Volume 15, No. 2 April 2003

ANTENNA

Newsletter of the Mercurians
Society for the History of Technology Special Interest Group
Publication costs met in part by support of the Shiers Memorial Fund
WWW.MERCURIANS.ORG

IN THIS ISSUE

HOMAGE TO PAMELA LAIRD

Mercurial Matters

The annual meeting of the Mercurians took place last October at Le Commensal in Toronto. At the end of the meeting, we presented Pam Laird with an award for her long years spent on the arduous task of editing the newsletter, *Antenna*, and chairing the Mercurians.

The previous issue (Fall 2002) marked the first in fourteen years that Pam did not have a hand in editing *Antenna*. Back then, in 1988, Milton Mueller was editor, and *Antenna* benefited from the work of three Pamela's. Pamela Inglesby and Pamela Sankar, from the University of Pennsylvania Annenberg School of Communications, served on the publication staff, while Lori Breslow and Pamela Laird shared the jobs of SIG coordinator and consulting editors. The faculty sponsor was none other than Carolyn Marvin. Also in 1988, during the SHOT meeting held at the Hagley Museum in Delaware, the SIG selected its name, Mercurians, which member Keith Nier, then with the Thomas Edison Papers, had suggested.

Back then, too, *Antenna* appeared three times a year, but also had a staff of nine to do the work, plus generous Annenberg grants.

The Mercurians and *Antenna* have traveled a long road since then, and so has the world. In 1988, after having been on the brink of total global war and annihilation for four decades, the U.S. was on the brink of peace with its cold war rivals.

Just as the world has changed since then, *Antenna* continued to evolve, and so did Pam Laird. The committed Annenberg graduate students moved on; Pam, still SIG coordinator, took on yet another duty, editorship of *Antenna*; and the newsletter moved to Denver, along with Pam and Frank, her husband. She and Frank and *Antenna* have been at the University of Colorado ever since.

Nobody will ever know how much time and hard work Pam put into getting *Antenna* into our mail-boxes year after year. She did the editing, the writing, and the graphics single-handedly; she was the entire publication staff. Pam also secured underwriting from the University of Colorado through her department. Nor can we realize completely her tireless efforts year after year to set up and run the Mercurians' breakfasts, to coordinate with SHOT, and to manage the SIG finances. *Antenna* and the Mercurians, for many long years now, has been, more than anything else, the work and creation of Pam Laird.

After being a subscriber for ten years, I joined Pam in putting together the newsletter. To say that it was a pleasure to work with Pam is an understatement, for I truly cannot express my delight in collaborating with such a professional and skilled editor and historian. When I learned that Pam wished to retire from editing *Antenna* and serving as the Mercurians' chair and SHOT liaison, I began wonder about what would serve best as a fitting tribute.

I consulted fellow Mercurian Dave Whalen and Jonathan Coopersmith, who chairs the Jovians SIG for electrical technology. We finally decided on "the flame."

"The flame," shown on this issue's cover, is made of jade crystal, stands 25 centimeters (ten inches) tall, and bears the inscription:

PAMELA LAIRD
with graditude, appreciation,
and love
THE MERCURIANS

Above the inscription is the laser-etched image familiar to all Mercurians, shown at the top of this column. It is Adolph A. Weinman's likeness of Liberty wearing a winged cap to symbolize freedom of thought as stamped on dimes minted from 1916 to 1945. We prefer, however, to interpret the image in our own way: winged Mercury.

We owe the representation of winged Mercury (or Lady Liberty) to Mercurian Pam Stephan. (Another Pam working on *Antenna!*) She skillfully converted an electronic image into an outline suitable for the laser engraving process. She deserves at least a word of appreciation for her work on the project, not to mention the financial contribution that she and her husband, fellow Mercurian Karl Stephan, made toward defraying the cost of commissioning "the flame." She really deserves applause also for the skillful way in which she has been building and maintaining our website <***mercurians.org***>.

While we look back on *Antenna's* past, which as historians we are constrained to do by our very nature, it is imperative that we "don't stop thinking about tomorrow." Let's keep *Antenna* useful, informative, and fun for all. Please send articles, essays, news, reviews, queries, statements of your work, information about conferences, museums, publications, archives, and institutions that may be of interest to Mercurians.

Conference

"From Creator to Consumer in a Digital Age"
April 22-24, 2003
Royal Melbourne Institute of Technology
Cairns, Australia

This International Conference on the Future of the Book is hosted by the RMIT International Centre for Graphic Technology with financial support from Australia's Department of Industry, Tourism and Resources.

The book is now 550 years old, if one dates its history from Gutenberg's invention, or much older if one dates it from the Chinese invention of moveable type, or the codex, or even the beginning of writing on transportable media. This conference, however, is about the book's future, as a creature of and conduit for human invention. It seeks answers to such questions as whether new media (the Internet, multimedia texts, and new delivery formats) represent a threat or an opportunity.

The papers submitted for the conference proceedings will undergo full peer-review and will appear in both print and electronic formats. For those unable to attend the conference, virtual registrations will be available to allow access to the electronic versions of the conference proceedings, as well as virtual presentations.

The deadline for submitting paper proposals was December 15, 2002. For details about the conference, consult the official website:

http://www.Book-Conference.com

Conference

"Printing and the Worlds of Learning"
January 5-6, 2004
Downing College, Cambridge

The Printing Historical Society, in association with the Cambridge Bibliographical Society and the Textbook Colloquium, announces its 2004 conference and requests interested people to submit abstracts for papers to be presented at the conference.

