
Center for the History of Electrical Engineering

Newsletter No. 40 Fall 1995

History Center Goes On-Line

Beginning in early 1996, the history of electrical technology will meet its future, when the IEEE History Center launches its own home page on the World Wide Web. The Center's Web page will provide the world internet community with an opportunity to learn more about the Center and its programs; discover information about the history of electrical, electronics, and computer engineering; and connect to other organizations that investigate the role of all types of electrical technology in our society.

The Center's home page, which is currently under construction, will be mounted on the IEEE's file server around the beginning of the new year. Content that will be available on the Center's home page will include:

- Transcripts and abstracts of oral histories conducted with some of the most distinguished electrical engineers of the past 60 years.
- Reference material for historical research, such as the Center's *Sources in Electrical History, Volume 1: Archives and Manuscript Collections in U.S. Repositories*.
- Finding aids for collections in the Center's archives, such as the IEEE Merger Collection, which contains documents and letters relating to the decision of the American Institute of Electrical Engineers and the Institute of Radio Engineers to join together in 1963.
- Past issues of the History Center's newsletter, including a cumulative bibliography
- Information on current Center research programs and projects
- Information on the Center's Milestones program

- Advice concerning matters such as preserving paper records and artifacts, requesting historical information from the Center, applying for the Center's fellowship in electrical history, organizing historical sessions or finding historical speakers.
- Biographical information about Center staff
- The Center bookstore, offering sale of Center publications and other Center merchandise, including tee-shirts

- Links to other Web pages that have material that is related to the history of electrical technology

Plans for the future include adding a full catalog of the Center's archives and more of the Center's reference guides.

The best way, of course, to learn what the Center has to offer on-line is to visit our home page. For those not already familiar with the Web, we have put together a brief primer (see below) that should get you sufficiently oriented to some Web basics so that you can begin to assemble the pieces you will need. For those of you who are already experienced Web crawlers, our URL is http://www.ieee.org/history_center. See you soon.

What is the World Wide Web?

The Web is an improved way of using the internet.

Not so fast, smart guy...what is the internet?

The internet is the link that exists between many different computers (usually large ones) that allows them all to share files with one another.

Why do these computers want to share files?

For the same reason that libraries want to share books; it increases the volume of material that each computer has to offer to its users. For example, if the Center's new historian David Morton types a complete list of all the brands of 8-track tape players that were ever manufactured into his home computer, then only he will be able to use that list. If he types it into the computer at the office (which is connected by wires to the other computers in the office), then anyone here in the History Center will be able to access his list. If, now, he types the list into the Rutgers University computer (which is on the internet), then anyone who has an account with a computer that is also on the internet (and there are estimated to be 34 million such people) will be able to see Morton's critical fact sheet. Any machine on the internet can connect to any other machine on the internet and look at those files there that have been made publicly available.

So what does the Web add?

The Web, as we said before, is just a better way for people to use the internet. First of all, it has sounds and pictures. When you visit a Web page, your computer screen usually fills with brightly colored pictures, all supplied over the internet by the computer which is the actual machine where the Web page you are visiting is stored. Before the Web, when you connected to another computer over the internet, you had to type commands (that you might or might not be familiar with) and received only text back as your response. The Web standardizes the interface across the many different computers the internet lets you connect to (by letting you point and click with your mouse rather than use text commands) and expands the range of possible formats for the data you can receive.

More importantly, however, the Web makes connecting to other machines on the internet easier. When someone puts a Web page together, they can build automatic links to related material on other computer directly into the content of their page. For example, one of the articles we have on the Center's Web page makes mention of the Smithsonian Institution. Now, the Smithsonian itself has a Web page on their own computer that has a lot of material that might be of interest to the readers of our page. With the Web, we can put a button on our page, right at the spot where the Smithsonian is mentioned,

STAFF NOTES

Staff Speaks at SHOT

Two of the Center's staff presented research papers at the annual meeting of the Society for the History of Technology held in Charlottesville, Virginia in October. William Aspray gave a lecture entitled *The Early History of the Microprocessor: A Japanese and American Story* in a session on the Post Post-War. He presented a longer version of this paper several days later at the history department of the University of Delaware. Janet Abbate presented a paper on "'Open Systems' as a Sociotechnical Model for the Internet," describing how the engineering concept of an "open system" has taken on political connotations in the context of the Internet. She also chaired a session on the history of computing technologies.

