Black Book code (England 1337)
De la Bourdonnais code (France 1738)
De Bigot code (France 1763)
Howe code (Britain 1790)
Popham code aka Trafalgar Code (Britain 1803, 1813)
US Army Myer Code semaphore (USA 1860).
Military balloon semaphore (France 1790s).

Early 20th Century electric searchlight spectacles.

DEAD ELECTRICAL TRANSFER NETWORKS
ELECTRICAL CURRENT TRANSFER
George Louis Lesage / Charles Morrison electric telegraph

(1774)

Francisco Salva's Madrid-Aranjuez electric telegraph (1796)

Soemmering's electrolytic bubble-letter telegraph (1812)

Henry's electromagnetic telegraph (1831)

Baron Schilling's Russian magnetized needle telegraph (1832)

Gauss/Weber mirror galvanometer telegraph (1833)

CODED ELECTRICAL TRANSFER

Samuel Morse telegraph (patented 1837)

Karl August Steinhill paper ribbon telegraph (1837)

Charles Wheatstone / William Fothergill Cooke Five-Needle Telegraph (1837)

The Alphabetical Telegraph

Foy-Breguet Chappe-code Electrical Telegraph

The Bain Chemical Telegraph (1848)

Alexander Bain automatic perforated-tape transmitters (1864).

Telex.

CODED ELECTRICAL TRANSFER OF IMAGES

Elisha Gray's telautograph (1886); the telescriber.

The Vail telegraphic printer (1837)

The House telegraphic printer (1846)

Frederick Bakewell's shellac conducting roller (1848)

Giovanni Caselli's fascimile pantelegraph (Paris-Lyon 1865-1870)

Arthur Korn's telephotography (1907)

Edouard Belin's Belinograph (1913)

Alexander Muirhead's 1947 fax.

ELECTRICAL TRANSFER OF SOUND

Unorthodox telephony networks and devices:

The Bliss toy telephone (1886)

Telefon Hirmondo

Cahill's Telharmonium (1895)

Bell's photophone

The Telephone Herald of Newark

Electrophone Ltd

Telephonic Jukeboxes: The Shyvers Multiphone, the Phonette Melody Lane, the AMI Automatic Hostess, the Rock-Ola Mystic Music System

ELECTRICAL TRANSFER OF SOUND AND IMAGE

Dead Telephony:

The AT&T Nipkow disk picturephone (1927)

Gunter Krawinkel's video telephone booth (Germany

1929)
Reichspost picturephone (Germany 1936)
AT&T Picturephone
AT&T Videophone 2500

Dead Mechanical Television:
Baird Television
Baird Noctovision
Baird Telelogoscopy
The General Electric Octagon
The Daven Tri-Standard Scanning Disc
The Jenkins W1IM Radiovisor Kit
The Jenkins Model 202 Radiovisor
Jenkins Radio Movies
The Baird Televisor Plessey Model
The Baird Televisor Kit
The Western Television Corporation Visionette

Dead Color Television Formats:
Baird Telechrome
HDTV
PALplus letterbox format

Dead Interactive Television:

Zenith Phonevision, the first pay-per-view TV service (1951).

AT&T wirephoto (1925)

DEAD DIGITAL NETWORKS

Teletext

Viewtron

Viewdata

Prestel

The Source

Qube

Alex (Quebec)

Telidon (Canada)

Viatel and Discovery 40 (Australia)

The ICL One-Per-Desk

TRANSFERS BY ELECTROMAGNETIC RADIATION

Dead Television:

Nipkow disk (1884)

Zworykin iconoscope (1923)

Farnsworth Dissector

Hugo Gernsback's Nipkow television broadcasts (1928)

Microwaves:

Microwave relay drone aircraft (Canada 1990s)

Radio

RCA radiophoto (1926)

DEAD INK-BASED MEDIA

Dead text production devices and systems:

Typewriters

Henry Mill's device (1714)

Pingeron's machine for the blind (1780)

Burt's Family Letter Press (1829)

Xavier Progin's "Machine Kryptographique" (1833)

Guiseppe Ravizza's "Cembalo-Scrivano" (1837)

Charles Thurber's "Chirographer" (1843)

Sir Charles Wheatstone's telegraphic printers (1850s)

J B. Fairbanks' "Phonetic Writer and Calico Printer"

Giuseppe Devincenzi's electric writing machine (1855)

Edison electric typewriter (1872)

Bartholomew's Stenograph (1879)

Schulz Auto-typist punch-paper copier typewriter (1927)

Weir's pneumatic typewriter (1891)

Juan Gualberto Holguin's 'Burbra' pneumatic typewriter (1914)

The IBM Selectric.