In addition to the papers, participants will have opportunities to visit the famous Wren Library at Trinity College Cambridge, the recently built Quinlan Terry Library at Downing College, the Rampant Lions Press, and at Cambridge University Library, Stanley Morison's Library and the "bibliographical" press.

Possible topics for papers include: Printing and Universities—university printers, university presses and printing houses, university censorship of printing, printing history as an academic study, university libraries and printing history, and bibliographical presses for training academics; Printing & Schools—printing and literacy, printing and textbooks, school presses, training the printer; Printing & Learning Beyond Academia—non-university printing museums and libraries, private and fine presses, printing and self-help, printing as rehabilitation.

The deadline for submitting abstracts was April 1, 2003. For more information, contact Dr. M.M. Smith, Department of Typography, University of Reading, 2 Earley Gate, Reading RG6 6AU, UK; or via e-mail:

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George Shiers and the Memorial Fund

If you are a regular reader of *Antenna*, you may have noticed something different about our masthead, namely the phrase, "Publication costs met in part by support of the Shiers Memorial Fund."

George Shiers was well known as a television historian, but he also contributed several edited compilations to a series of reprint volumes published by Arno Press (owned by *The New York Times*; the titles were distributed later by the Ayer Company) during the 1970s on communication technologies from the telegraph and telephone to radio and television. He started his publishing career, however, with a pair of best-selling books on electronic drafting and the design and construction of electronic equipment.

Shiers, with the help of his wife May, also compiled a bibliography of the history of electronics, and had completed most of a valuable comprehensive bibliographic guide to the first decades of TV history. After Shiers' death, that was seen through to publication by Mercurian Christopher H. Sterling, who more recently completed an updated version of the first bibliography, which now focused on telecommunication technology. The editorial link between the two men was rather appropriate.

George Shiers also endowed a memorial fund at George Washington University, where Christopher Sterling is director of the Graduate Telecommunication Program and a professor of Media and Public Affairs. Sterling's research interests concern the history of, and policy surrounding, electronic media and telecommunications. He has authored or edited over 15 books.

Thanks to the generosity of Christopher Sterling and (posthumously) George Shiers, *Antenna* will be receiving a generous subvention from the George Shiers Memorial Fund that should guarantee the future of our newsletter. Thank you, Christopher Sterling and George Shiers!

Centennial of Radio

This year marks the centennial of radio . . . or should we say *another* centennial of radio? One century ago, on January 18, 1903, Guglielmo Marconi transmitted a message from President Theodore Roosevelt from a station in the Massachusetts town of South Wellfleet (now known as Marconi Beach) to a sister station in England. A reply from King Edward VII soon came back.

Marconi, born in 1874 in Bologna, was fascinated by the idea of using electricity to communicate across distances without the assistance of wires or cables. Other inventors in France, Germany, Russia, and elsewhere pursued the same idea. After constructing a crude apparatus, Marconi gradually increased the distance over which he could transmit. By 1895, he had succeeded in transmitting Morse signals more than two kilometers. By 1898, he had formed the Wireless Telegraph and Signal Company in England, and had set up a factory to build wireless sets.

Guglielmo Marconi in 1901

In England, Marconi sent signals from ships at sea to lighthouses, and from one royal English palace to another. Then, in 1899, he sent the first international wireless transmission across the English Channel. These "stunts" served an ulterior commercial purpose.

In 1903, Marconi, only 28 years old, attempted to transmit across the Atlantic Ocean from the United States. He set up three stations in Poldhu (Cornwall), England; Glace Bay (Cape Breton Island), Nova Scotia; and Wellfleet, Massachusetts. The Glace Bay station received the very first transatlantic radio signals. However, the first transatlantic wireless communication *from* the United States took place on January 18, 1903, between the Wellfleet and Poldhu stations.

How much of a "first" was this event? These were not Marconi's first transmissions from America to England. In 1901, he achieved his first successful transatlantic radio transmission, sending the letter "S" in Morse code from St. John's, Newfoundland, to Poldhu. That event has received far more attention than the later Wellfleet transmission—deservedly so, for it was the first radio communication from America to England. Moreover, the 1903 transmission did not demonstrate a direct link between Massachusetts and Cornwall, as Marconi's Nova Scotia station relayed the signals from Wellfleet to Poldhu.

The message sent from President Roosevelt to King Edward VII was simple: "In taking advantage of the most wonderful triumph of scientific research and ingenuity which has been achieved in perfecting a system of wireless telegraphy, I extend on behalf of the American people most cordial greetings and good wishes to you and all the people of the British Empire."

Among the events that marked the centennial locally was a display of Marconi-related artifacts by the Wellfleet Historical Society. Among the artifacts were letters from Marconi, many of which mention the difficulties involved in setting up his transmitters in the blustery Cape Code winds, and photographs of Marconi and his team. The celebration also included a transmission of the original message from President Roosevelt to King Edward, as well as a new message from the latest U.S. President to Queen Elizabeth II, sent in code and by voice.

Marconi's daughter, Princess Elettra Marconi, was present at the Wellfleet station, while her son, also named Guglielmo Marconi, received the message from his mother at the family's ancestral home in Bologna. In 1978, the 75th anniversary of the same event included messages from President Jimmy Carter, President Giovanni Leone (Italy), and Marconi's daughter.

The current Wellfleet station is not at the same location as the original out of necessity. The original site, where the station's four 210-foot wooden towers stood, is now under water. However, at very low tides a few remnants of its concrete foundations are visible beneath the surface. Today, a small monument high on the sandy bluff overlooking the beach marks the location.