NEW DONORS

With this issue of the newsletter, the IEEE Center for the History of Electrical Engineering welcomes four new members to our Partnership Program. Joining the program at the Associate level are:

- Earl Bakken
- The Central Research Institute of Electric Power Industry
- Tokyo Electric Power Company
- Toshiba

Our sincere thanks go out to these people and organizations. For a complete list of the Center's partners, please turn to the last page of this newsletter.

1996-97 Fellowship in Electrical History

Applications are currently being accepted for the 1996-97 Fellowship in Electrical History. The Fellowship is for either one year of full-time graduate work in the history of electrical science and technology at a college or university of recognized standing, or for up to one year of independent research for a recent Ph.D. graduate in the same field. The stipend is \$14,000.

The Fellowship committee evaluates applicants on the basis of a complete description of the proposed research, college tran-

Morton Lectures at Lehigh

On October 11th, staff Research Historian David Morton visited the Lehigh University campus in Bethlehem, Pennsylvania to deliver a talk as part of the University's visiting lecture series. The subject of the talk was "The History of the 8-Track Tape." Morton tracked the rise of this familiar technology from its early specialized application in the 1950s as a medium for background music to its eventual domination of the portable music market. He argued that the decline of the 8-track in the 1970s can be attributed not only to technical deficiencies and competition from the cassette, but also to cultural and economic factors. Morton drew his talk from research he conducted for his Ph.D. dissertation, which he successfully defended on November 2 at Georgia Tech in Atlanta, completing the requirements for the History of Technology program there.

Abbate Attends Confs.

In September Janet Abbate traveled to France to participate in two international conferences on the history of technology. The first, held in Paris, was entitled "Les Technologies du Territoire/Territorial Technologies" and focused on the social impact of infrastructural systems such as electricity and communications networks. The second, held in Autun, Burgundy, was an intensive workshop bringing together scholars from around the world to discuss issues in the historical and social analysis of large technical systems. Abbate presented a paper entitled "From Control to Coordination: New Governance Models for Network Systems," which described current US and international policy approaches for information infrastructure. The workshop papers are expected to be published as an edited volume.

scripts, letters of recommendation, and additional information supplied on the application form. Students with undergraduate degrees in engineering or the sciences as well as those having degrees in the humanities are invited to apply. The deadline for receipt of applications is 1 February 1996, and three copies of the entire application package must accompany the original. Application forms are available from the Center. The Fellowship in Electrical History is made possible by a grant from the IEEE Life Members Fund.

Nebeker Writes on Townes

At the invitation of the editors of *Engineering Science and Education Journal* (a publication of the British Institution of Electrical Engineers), Frederik Nebeker has written an article entitled "Charles Townes, the maser, and the relationship between engineering and science," which will soon appear in that journal. In the paper, Nebeker describes how Townes' work at Bell Telephone Labs as an electrical engineer on radar systems led to his pioneering work in microwave spectroscopy and then to his invention of the maser.

The Newsletter reports on the activities of the Center and on new resources and projects in electrical history. It is published three times each year by the Center for the History of Electrical Engineering.

Mailing address:
Rutgers University
39 Union Street
New Brunswick NJ 08903
Telephone: (908) 932-1066
Fax: (908) 932-1193
e-mail: history@ieee.org

IEEE History Committee
1995

Michael R. Williams, Chair	
James E. Brittain	Howard B. Hamilton
John H. Bryant	Amos Joel
W. Bernard Carlson	Otto Mayr
Jonathan Coopersmith	Emerson W. Pugh
Bernard S. Finn	Theodore S. Saad
Margaret B.W. Graham	Yuzo Takahashi
Anna Guagnini	Lewis M. Terman

IEEE Friends Committee
1995

Eric Herz, Chair	
William Baker	Theodore Saad
James Brittain	Joseph Saloom
John H. Bryant	Takashi Sugiyama
Joseph F. Keithley	Charles Townes
Emerson W. Pugh	Michiyuki Uenohara