Dead copying devices:
James Watt's ink copier (1780)
The aniline dye copy press
The hektograph
Edison's Electric Pen stencil (1876)
The Edison pneumatic pen stencil
The Edison foot-powered pen stencil
The Music Ruling pen stencil
The Reed pen stencil
Zuccato's Trypograph (1877)
Gestetner's Cyclostyle (1881)
The Edison Mimeograph (1887)
The Gammeter, aka Multigraph (circa 1900)
The Vari-Typer

Chinese imperial court printed newspaper (circa 618 AD)
Beijing city printed newspaper (748 AD)
Bi Sheng's clay movable type (1041 AD)

DEAD SOUND-CAPTURE TECHNOLOGIES
Extinct forms of dictation machine:
Poulsen's telegraphon wire recorder (1893)

The Wilcox-Gay Coin Recordio (1950?)

DEAD SOUND ARCHIVAL TECHNIQUES

Extinct phonographic formats:

Leon Scott de Martinville phono-autograph, Edison tinfoil cylinder, Edison wax cylinder, the Bettini Micro-Phonograph, the telegraphone, Bell's graphophone, The Columbia Graphophone Grand, the Edison Concert Grand Phonograph, the Pathe' Salon cylinder, the Edison Blue Amberol cylinder, the Edison vertical-groove disc phonograph, the Michaelis Neophone, wire recorders, 78s, 8-track tape, 2-track Playtape, the Elcaset, Soviet "bone music," aluminum transcription disks.

DEAD SOUND REPRODUCTION TECHNOLOGIES: The AT&T Voder (1939) The Bell Labs Vocoder Talking dolls and cassette dolls (von Kempelen's "talking" doll (1778), Robertson's talking waxwork (1815), Faber's talking automaton (1853), Teddy Ruxpin, dolls linked to television programs, realistic sound-producing squeeze toys, etc).

DEAD STILL-IMAGE CAPTURE TECHNOLOGIES

Extinct photographic techniques: Niepce's asphalt photograph (1826), daguerrotype, talbotype, calotype, collodion, fluorotype, cyanotype, Pellet process, ferro-gallic and ferro-tannic papers, albumen process, argenotype, kalliotype, palladiotype, platinotype, uranium

printing, powder processes, pigment printing, Artigue proces, oil printing, chromotype, Herschel's breath printing, diazotype, pinatype, wothlytype, etc.

DEAD STILL-IMAGE TO TACTILE IMAGE TECHNOLOGY

Naumburg's printing visagraph and automatic visagraph.

DEAD STILL-IMAGE DISPLAY TECHNOLOGIES

The stereopticon, the Protean View, the Zogroscope, the Polyorama Panoptique, Frith's Cosmoscope, Knight's Cosmorama, Ponti's Megalethoscope (1862), Rousell's Graphoscope (1864), Wheatstone's stereoscope (1832), dead Viewmaster knockoffs.

Medieval and renaissance magic-glass conjuring. Alhazen's camera obscura (1000 AD), Wollaston's camera lucida (1807). Magic lantern, dissolving views

Phantasmagoria: Robertson's Fantasmagorie, Seraphin's Ombres Chinoises, Guyot's smoke apparitions, Philipstal's phantasmagoria, Lonsdale's Spectrographia, Meeson's phantasmagoria, the optical eidothaumata, the Capnophoric Phantoms, Moritz's phantasmagoria, Jack Bologna's Phantoscopia, Schirmer and Scholl's Ergascopia, De Berar's Optikali Illusio, Brewster's catadioptrical phantasmagoria, Pepper's Ghost, Messter's Kinoplastikon.

Biddall's Phantospectraghostodrama and similar "fairground bogeys."

Riviere's Theatre d'Ombres.

DEAD STILL-IMAGE "3-D" WITH SOUND

The Talking View-Master.

DEAD MULTIPLE-IMAGE PERSISTENCE-OF-VISION TECHNOLOGIES

Joseph Plateau's phenakistiscope (1832), Emile Reynaud's praxinoscope, Ayrton's thaumatrope or "magic disks" (1825), Stampfer's stroboscope, William George Horner's zoetrope or "wheel-of-life" (1834), L. S. Beale's choreutoscope (1866), the viviscope, Short's Filoscope, Herman Casler's mutoscope and the "picture parlor" (1895), the Lumiere Kinora viewer and Kinora camera, the fantascope, etc.

Dead cinematic devices, including but not limited to: Muybridge's zoogyroscope, E J Marey's chronophotographe and fusil photographique, George Demeny's Phonoscope, Edison kinetoscope, Anschutz's Electro-Tachyscope, Armat's vitascope, Rudge's biophantascope, Skladanowsky's Bioscope, Acre's kineopticon, the counterfivoscope, the klondikoscope, Paul's theatrograph, Reynaud's Theatre Optique, Reynaud's Musee Grevin Cabinet Fantastique, Lumiere cinematographe, Kobelkoff's Giant Cinematographe, Lumiere Cinematographe Geant (1900), the vitagraph,

Paul's animatograph, the vitamotograph, the Kinesetograph, Proszynski's Oko, the Urbanora, the Prague Laterna Magika.