The Wellfleet radio station operated until 1918. Aside from the Marconi display in 1903, the station received its most gripping message in 1912, when its operator received a transmission from the *Titanic* just hours before it sank.

Far less known or celebrated are the Marconi stations in New Jersey, the first of which he built in the Navesink Highlands ("Twin Lights") overlooking New York harbor with funding from *The New York Herald.* In 1906, Marconi built a number of high antennas along the Shark River in Wall Township. The station, W1GM, was the first commercial transatlantic communications installation. Transmissions originated, however, at a location forty miles away in Franklin Township along the Delaware-Raritan Canal.

In 1941, the Army Signal Corps, Ft. Monmouth, bought the site and renamed it for Col. Paul Wesley Evans, who had worked with Marconi on the development of radio transmitters and receivers. On January 10, 1946, Lt. Col. John DeWitt and others succeeded in bouncing radar signals off the moon from the Evans site.

Guglielmo Marconi received the Nobel Prize for physics in 1909. Time for another Marconi centennial?

New Mercurians

Jim Haynes

I'm a retired electrical engineer and computer plumber. I hung out at the hometown broadcast station and telephone and Western Union offices at an early age, then studied electrical engineering at the University of Arkansas from 1955 until graduating in 1960. While there, I obtained an amateur radio license and operated an amateur radioteletype. I worked for the Teletype Corporation the summers of 1958 and 1959. Among the projects were time-division multiplex systems for the military and a weather data collection and distribution system for the FAA.

While in the U.S. Air Force (1960-1963), my work included rocket engine testing, radio frequency spectrum management and interference location, analog computing, and playing with an early minicomputer, the Packard-Bell 250. Afterwards, I worked for the Teletype Corporation (1963-1966), where projects included high-speed (for the time) paper tape data transmission equipment, facsimile equipment, and product planning studies. While at the General Electric Computer Department in Phoenix (1966-1968), work included logic design on parts of the GE 635 and 645 computer systems and maintainability studies.

Then I worked for the University of California at Santa Cruz (1968-1998), designing, constructing, and maintaining equipment for the campus computer center and for the computer science department; planning and teaching hardware laboratory work for computer science; and rarely teaching computer architecture and design. Later the work was more computer system planning and administration for the computer center.

During much of this period I edited the Open Channel column in the IEEE computer magazine. Upon my retirement in 1998, I returned to Fayetteville, Arkansas and continued to operate amateur radio in all the digital modes. I am working with former Teletype colleagues on an engineering-oriented history of the company. Currently we are mostly gathering material that I am putting on a CD ROM. This is a "scrapbook," meaning the material has not yet been organized to make it easy to navigate. Also, I am collecting material and planning to write something on the subject of the electromechanical teleprinter switching systems.

We want to encourage new Mercurians to send in detailed news about your research interests and background. By introducing yourself, you may discover fellow Mercurians with similar interests as well as others who may be able to help in your research.

Richard Bellaver

I am the associate director of the Center for Information and Communication Sciences at Ball State University, where I've been for the past eight years, and teach the history of the information and communications industry, telecommunications management, and other courses. While working at AT&T headquarters as the acting director for system engineering, I was responsible for integrating the activities of the general departments, long lines, and information systems programming staffs.

Currently I am working on eBooks, not the text to be read off computers, but the storage devices that are stand-alone. I will be setting up two trials this Fall at the grade school level to see how effective these small, relatively inexpensive devices can be in overcoming the "heavy backpack syndrome." I have done work at the graduate level. You can look at ***www.bsu.edu/cics*** to see my earlier results.

Neil Burton

Originally trained in Information Systems, my first career was in the technology industry. In 1987, Merrill Lynch recruited me to establish and lead their European communications technology research; I specialized in mobile communications.

Presently I am a doctoral candidate at the Bartlett School of Architecture and Planning in University College London, where I am researching the impact of the telegraph on the city from 1845-1880. As preparation for this research, I completed an MA in the sociology of communications and technology at Brunel University, West London, and a BA with a major in the history of technology at the Open University.

My doctoral thesis explores the introduction of the telegraph into the UK and the accompanying spatial changes. It investigates how the technology evolved from a railway signaling device in 1845 to an information and communications tool, as well as the changing social construction as it became embedded in British society. Rapidly changing information and communication technologies are challenging our understanding of relationships in modern society. While many believe this process is unique to our age, the thesis agrees with Daniel Headrick's view that we've been experiencing such communications changes for (at least) three hundred years. In the tradition of Allan Pred and Richard Allen Schwarzlose, the research hopes to show the changing spatial relationship between Liverpool and Manchester and London during the 19th century using the theories of Alfred Weber, Walter Christaller, and August Lösch.

Citizens, Clients, and Consumers: Rethinking the Advent of American Telecommunications

Richard R. John

If we are living in the information age, when did it begin? To what extent have changes in what we have come to call the information infrastructure shaped the course of history? To what extent have they been shaped by the wider society?

These questions inform the book that I have been working on for the past few years that is tentatively titled "Making Connections: The Advent of American Telecommunications." My theme is the history of U.S. telecommunications in the seven-and-a-half decades between the first public demonstration of electric telegraphy in 1844 and the beginnings of commercial radio in 1920. This period, the heyday of the industrial age and the cradle of modern America, witnessed the creation of a global telegraph network and the nationwide telephone grid—two of the most notable scientific, technological, organizational, and entrepreneurial achievements of the day.