Center for the History of
Electrical Engineering

William Aspray, Staff Director
David Morton, Research Historian
Frederik Nebeker, Research Historian
Andrew Goldstein, Manager and Curator
Janet Abbate, Postdoctoral Fellow
Nichole Brownlee, Assistant to the Director
Maria Palombini, Secretary

Sources In Electrical
History 3An International Guide To
Corporate Archives

The Center has just released *Sources In Electrical History, Volume 3, An International Guide to Corporate Records and Archives of Companies in the Electrical, Electronics, and Computer Industries*, a guide to the archival holdings of leading electrical companies. The book provides summary information about 132 companies in the named industries, including such information as a general description of the company's records holdings; notes concerning access to corporate records; the address of a contact within the company who can aid the historical researcher; the availability of a corporate history; the location of the company's headquarters; the date of the company's founding; and additional information concerning the company or its records, such as the location of a company museum, or information provided about future changes planned for company records. The volume also has an index which lists the included companies by their industry.

This volume marks the third installment of the Center's *Sources in Electrical History* series. The goal of the *Sources* series is two-fold—to promote research in electrical history by making scholars and students aware of the diverse collections of primary sources and to encourage the collection and preservation of these materials by archives and manuscript repositories. The first two volumes of the series covered U.S. collections of archives, manuscripts, and oral histories that relate to the history of electrical technology. We were concerned, however, that our past guides might have left an important gap in their coverage of available research resources. Much of the development of electrical technology has been accomplished by the industrial sector, and archival materials documenting this sector's involvement may not have been placed in publicly accessible repositories, or may not have been preserved at all. We saw a need to determine the extent of archival preservation that currently exists within the electrical industries and to give researchers an introductory guide to these resources.

This guide, an aspect of the Center's Power and Control project, was supported by a grant from the Andrew Mellon Foundation. Other project supporters include the IEEE Foundation, IEEE Life Member Fund, IEEE Foundation Friends Fund, and the AT&T Foundation.

Web Primer continued from page 1

that allows a user to leave our computer and connect to the Smithsonian's computer just by clicking. The pre-Web process for connecting to another machine over the internet was far more awkward. It is these built-in links that gives the Web its name. With each page linked to any other page, people are able to jump easily from computer to computer, led by the hand towards material that is of interest to them.

So if I want to use the Web, then I need to be on the internet, right?

That's right. Many people get on the 'net through their university or business. For example, I am at Rutgers University, so my connection to the internet is through my account on the Rutgers computer. My sister works for Pacific Bell, and her account on their computer provides her with connection to the internet.

But my business doesn't have a computer that is on the 'net. How do I get connected?

People who aren't given accounts with a computer that is on the 'net through their job, etc., often can get on the 'net by buying an account with a private computer owner who is connected. Ads for companies that offer this type of service are becoming common in the business or science pages of many newspapers. The arrangement is similar to how you get your local telephone service, except that you will probably have more choice in selecting an internet service provider.

What's the difference between one of those services and some of the other popular on-line services I hear about, such as America On-Line, Compuserve, and Prodigy?

Service from an internet provider actually is quite similar to those on-line services. The big difference is that those services have traditionally provide only limited connection to all of the other computers on the internet (although this is changing fast.) Their main focus is to provide interesting content on their own computer (which they can then charge additional fees to access) and to make the interface user-friendly. Most internet providers do little to make the accounts they offer easy to use, but they do offer free connections to every other machine on the 'net.

Once I have an account, then what?

Now it's simple. First, you need a way to connect to the computer that is supplying you with your account. The most common way is to attach a modem to your home computer. Then you need some

brand of communications software to run the modem (it's becoming more common for the communications software to come included on your home computer when you buy it; perhaps it is even built into the operating system.)

To get on the Web, you use the communications software to get the modem to call your internet provider, a process that is very much like placing a normal telephone call. The details of what follows differ from one internet provider to the next (since different providers have different computers), but the basic move is to log on to your account and then issue the command that tells the computer you have just logged on to that you wish to connect to the 'net.