DEAD MULTIPLE-IMAGE, PERSISTENCE-OF-VISION, SOUND TECHNOLOGIES

the Photo-Cinema-Theatre sound film system (1900), Gaumont's Chronophone (1910), Messter's Biophon (1904), The Mendel-Walturdaw cinematophone (1911), The Jeapes- Barker Cinephone (1908), Hepworth's Vivaphone (1911), Edison kinetophone (1913), Ruhmer's Photographon optical sound recorder (1901), the synchronoscope, the cameraphone, phonofilm, the graphophonoscope, the chronophotographoscope, the biophonograph, DeForest Phonofilm (1923), Warner Bros/ Western Electric Vitaphone (1926), Fox Movietone (1927), Vocafilm, Firnatone, Bristolphone, Titanifrone, Disney's Cinephone, Hoxie / RCA Photophone (1928), General Electric Kinegraphone (1925), Cinerama (1951), CinemaScope (1952), Natural Vision (1952), etc.

The Scopitone.

DEAD MULTIPLE-IMAGE, PERSISTENCE-OF-VISION, IMMERSIVE

Raoul Grimoin-Sanson's Ballon-Cineorama ten-projector circular screen (1900)

DEAD MULTIPLE-IMAGE, PERSISTENCE-OF-VISION, SOUND, SMELL Odorama, Smell-O-Vision (1960), Aromarama (1959) etc.

DEAD MULTIPLE-IMAGE, PERSISTENCE-OF-VISION, SOUND, SMELL, IMMERSIVE Morton Heilig's early virtual reality.

DEAD MULTIPLE-IMAGE, PERSISTENCE-OF-VISION, "3-D"

Devignes's stereoscopic zoetrope (1860) Stereoscopic phenakistoscopes: Seller's Kinematoscope (1861), Shaw's stereoscopic phenakistiscope (1860) Bonelli and Cook's microphotograph stereo-phenakistiscope (1863), Wheatstone's stereoscopic viewer (c. 1870)

3-D projection systems: d'Almeida's projected 3-D magic lantern slides (1856), Heyl's Phasmatrope (1870), Grivolas's stereoscopic moving pictures (1897), the Fairall anaglyph process (1922), Kelly's Plasticon (1922), Ives and Leventhall's Plastigram, aka Pathe Stereoscopiks, aka Audioscopiks, aka Metroscopix (1923,1925, 1935, 1953), Teleview (New York 1922), polarized light stereoscopic movies (1936), Ivanov's parallax stereogram projector (Moscow 1941), Savoy's Cyclostereoscope (Paris 1949), the Telekinema (London 1951), Space Vision (Chicago 1966).

DEAD MULTIPLE-IMAGE, PERSISTENCE-OF-VISION, SOUND, ARCHIVAL

Dead video: Baird Phonovisor wax videodisk (1927), Ives/Bell Labs Half-Tone Television (1930s) Eidophor video projector (1945), PixelVision, Polavision, Philips Laservision videodisk, Panasonic HDTV (1974), McDonnell Douglas Laserfilm Videodisc (1984), analog HDTV (1989), RCA SelectaVision CED videodisk, Telefunken Teldec Decca TeD videodisk, TEAC system videodisk, Philips JVC VHD/AHD videodisk

Dead videotapes: Ampex Signature I (1963), Sony CV B/W (1965), Akai 1/4 inch B/W & Colour (1969), Cartivision/Sears (1972) Sony U-Matic (197?), Sony-Matic 1/2" B/W (197?) EIAJ-1 1/2" (197?), RCA Selectavision Magtape (1973) Akai VT-100 1/4 inch portable (1974), Panasonic Omnivision I (1975), Philips "VCR" (197?), Sanyo V-Cord, V-Cord II (197?) Akai VT-120 (1976), Matsushita/Quasar VX (1976) Philips & Grundig Video 2000 (1979), Funai/Technicolor CVC (1984) Sony Betamax

DEAD VIRTUALITIES

Physical display environments (non-immersive): Dioramas (no sound), de Loutherbourg's Eidophusikon (sound and lighting) (1781), the Stereorama, the Cosmoramic Stereoscope,

Mechanical drama: Japanese karakuri puppet theatre Heron's Nauplius. Dead thrill rides.

Immersive physical display environments Panoramas,

Poole's Myriorama, the Octorama, the Diaphorama, Cycloramas, the Paris Mareorama (1900).

Defunct digital VR systems.