Most histories of U.S. telecommunications in its formative era stress the primacy of economic incentives and technological imperatives. Though I neglect neither economics nor technology, I broaden the angle of vision to embrace politics and culture, too. By paying attention to losers as well as winners, and to the often neglected paths not taken as well as to the more familiar success stories, I challenge familiar triumphalist narratives of technological progress and economic growth. In no sense was the outcome foreordained. Government officials, business leaders, industry critics, and telegraph and telephone users all made choices that shaped the evolution of the information infrastructure. Technological and economic considerations were never unimportant; yet they were rarely as pivotal as most previous scholars suppose. Far more important were cultural values and political practices—precisely the considerations that existing accounts underplay.

No history of American telecommunications can neglect the extent to which the leading institutions have been shaped by governmental agencies and civic ideals. Historians have long recognized the centrality of politics to twentieth-century developments of American telecommunications. Yet only rarely have they explored the relationship of politics and telecommunications in the less recent past. My project traces the influence upon U.S. telecommunications of a variety of governmental policies, including patent law, eminent domain, city charters, and state and federal regulation. Among the topics I consider are the brief experiment in government telegraphy in the 1840s; the postal telegraph movement of the post-Civil War decades; and the public ownership movement of the 1910s.

Perhaps the most significant and enduring of the cultural values to influence U.S. telecommunications in its formative era was the expansive, and indeed, almost utopian, ideal of equal access to information. Americans have long invested information technologies with an extraordinary range of meanings. It is partly for this reason that the realization of the equal access ideal has been so elusive. What one generation regarded as unattainable became, for the next, necessary and even unremarkable. Time and time again, critics warned that the potential of telegraphy and telephony was being perverted or unmet.

At its core, the equal access ideal affirmed a faith that improvements in information technology would foster social solidarity and moral progress. To invoke a religious metaphor that nineteenth-century Americans would have understood, it kept the covenant by affirming cherished values to which all Americans were presumed to subscribe.

The origins of the equal access ideal long antedated the initial public demonstration of electric telegraphy. During the Reformation, access to the printed Bible inspired lay challenges to clerical authority. During the Enlightenment, access to newspapers and pamphlets emboldened popular protest against monarchial prerogative. In the U.S., the equal access ideal acquired a heightened prominence in the 1780s, when the founders of the republic shifted the locus of sovereignty from the government to the people. Now that the people were sovereign, it seemed indisputable that they had a right to be informed.

In the new republic, the ideal of equal access initially focused on the obligation of government officials to provide citizens with information on public affairs. Beginning in the 1790s, this civic rationale shaped the mandate of the postal system, the keystone of the new republic's information infrastructure, and the first long-distance communications network in the United States. (Of course, this characterization of the postal system challenges the many media scholars who deny the existence of a long-distance communications network prior to the commercialization of the electric telegraph.) By the 1820s, this civic rationale expanded to embrace information relevant to market transactions. In the following decades, this gospel of speed prompted some to urge that the federal government build a nationwide optical telegraph network and prompted others—including inventor Samuel F. B. Morse—to urge that the government purchase the rights to the Morse telegraph.

Citizens, Clients, and Consumers: Rethinking the Advent of American Telecommunications (continued)

With the establishment in the 1860s by Western Union of a nationwide telegraph network, the debate over equal access to information entered a new phase. Western Union critics urged Western Union managers to adopt the same civic rationale that had long shaped postal policy. Western Union managers rejected this rationale by contending, among other things, that ordinary Americans would never use electricity to transmit information, regardless of the cost. Telegraph users, in their view, were not citizens for whom access to information was a fundamental right, but clients willing to pay a fee for a service. This disagreement sparked a thirty-year debate over the merits of what Western Union critics called "postal telegraphy."

In this debate, Western Union managers and their critics debated three distinct yet related issues: First, did Western Union have a civic obligation, like the Post Office Department, to provide equal access to every newspaper editor who wished to receive low-cost news reports? Or might it permit favored clients—such as the New York Associated Press—to provide special rates to its members? Second, did Western Union have an obligation, like the Post Office Department, to serve the masses as well as the classes? Was it merely a business tool, as Western Union managers assumed? Or did this assumption deny the revolutionary potential of the new technology, as their critics charged? And, third, should the federal government establish its own telegraphic facilities and, if so, would these facilities be superior to those that Western Union maintained?

With the invention of telephony, the terms of the debate shifted once again. From the outset, executives at American Bell (the parent of AT&T) presumed—like postal administrators, but unlike telegraph managers—that they had an obligation to serve the general population. In large part, this was because they conceived of telephony not as a private enterprise like Western Union, but as a public utility like the Post Office Department. The rejection of Western Union's business strategy by the founders of American Bell is overlooked by scholars as otherwise diverse as Claude Fischer and Milton Mueller who mistakenly assume that American Bell emulated Western Union in its early years. Business leaders learn from each other; the early history of American Bell is a case in point. Gardiner Greene Hubbard was not only a major American Bell investor and the father-in-law of telephone inventor Alexander Graham Bell, but also a longtime critic of Western Union and a leader in the movement for postal telegraphy. Hubbard's critique of Western Union would decisively shape corporate strategy at American Bell.