Now, to actually visit a Web page, you will need to use a piece of software called a browser. The browser is the program that displays the content of the Web pages that you visit and orchestrates the connections to other internet computers when you indicate that you want to follow a link to another Web page. The browser that you run might be located on the computer that is providing you internet access (in which case, it will often be text-only and not permit you to point and click with your mouse—you instead use the arrow keys on your keyboard to navigate around a Web page. "Lynx" is a well-known example of this type of browser), or it might be located on your own home computer. If the browser is on your home computer ("Netscape" is one of the most popular of these types of browsers. It is available for free), then you will probably get a flashier show, i.e. pictures, but you will need some special software on your home computer to help it work. Your communications software will have to allow what is called a SLIP connection (not all of them do), and you will need some additional software to allow your browser to work with the communications software. There are several varieties of this special software; popular ones include TCP or PPP.

Once you have logged on to your internet provider computer, and instructed it to allow you access to the 'net, then you start up your browser and tell the browser what Web page you wish to visit (the method for doing this depends on the browser, of course). You specify the Web page by giving its computer address, which is called its URL. This is the string of characters that you are seeing everywhere that almost always begins with "http://"

DONORS

The Center continues to work hard to preserve the history of electrical engineering and spread the word widely to electrical engineers, students, and the general public. Half of our funding comes from the IEEE General Fund. The rest comes from Rutgers, project grants, and contributions from companies, foundations, and individuals like you. We need and appreciate your help to continue our work developing archives, exhibits, oral histories, popular articles, conferences, milestones, teaching, and research.

We have two programs by which companies, foundations, and individuals can help

to support the Center's activities: through an annual gift to the Friends Program or a lifetime gift to the Partnership Program. Whether you give to the Friends Program or the Partnership Program, your gift is tax-deductible and its use is overseen by the Friends Committee, a group of distinguished electrical engineers appointed by the IEEE Foundation. Partnership donations not earmarked for a specific project are treated like endowment funds, as a means to provide continuing support to the Center. Partnership contributions may be fulfilled over several years. All donations to either the Friends Program or the Partnership Program should be made

payable to the "IEEE Foundation Friends Fund."

Friends Program	(annual giving)
Patron	\$1000 - 2499
Senior Friend	250 - 999
Sustaining Friend	100 - 249
Friend	35 - 99

Partnership Program	(lifetime gift)
Founding Partner	\$100,000 or more
Senior Partner	50,000 - 99,999
Partner	25,000 - 49,999
Colleague	10,000 - 24,999
Associate	2,500 - 9,999

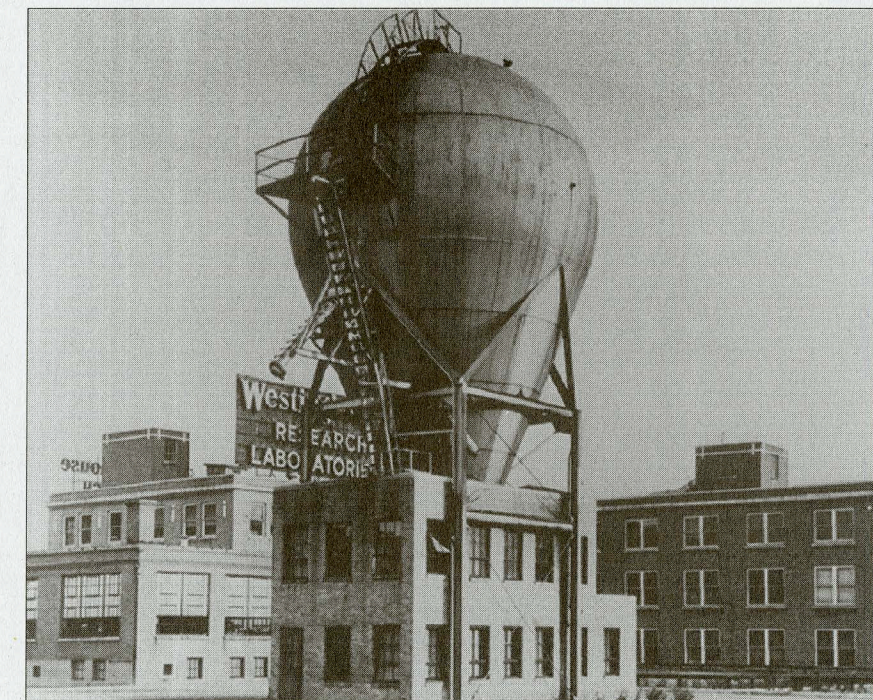
Senior Friends and Sustaining Friends:*

*Earlier this year, the Center introduced the giving category "Senior Friend." In future years, we will segregate these categories