DEAD DATA-RETRIEVAL DEVICES AND SYSTEMS

accountant tally sticks Card catalogs: The Indecks Information Retrieval System, Diebold Cardineer rotary files, etc. Vannevar Bush's Comparator and Rapid Selector Scott's Electronium music composition system

DEAD COMPUTATIONAL TECHNOLOGY (ANALOG)

Extinct computational platforms:

abacus (circa 500BC Egypt, still in wide use) saun-pan computing tray (200 AD China) soroban computing tray (200 AD Japan) Napier's bones (1617 Scotland), William Oughtred's slide rule (1622 England) and other slide rules, Wilhelm Schickard's calculator (1623 ?) Blaise Pascal's calculating machine (1642 France) Schott's Organum Mathematicum (1666) Gottfried Liebniz's calculating machine (1673) Charles Babbage's Difference Engine (built 1990s) (1822 England) Charles Babbage's Analytical Engine (never built) (1833 England) Scheutz mechanical calculator (1855 Sweden) The Thomas Arithmometer Hollerith tabulating machine (1890) Vannevar Bush differential analyzer (1925 USA)

DEAD COMPUTATIONAL TECHNOLOGY (DIGITAL)

The Cauzin Strip Reader (archival)

Extinct game platforms: Actionmax Video System, Adam Computer System, Aquarius Computer System, Atari: 2600/5200/7800, Colecovision, GCE Vectrex Arcade System, Intellivision I/II/III, Odyssey, Commodore, APF, Bally Astrocade, Emerson Arcadia, Fairchild "Channel F," Microvision, RCA Studio II, Spectravision, Tomy Tutor, etc.

DEAD BINARY DIGITAL COMPUTERS

Konrad Zuse's Z1 computer (1931 Germany) Atanasoff-Berry Computer (1939 USA) Turing's Colossus Mark 1 (1941 England) Zuse's Z3 computer (1941 Germany) Colossus Mark II (1944 England) IBM ASCC Mark I (1944 USA) BINAC (Binary Automatic Computer) (1946-1949 USA) ENIAC (Electronic Numerical Integrator and Computer) (1946 USA)

Dead personal computers:

Altair 8800, Amiga 500, Amiga 1000, Amstrad Apple I, II, II+, IIc, IIe, IIGS, III Apple Lisa, Apple Lisa MacXL, Apricot Atari 400 and 800 XL, XE, ST, Atari 800XL, Atari 1200XL, Atari XE Basis 190, BBC Micro, Bondwell 2, Cambridge Z-88 Canon Cat, Columbia Portable Commodore C64, Commodore Vic-20, Commodore Plus 4 Commodore Pet, Commodore 128 CompuPro "Big 16," Cromemco Z-2D, Cromemco Dazzler, Cromemco System 3, DOT Portable, Eagle II Epson QX-10, Epson HX-20, Epson PX-8 Geneva Exidy Sorcerer, Franklin Ace 500, Franklin Ace 1200 Gavilan, Grid Compass, Heath/Zenith, Hitachi Peach

Hyperion, IBM PC 640K, IBM XT, IBM Portable IBM PCjr, IMSAI 8080, Intertek Superbrain II Ithaca Intersystems DPS-1, Kaypro 2x Linus WriteTop, Mac 128, 512, 512KE Mattel Aquarius, Micro-Professor MPF-II Morrow MicroDecision 3, Morrow Portable NEC PC-8081, NEC Starlet 8401-LS, NEC 8201A Portable, NEC 8401A, NorthStar Advantage, NorthStar Horizon Ohio Scientific, Oric, Osborne 1, Osborne Executive Panasonic, Sanyo 1255, Sanyo PC 1250 Sinclair ZX-80, Sinclair ZX-81 Sol Model 20, Sony SMC-70, Spectravideo SV-328 Tandy 1000, Tandy 1000SL, Tandy Coco 1, Tandy Coco 2 Tandy Coco 3, TRS-80 models I, II, III, IV, 100, Tano Dragon, TI 99/4, Timex/Sinclair 1000 Timex/Sinclair color computer, Vector 4 Victor 9000, Workslate Xerox 820 II, Xerox Alto, Xerox Dorado, Xerox 1108 Yamaha CX5M etc. etc. etc.

Dead computer languages:

Fortran I, II and III, ALGOL 58 and 60, Lisp 1 and 1.5 COBOL, APT, JOVIAL, SIMULA I and 67 JOSS, PL/1, SNOBOL, APL

Dead Internet techniques.

We are actively hunting data in all these categories. We are also searching for new taxonomical methods and alternative categorization schemes. Send email if you (a) are personally willing to re-format this list along some specific taxonomical scheme or (b) you have a novel idea for a taxonomical approach.

Bruce Sterling (bruces@well.com) Jan 18, 1997