Early debates over equal access to telephony pivoted on divergent conceptions of its likely users. Bell executives initially envisioned as their primary clientele the urban middle-class. Bell's rivals, in contrast, targeted the inhabitants of the small towns and farm homesteads that dotted the vast American hinterland. Neither paid much attention to the urban working class. Goaded by would-be-telephone users, as well as by the threat of competition, Bell executives in the 1890s devised a variety of innovative pricing schemes—including pay telephones, party lines, and measured service—that enabled them to reach a much larger portion of the urban population. In addition, they met the demand of their core business users for long-distance connections by establishing what would by 1915 become a nationwide telephone grid. In the process, they reconceptualized telephone users as neither citizens nor clients but as consumers.

Among the most important of Bell's pricing innovations was measured service. Business historians have often assumed that measured service was unpopular with telephone users. This may well have been true in the small towns and farm homesteads dominated by Bell's competitors. Yet a very different situation prevailed in major urban centers such as Chicago and New York. In both cities, telephone user groups, often in conjunction with city government officials, opposed competition in telephony while supporting innovative pricing schemes (including measured service) as a superior alternative to flat rates.

The debate over equal access to telephony was subtly transformed after 1907, when a new generation of AT&T executives, led by Theodore N. Vail, championed "universal service" as a business strategy. Like the equal access ideal (which in certain respects it resembled), universal service was by no means easily defined. Did it imply universal interconnectivity for a relatively limited number of users at a relatively high cost? Or the extension of telephony at low cost to every American household within a limited geographical area? Or something else altogether? To ensure that they would have a major voice in answering these questions, AT&T executives launched a major corporate public relations campaign that was one of the first in American history. This campaign helped AT&T forestall its threatened dismemberment by the Justice Department and block the threatened nationalization of the industry—a major issue during the 1910s. No less importantly, it legitimized a regulatory regime that would guarantee AT&T a dominant position in the industry for the next seventy years.

Mercurian Honored
Basilio Catania

The Order Sons of Italy in America (OSIA) has officially recognized fellow Mercurian Basilio Catania of Turin, Italy, for his research documenting Italian inventor Antonio Meucci's contributions to the development of the telephone. Catania received the award at an October 12, 2002, banquet ceremony in Rome. Sons of Italy President Robert Messa presented a certificate of recognition to Catania for his 12 years of telecommunications research.

Catania has proved that Meucci's laboratory notebook was not a forgery, and that Meucci demonstrated his invention, which he called the telettrofono, in 1860, 16 years before Alexander Graham Bell patented his instrument. Meucci, however, in dire financial straits, was unable to afford the fees to patent his invention.

Catania's extensive search in about 50 archives and libraries in various countries and his study of their relevant documents also uncovered a mass of unpublished information on the suit brought by the U.S. government against Alexander Graham Bell and the Bell Company, which would have annulled the Bell patent.

Meucci died in 1889 before the government could complete its case, and history all but forgot him until Catania began his research.

Catania's discoveries have appeared in a number of scientific magazines, as well as in *Antenna*, and have been filed with the U.S. Congress in support of a resolution acknowledging Meucci's merits.

Catania also lectures on Meucci and has created an Internet site on the inventor:
www.esanet.it/chez_basilio

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E-Mail Directory Update

Membership in the Mercurians has been increasing, and so has our E-mail Directory!
Do we have your current e-mail address? Also, please check your listing for accuracy and case sensitivity.
Thanks!

Books of Interest to Mercurians

In lieu of the usual book reviews, we have decided to conduct an experiment. The following is an annotated list of selected books recently published in the field of the history of communications technology. The idea is that the annotated list is more useful than just a list of new books, because it provides more information. This format lacks the personal touch of a reviewer, but it allows us to publish information about more books, thereby making the exercise more valuable (hopefully) to you, the reader. We are interested in knowing what you think about this innovation, so please send your comments to: info@mercurians.org

***Disconnected: Deceit and Betrayal at WorldCom*. By Lynne W. Jeter. New York: John Wiley & Sons, February 2003. Pp. xxiv + 248; bibliographical references (p. 225-240) and index. $25.95.**

Disconnected is the first book to tell the tale of the once powerful telecom pioneer whose corporate scandal eclipsed the Enron fiasco. During the summer of 2002, WorldCom, once a leading carrier of Internet traffic, filed the largest bankruptcy claim in American history due to accounting errors totaling over $7 billion, and now finds itself on the brink of corporate extinction. *Disconnected* offers an engaging account of what really went wrong at WorldCom and why no one saw this corporate collapse coming.

Author and award-winning journalist Lynne W. Jeter has been covering WorldCom since 1984, mainly for the only statewide business journal in Mississippi (home of WorldCom headquarters), *The Mississippi Business Journal*. Jeter has followed the company's rise and fall since its inception in 1983 as LDDS. Jeter has a solid knowledge of the unique business climate of the Deep South and access to a wealth of information and contacts that no other reporter could possess on this topic.

Her book provides a one-of-a-kind look into the inner workings of this global telecom giant. Readers will take a front row seat as Jeter explores the personalities and factors that led to WorldCom's rise and dramatic fall, such as the failed Sprint merger in 2000 and the revelation in June 2002 of their overstatement in earnings. Digging deep to uncover the mistakes, missteps, and outright unethical behavior that engulfed WorldCom, *Disconnected* also takes a closer look at former CEO Bernie Ebbers, who was on the frontline during the years leading up to this corporate debacle.