R V Allen	Jerrier A Haddad	A Malcolm	Region 5, IEEE
Warren R Anderson	H B Hamilton	Thomas J Marlowe	Arthur E Rothenberg
F T Andrews Jr.	J Scott Hamilton	J E Martin	John S Rostand
Juan Pierre Arroba	Eric Herz	Samuel H Maslak	Joseph E Rowe
William Aspray & - Carol Voelker	Wm A Higinbotham	Suehiko Matsuda	W I Rumer
W F Auerbacher	Katsuhiko Hirai	G.A. McCammon	Theodore S Saad
George E Becker	Robert F Holtz	Donald R Mc Gill	Santa Clara Valley - Section, IEEE
Bas H Den Boer	Takamasa Hori	John C Mc Pherson	Gentei Sato
James E Brittain	Robert C Howard	A H Mendel	W R Schlinger
Michael D Brown	Koji Imai	William W Middleton	Winfred G Schneeweiss
John H Bryant	R D Jablonsky	Saiyyad M Saleem Moini	Mark Schubin
Alexandre R Caminha	A E Joel Jr	Fusao Mori	Philip N Seidenberg
Robert J Chapuis	Thomas Kailath	Akira Nabae	R A Soderman
W R Cheriton	Jake Karrfalt	Kiyoshi Nagai	F R Stansel
A D Cole	S Kazama	Masayuki Nago	Tadashi Sueta
H W Cooper	Dr Nobutoshi Kihara	Tomoharu Nakahara	Donald E Tesko
J A Ruiz De La Herran	Jack S Kilby	Tsuneo Nakahara	E E Thompson
Ernst Denert	Carroll G Killen	Richard S Nichols	Erwin Tomash
Robert A Dent	Myoung Sam Ko	Conrado N Nuesca	Chu Shu Tong
David L Dodge	Susumu Kobayashi	Kuniomi Oguchi	W W Turner
Joseph F Douglas	Arden K Kossuth	Eiichi Oka	Wagih G Wazer
R B Dudley	John D Kraus	Noe Pacheco	Harold A Wheeler
Parry R Dybing	S A Kroll	J D Peebles	Warren D White
George H Fathauer	Noriyoshi Kuroanagi	Thomas F Peterson	John P Wood
Lyle D Feisel	C W La Pierre	Victor M Pillich	Charles R Wright
E D Frankhouser	Vincent Learned	James H Pomerene	Charles R Wright
Shigeru Fukuda	Louis C Lechenger	C S Powell	R E Wright Environ. Inc.
Louis R Gray	G A Liedholz	R L Pritchard	Sakae Yamamura
	A Lovoff	E W Pugh	Leo Young

Friends:

Robert M. Adams	S B Cohn	Charles D Goodman	David S Howarth	Yinchieh Lai
A J Affrunti	W H Cole	J Goodstein	D W Howe Jr	W J Lantier
Edward T Akerlund	Delbert Conger	Francis G Goodwin	Frederick B Hoyle	J L Larduskey Jr
Dr Michelle Aldrich	E P Cook	Robert L Goodwin	Charles F Huber	R F Lawrence
Mr. Allington	Franklin S Cooper	Leo Gorin	W R Hutchins	Nan H Le
Adolph Amend Jr	A Coppins	Donald A Grandis	Aleksandar V Ilic	H Leach Jr
A E Anderson	L P Cornell Jr	Willard S Grant	J J Ingram	Vincent Learned
Allan H Anderson	Dominic N Costantino	R E Grantham	Shozo Ishii	Erik H Lembke
Weston Anderson	W J Cunningham	J P Green	Masayuki Ishikawa	I A Lesk
A M Angelini	P Cushing Jr	M J Green	R W Ittelson	S B Lent
Philippe A Angelle	F S Davenport	W L Green	G T Jacobi	H Letaw Jr
J Arasim Jr	L L Davenport	Wm S Haddock Jr	R M Johnson	Mr. Levine
Paul Armer	James R Davey	Marion O Hagler	Vipin Joshi	Winston D Lew
Rolland B Arndt	Douglas C Dawson	Howard H Haglund	Hans H Jucker	Jesse R Lien
W C Bachtel	F P Dean	Nagaharu Hamada	Masaichi Kajiwara	Alan Lim
Mr. Backenstoss	Frank Di Iorio	Carl Hammer	Douglas R Kanitz	William B Lindsay
R H Baer	F H Dill Jr	E L Harder	E F Kaprielin	Clovis E Linkous
Thomas C Bagg	W E Dobbins	Mr. Hartl	John G Kassakian	Hao Young Lo
D L Bailey	Kenneth K Dols	Dr J Paul Hartman Pe	B T Kawachi	Edward S Loane
Donald S Banks	Nicholas J Doto	B F Hatfield	F J Keim Jr	Neal E Lockwood
P L Bargellini	Kenneth R Dow Jr	Syuiti Hayasi	T B Kelley	John L Loeb
Theodore R Bashkow	John B Driver	C U Hedlund	Joseph F Kessler	M O Loftness
H L Bassett	G L Dugan	M L Henderson	V Kjaer	W A Lombard
Frank F Bateman	R F Duston			
Dwight C Baum	Edward Edison			
Floyd H Bay	W A Edson			
Charles Bazerman	Adolph C Ekvall			
Brian C Belanger	William J Ellenberger			
L M Belleville	John N Ellis			
J M Bennett	Orval T Ellsworth			
Robert Benningfield Jr	George V Eltgroth			
Eduardo Berrios	Donald H Erickson			
B A Blackman	C J Essel			
J P Blewett	Albert R Evans			
Federico Bonzanigo	George H Fathauer			
R C Booton Jr	D R Ferguson			
Richard L Borst	Justiniano E Fernandez			
Charles W Bostian	D M Fetterman			
Raymond T Boute	A Fini			
Myron J Boyajian	L W Finnell			
Marshall K Brandon	Lewis T Fitch			
J F Brumbach	C Flick			
Mr. Bucher	John J Foley			
Arnold M Bucksbaum	Reginald Forster			
R G Bullock	Conrad J Fowler			
William L Burns	Robert L Frank			
David W Burow	Mr. Friedman			
Eric Cachin	Norio Fujimaki			
B M Cain	F A Furfari			
G M Campbell	E K Gannett			
F J Campisano	Wilfried Gappmair			
W C Carter	Cassy Garelis			
O B Charlton	Lawrence D Gasman			
Gary C Chatters	William J Getsinger			
James Cheal	W R Giedt			
Harold Chestnut	Mr. Gillette			
William R Chynoweth	Robert J Goebel			
Charles H Clark	Arthur Goldsmith			
		H M Hess	Raymond A Kjar	W G Longest
		G V Hetherington	E A Klingshirn	H W Lord
		Thomas J. Higgins	Kenji Kohiyama	M J Lowenstein
		T Hintopoulos	Douglas Y Koide	D A Macdonald
		Frank J Hollenbach	Peter A Kreider	J S Mac Kelvie
		Keith N Hood	Seymour Krevsky	A B Macnee
		A J Hoover	N B Krim	Dr Haruo Maeda
		M D Horton	Maj Harold J Kunnen	Junji Maeda
		A Hotvedt	Genzaburo Kuraishi	W F Mahn
		David A Hounshell	Glenn O Ladd	



Westinghouse "Atom Smasher"

Friends:

Yasuo Makino
 Thomas E Mancino
 A F Manz
 Albert P Manzi
 Roger A Mao
 F C Martin Jr
 Joel W Masters
 Clyde E Mathews
 George L Matthaehi
 I S Mayer
 C L Mayeshiba
 R O Mccary
 Joel Mcgregor
 John L Mckinley
 Frederick Mc Millan
 H P Meisinger
 Edward G Menaker
 R W Merriam
 George E Merrill
 S Metzger
 Harold Meyers
 W V Middough
 David A Mindell
 Takahiko Misugi
 H M Moore
 Shunji Mori
 John W Mueller
 James A Mullen
 J Muroga
 Mr. Mushenski
 Yasuto Mushiake
 Akira Nabae
 Minoru Nagata
 Tomoharu Nakahara
 Hideto Nakajima
 Toru Nakamura
 Takashi Nakashima

B J Nankervis
 Anthony P Napikoski
 Mr. Newlon
 New York Section,
 IEEE
 R B Nourse
 P C Nurches
 Fumiaki Okada
 Sogo Okamura
 Robert J O Malley Jr
 Russell D Oneal
 E.F. O'Neill
 Mr. Orazio
 Neville Orellana
 K S Packard Jr
 Daechee Park
 R G Parker
 Howard R Patterson
 John J Paull
 S H Pearsall
 J R Petrak
 William H Pickering
 V J Pietkiewicz
 Orfeo G Pinton
 C Poda
 Lawrence A Prather
 D H Preist
 Public Service
 Company of Colorado
 Emilio Puigdollers
 Howard T Pyle
 Mihai Radu
 R E Ralstin
 Lee B Randall
 H J Rathbun
 Chester T Rice
 J K Richmond
 J D Riddle II

R N Riley
 George W Robinson
 Theodore Rockwell
 Juan V. Rodriguez
 C A Rousselet
 S Rubin
 Boris Rubinstein
 Robert W Ruedisueli
 Darcy E Ruff
 W I Rumer
 Robert Sackman
 Mary A Sager
 Robert E Samuelson
 J N Sanders
 Michael A Santangelo
 R Sawada
 Albert Schapiro
 Edward R Schatz
 Rich F Schiferl
 Joseph A Schindler
 Roland Schinzinger
 A E Schneider
 John H Schramm
 Mr. Schroeder
 T W Schroeder
 R B Schroer
 Herman P Schwan
 Mischa Schwartz
 Norman R Scott
 Frederick Seitz
 George B Seliga
 E M Selle
 S Sensiper
 D K Shah
 O Shapiro
 J M Sharp
 Lee A Shombert
 Martha Sloan

F W Smith
 G B Smith
 E F C Somerscales
 Margaret Sondey
 G B Soule
 T G Spargo
 L H Sperow
 Charles J Spiteri
 James M Spitze
 Dale St. John
 Karl D Stephan
 Charles P Stromp
 Robert J Sublett
 Hiroshi Suzuki
 Earl E Swartzlander Jr
 Hitoshi Takagi
 Yuzo Takahashi
 Y Takenchi
 Shuzo Tanaka
 John Tardy
 B C Taylor
 Frederic T Terry
 Leonard W Thomas Sr
 H V Thompson
 John R Thompson
 Joseph J Thompson
 Leroy Thompson Jr
 Richard P Thurston
 Hideo Tomita
 Tokujun Totani
 C A Tudbury
 Robert W Turner
 Masami Uno
 J P Van Duyne
 G Vassell
 C M Veronda
 Theodore C Viars
 Herbert B Voelcker, Jr

J H Vogelman
 D L Waidelich
 Jack M Walden
 Walter Wallin
 Richard P
 Waltermeyer
 Ronald L Ward
 William W Ward
 S R Watson Jr
 Charles H Weaver
 H A Webb
 Che-Ho Wei
 Frank C Weimer
 Gerald Weiss
 Max T Weiss
 S E Wenzel
 Honisch E Werner
 Harold A Wheeler
 Tracy Wichmann
 Don A Wick
 W Willendrup
 T G Wilson
 W Winglar
 Robert C Winton
 George Wise
 M Wittrou
 Robert M Woelfle
 Lee Marc Wolman
 David R Wood
 H O Wood
 Orville C Woodyard
 W P Worley
 Joseph H Wujek
 Kongshi Xu
 Mitsuyoshi Yamamoto
 Junichi Yoshida
 Isami Yoshihara
 E J Ziha Jr