***Nortel Networks: How Innovation and Vision Created a Network Giant*. By Larry MacDonald. New York: John Wiley & Sons, 2000. Pp. xxxix + 259; bibliographical references (p. 241-251) and index. $27.95.**

Larry MacDonald furnishes his readers a simple formula. Welcome to the culture of speed. Blur the Canadian origins. Ramp up international sales, especially to the United States. Establish useful corporate alliances. So long, sluggish and dated product lines! Bye bye, redundant employees! Whoosh! Grab companies with useful technologies like Bay Networks. Oops! Down goes the stock price. Pull back, holding your breath. That's the story of Canada's Nortel Networks in a nutshell. More comprehensive detail about how Nortel established the groundwork for Internet-based corporate networks on wireless communications and fiber-optics connections is offered in Larry MacDonald's *Nortel Networks: How Innovation and Vision Created a Network Giant*.

Nortel began in the late 19th century as the telephone-manufacturing arm of Bell Canada, originally building telephones based on the designs of the leading U.S. telecommunications manufacturer, Western Electric Company. For a time it also produced a host of consumer electrical products, such as fire alarms and radios, and was a major supplier to the Canadian military during the Second World War. By the late 1960s, however, Nortel began exploring digital telephone switches, long before other telecommunications companies, including U.S. behemoth AT&T, which became its eventual customer. In 2000, its parent company spun off Nortel as an independent corporation.

Larry MacDonald is a technology writer for various Canadian newspapers, including the *Ottawa Citizen* and the *Financial Post*, and a former Canadian federal government economist. He refers to government sanctioning of Nortel's monopolistic position as the preferred supplier for Bell Canada as "a covert industrial policy." This policy allowed the company to grow into the international player that it is today. MacDonald also speculates on the future of Nortel, namely, he believes that it will join forces with its California-based competitor, Cisco Systems.

More Books of Interest

***The Nokia Revolution: The Story of an Extraordinary Company that Transformed an Industry*. By Dan Steinbock. New York: AMACOM, 2001. Pp. xxxvii + 375; illustrated, bibliographical references (p. 323-361) and index. $27.95.**

The Nokia Revolution is a dense book packed with the results of prodigious research into the mobile communications behemoth, including reams of charts, statistics, and history that are likely to overwhelm casual readers. Although Nokia now dominates wireless communications worldwide, it began in 1865 as something completely different: a small timber concern in rural Finland. In 1917, it became part of a three-company partnership that expanded its operations into rubber works, cable, and electrical power. Fifty years later, in 1967, the Nokia Paper Factory merged with The Finnish Rubber Works and The Finnish Cable Works to form the Nokia Corporation.

During the second half of the seventies and into the eighties, the firm's CEO, the energetic and charming Kari Kairamo, guided Nokia's transformation into a diversified, global corporation that led many extraordinary advances in portable communications. Tragically, however, Kairamo committed suicide in 1988. Jorma Ollila succeeded him as CEO in 1992.

During the nineties, under Ollila's aegis, Nokia focused on digital (as opposed to analog) phones, while its chief competitors, Motorola and Ericsson, concentrated on developing new technologies. Today, Nokia makes about one out of every three cell phones in the world and is truly international. About half of its 55,000 employees (all of whom speak English) are Finnish, yet less than 3% of Nokia's revenues come from Finland.

The author, Dan Steinbock, is a "visiting virtual professor" at the Helsinki School of Economics as well as a researcher at the Columbia Business School.

SOME THOUGHTS ON RADIO

"Radio news is bearable. This is due to the fact that while the news is being broadcast the disc jockey is not allowed to talk."

"Citizen's Band radio renders one accessible to a wide variety of people from all walks of life. It should not be forgotten that all walks of life include conceptual artists, dry cleaners, and living poets."

—- Fran Lebowitz, "Metropolitan Life" (1978).

***Networking the World, 1794-2000*. By Armand Mattelart. Trans. Liz Carey-Libbrecht and James A. Cohen. Minneapolis: University of Minnesota Press, 2000. Pp. 160. $16.95 (paper).**

Armand Mattelart is a prolific and important thinker and writer about communications and its impact on society and culture. Currently he is professor of information and communication sciences at the Université de Paris-VIII, Saint-Denis. Among the nearly thirty books that he has written, some of his more noteworthy works (and this list is not intended to be inclusive) include: *How to Read Donald Duck: Imperialist Ideology in the Disney Comic* (with Ariel Dorfman, 1975); *Advertising International: The Privatisation of Public Space* (1991); *Rethinking Media Theory: Signposts and New Directions* (with Michèle Mattelart, trans. James A. Cohen and Marina Urquidi, 1992); *Mapping World Communication* (1994); *The Invention of Communication* (1996); and *Information Society: An Introduction* (2003). I first encountered M. Mattelart's work in the form of a report he wrote with the famous semiologist Yves Stourdzé to the French Minister for Research and Industry: *Technologie, culture & communication: rapport remis à Jean-Pierre Chevènement, ministre d'Etat, ministre de la Recherche et de l'industrie* (1982; English edition 1985).

The University of Minnesota Press recently released his *Networking the World, 1794-2000*, a history of global networks and their implications today. Our age of satellites, the Internet, and worldwide communications has seen no end to hype about the librating possibilities of international networks. Armand Mattelart argues that this rhetoric is hardly new and supports his case by placing contemporary global communication networks into historical context. He shows that both globalization and its attendant hype have existed since the road, and later the rail, became the fastest way to move information. Thus, the networking of the world began much earlier than many assume, namely in the late eighteenth century.

According to Mattelart, such Enlightenment ideals as universalism and liberalism spawned the internationalization of communication. He also examines how the development of global communications has been inextricably linked to the industrial revolution, modern warfare, and the emergence of nationalism. Throughout, Mattelart maintains that discourses of better living through globalization often mask projects of political, economic, and cultural domination, a theme that runs through many of his earlier books.

Liz Carey-Libbrecht is a freelance translator living in France. James A. Cohen is professor of political science at the Université de Paris-VIII, Saint-Denis and at the Institut d'Etudes Politiques de Paris.

More Books of Interest

***Global Communications, International Affairs and the Media Since 1945*. By Philip M. Taylor. New York: Routledge, 1997. Pp. xx + 248; bibliographical references (p. 229-241) and index. $95.00.**

Although Philip Taylor's book has been out a few years, its theme has taken on a new significance, for it is about mass communications and mass media as milieus in which politicians, statesmen, and soldiers increasingly operate. Taylor traces the increased involvement of the media in issues of peace and especially war from the nineteenth century to the present day, although the book's focus is principally the second half of the last century. He analyzes the nature, role, and impact of communications within the international arena and how communications interacts with foreign policy in practice, not theory. Taylor details the contemporary problems of reporting in wartime, using studies of the first gulf war and Vietnam, while simultaneously providing the broad historical context.

From the IEEE Virtual Museum: President Franklin Roosevelt shown giving one of his "fireside chats" that demonstrated the power of radio as well as its skillful use by FDR.

***Getting the Message: A History of Communications*. By Laszlo Solymar. New York: Oxford University Press, 1999. Pp. xii + 311; illustrated, maps, bibliographical references (p. 304-305) and index. $29.95.**

If there is a book category called "And now for something completely different," *Getting the Message* undoubtedly would be so classified. Is it a coffee table book, a textbook, or a serious history? Part I gives the reader "The first thirty-six centuries," while Part II is telegraphy (and a bit of telephony), and everything else (microwaves, digitization, fiber optics, deregulation, mobile communications, the fax, the "communications-computing symbiosis," and more) crowd into Part III.

Laszlo Solymar, an Oxford professor of engineering, infuses the text with quirky commentary, colorful character studies, social criticism, technical explanations, and personal prejudice. Indeed, he set out to make this book simultaneously technical, polemical, historical, analytical, and readable. The narrative is brisk, and a large number of illustrations and cartoons make Solymar's points. For example, he includes a "Punch" cartoon from 1879 that shows two people who appear to be videoconferencing, and a picture of an eavesdropping device used by Alexander the Great.

IEEE Virtual Museum

The IEEE Virtual Museum <***http://www.ieee.org/museum***> is an online educational resource created by the IEEE History Center at Rutgers University in collaboration with IEEE volunteers and others. The project began in 2000 as an initiative of the IEEE Foundation, Inc., which provided the seed money. The museum's primary goal is to provide historical information about electrical and electronic technologies, explain how those technologies worked, and show the evolution of those technologies. The museum is aimed primarily at high school students and their teachers as well as the non-engineering general public.

Creating the museum on the web, rather than establishing a brick-and-mortar institution, was important to the IEEE for a number of reasons. First, neither the IEEE nor the History Center has significant collections of artifacts or a professional curatorial staff. One advantage of building a virtual museum is that it can bring together the best artifacts from museums around the world and present them online. Second, the IEEE has a global membership, so its museum had to have the global reach that a physical museum simply cannot achieve. Future enhancements of the IEEE Virtual Museum may include the ability to select the language in which text is presented, thereby making the museum more accessible to non-English speakers.

The first two exhibits opened in 2001. They were "Socket to Me!" an overview of the history of electrical and computing technologies, and a more narrowly focused exhibit called "The Beat Goes On," examining the history of sound recording technology. "Socket to Me!" was created to provide an introduction or "backbone" for the museum. "The Beat Goes On," smaller in size and narrower in scope, provided a model for future exhibits on specialized topics.

Center staff also organized focus groups with educators to devise ways in which the material offered through the IEEE Virtual Museum might be incorporated into middle-school classrooms.

Two new exhibits were added during 2001 and 2002: one was on Thomas Edison, the other on the theme of women and technology. A fifth exhibit on microwave technologies, created largely by IEEE volunteers, will open in early 2003.

—David Morton

Hams on Wheels:
Amateur Radio Adapts to the Automobile

Ronald R. Thomas (W8QYR)

Today, for better or worse, we commonly see someone driving and talking on a cell phone at the same time. The technological marriage of the cell phone and automobile, however, is only the latest stage in the long evolution of two-way wireless mobile communication. Its ancestor, the automobile radiotelephone, has been around for decades, as has the citizens band radio. Another long-standing user community of automotive wireless communications is the amateur radio operator. Their small, solid-state, high-frequency transceivers fit unobtrusively under the dash of an automobile and connect easily to the 12-volt electrical system. "Ham" radiotelephony became widespread in the 1950s. Their creation of a new form of mobile communication is an interesting story and shows the difficulty of joining one technology with another, despite the relative maturity of both.

By the 1920s, hams were experimenting with vacuum-tube transmitters and radiotelephony, and by the 1930s, radio sub-bands existed for amateur voice communications. However, only a relatively small number (perhaps 25 percent) of hams were using voice communications, probably because the equipment was physically large and costly, and in the midst of the Great Depression very few hams could afford them. Then, during World War II, amateur radio communications ceased until the conflict ended.

The 1950s saw the return of prosperity for many Americans, and gradually more and more hams could afford to dabble in radiotelephony, or phone communications as it had come to be known. The creation of the Novice class license brought in a whole new generation of hams. Many wanted to use their Ham equipment in their automobiles. Police departments and other users of commercial two-way mobile radio equipment often installed an alternator and a second battery to power the equipment. Unfortunately, this rather expensive arrangement was well beyond the reach of the average ham. Then, too, there was the daunting technological problem of adapting the technology to the automobile.

The difference between the automobile electric generator of the 1950s and today's alternator is the difference between night and day. While today's alternator provides a constant amount of current regardless of the automobile's speed. A 1950s-era generator increased or decreased its current output in proportion to the speed of the automobile. As a result, when one sat in traffic with the lights on, the generator would fail to keep up with the drain on the battery. Worse yet, even when driving at highway speed, a generator could not produce enough current to keep up with the drain of the vacuum-tube transmitter.

In addition, the automobile was an electrically noisy environment. One needed noise suppressers for the spark plugs and distributor, bypass capacitors for the instrument panel gauges, and even wheel noise suppressers that fit between the front wheel bearings and the hubcaps. Despite these technological realities, if a ham still wanted to go mobile, they might start with just a receiver, then add the ability to transmit later.

One option was to convert an existing car radio into one capable of receiving amateur frequencies. This was done by connecting a small, tunable shortwave converter to it. The operator would set the auto radio to a specific frequency, and the shortwave tuner would use the auto radio as an intermediate frequency and audio amplifier. Another option was to use a crystal-controlled, fixed-tuner converter, which required tuning the auto radio to select a receiving frequency. These approaches worked, both because the 1950s was still the era of amplitude modulation (AM) radio, and because the power requirements were low.

Adding a mobile transmitting capability was much more challenging. One could buy a commercial ham transmitter or build one based on schematic diagrams, parts lists, and photos in ham radio magazines. Mobile kits, such as those sold by Heathkit, just were not available. The next step was to try to find the parts. This could be a very time consuming process. While some large cities had retail and surplus parts stores, mail order suppliers usually were the best source for new and military surplus parts. Next, the amateur drilled holes in a metal chassis for the vacuum tubes and individual components, and started wiring and soldering everything together. The availability of printed circuits and transistors was still years into the future. The final step was to install it under the dash of the automobile and to mount the antenna.

Clearly, after all this hard work, the first mobile contact had to be a thrill. The ham could now hold a conversation with another amateur radio operator, transmitting from either a fixed or mobile base, while driving down the highway. Of course, the mobile ham operator's automobile might be mistaken for an undercover police vehicle, because both hams and police vehicles used the same type of whip antennas.

After the 1950s, mobile ham radio technology continued to evolve in step with changes in stationary sets. By the 1960s, the popularity of AM phone

Hams on Wheels (continued)

operations on the high-frequency (HF) bands had created a real interference problem, so gradually phone operations on those bands switched from AM to single side band (SSB). Although SSB theory was understood as early as the 1930s, the technology did not become available to amateur radio operators until the 1960s. The Heath Company played a significant role in the transition to SSB, with the introduction of the inexpensive (under $300) HW-100 transceiver, which, when installed in an automobile, made mobile operations more of a practical reality.

Another key change was use of repeaters on the VHF bands, because they prompted the move from amplitude modulation (AM) to frequency modulation (FM). The VHF bands now came to life, and the 1970s saw the introduction of small hand-held rigs that made VHF FM operations even more popular. These small rigs made mobile operation a practical reality for every ham. Even diehard HF operators eventually ended up owning a VHF/FM set. The 1980s and 1990s saw a further increase in the transition to phone operations, which today is simply taken for granted. However, while enjoying the fun of phone operations, it is worth remembering that it took a lot of hard work to make phone operations widely available to every ham.

The Heath Company HW 100 SSB transceiver, advertised as "the most SSB equipment you can get for the money," cost under $300. The company offered an installment plan of no money down and $22 a month. The set used 20 tubes and several solid-state parts (transistors and diodes) mounted on nine circuit boards. Hams built the radio from a kit that included all parts (including the case), directions, and schematic diagrams. The speaker and power supplies sold separately.

"The day of the printed word is far from ended. Swift as is the delivery of the radio bulletin, graphic as is television's eyewitness picture, the task of adding meaning and clarity remains urgent. People cannot and need not absorb meanings at the speed of light."

—- Erwin Canham, Editor, *Christian Science Monitor*, 1958

Announcement

The Mercurians' annual meeting will take place at lunchtime, Friday, October 17, 2003, in Atlanta, Georgia, at a moderately-priced Vietnamese restaurant called Cha Gio not far from the conference hotel. A map, directions, and more information will be posted on our website prior to the meeting. Students should e-mail <***info@mercurians.org***> their names to qualify for a free lunch.

Virtual Telecommunications History Museum

The Telecommunication History Group, on whose board of directors Mercurian Pam Laird serves, has merged with The Museum of Communications, formerly known as the Vintage Telephone Equipment Museum, which is sponsored by the Washington Telephone Pioneers of America. The museum is located in Seattle, Washington, at 7000 East Marginal Way South, just 1-1/2 miles north of The Museum of Flight.

The Museum of Communications celebrates the history of the telephone and telephone equipment in the United States. Among the exhibits are a model of Alexander Graham Bell's 1876 telephone, early wall telephones, a British Post Office call box, central office equipment, and several automated displays. The museum also features old amateur radio sets, a 1,000-watt AM broadcast transmitter manufactured in 1928 by Western Electric and formerly in commercial operation in Everett, Washington, as well as a movie projector, sewing machine, and washing machine from the 1920s. Virtually all of the equipment on display is operational. Volunteers provide guided tours. Take a virtual tour of the museum at their website:

http://www.museumofcommunications.org/

Business Matters

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