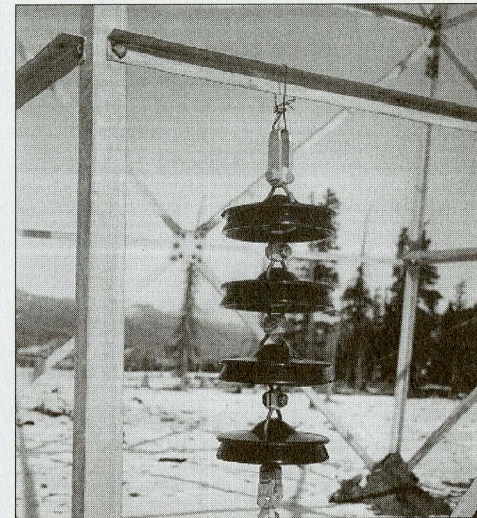
Other Contributors:

Djuniardjo Abdulgani
 Jacob M Abel
 Mohammad A Abou-Rayyan
 Eldon V Adams
 G P Adams
 Jerry L Adams
 B T Ahlport
 Kazuo Aida
 K Akasah
 Haruo Akimaru
 R B Albee
 Barry R Allen
 Cardis L Allen
 Frank L Allen
 Ryne C Allen
 R W Allington
 Edward E. Altshuler
 Markus C Amann
 Tetsuo Anada
 David L Anderson
 Gary A Anderson
 John M Anderson
 Joseph C Anderson
 K O Anderson
 O E E Anderson
 S H Anderson
 Weston A Anderson
 Paul S Anderssen
 Manuel Ando
 James T Andrews
 John H Andrews
 Howard W Andrews
 S J Angello
 A Angeloglu
 L C Angermeyer
 David A Angst
 N M Anil-Kumar
 Michael M Anshel
 Charles E Antoniak
 Henry J Antosz
 P L Apolito
 Nicolas Apostolopoulos
 Mituhiko Araki
 Pedro L Arias
 Ignacio A Arias
 Fritz Arndt
 Michael S Arnold
 E F Arnold
 F C Arnoult
 Alfredo J Arrueta
 Yoshimi Asada
 Jim Asleson
 Robert G Atkinson Jr
 John G Atwood
 Ralph S Averitt
 Arie Avnur
 Jack S Avrin
 Ronald R Badamo
 Stephen Bailey
 Praphulla K Bajpai
 James R Baker
 K D Baker
 Norvil A Baker
 Ricky D Baker
 Richard L Balluff
 Manzoora R Baloch
 J Bangs
 D S Banks
 Michael R Banther
 Edward A Barfoot
 R A Barker
 Leon Barnett
 Hal T Barraclough
 Anthony L Bartels
 Herbert M Baruch Jr
 A Lewis Bastian Jr
 Paul E Batchelder
 Luc Berger
 Michael Bergman
 Andrew E Bernstein
 Lawrence Bernstein
 N M Bernstein
 Theodore Bernstein
 Frederick C Berry
 Nathanael W Berry
 Thomas R Bertolino
 S Bertram
 James V Bianchi
 Charles Bibbins
 Delamar T Bell Jr
 Joe E Bell
 Charles H Beller Jr
 Ray Bendett
 Salah Bendifallah
 Nigel A Benfield
 Lionel C Bening Jr
 Lim Kee Beng
 George M Benko
 Douglas N Bennett
 Albert Berg
 Luc Berger
 Michael Bergman
 Andrew E Bernstein
 Lawrence Bernstein
 N M Bernstein
 Theodore Bernstein
 Frederick C Berry
 Nathanael W Berry
 Thomas R Bertolino
 S Bertram
 James V Bianchi
 Charles Bibbins
 R C Bickel
 Michael D Bielucki
 Charles Bilderback
 Gustavo A Bisaccio
 L I Biscomb Jr
 Daniel R Bishop
 Maurice W Bizzarri
 R R Black
 J L Blackburn
 L R Blair
 A L Blanchard
 F K Bland
 Douglas O Blattner
 Thomas P Blinn
 A Blokdiik
 Eric Bogatin
 R Bolgiano Jr
 O R Boll
 Michael L Bolt
 N A Bolton
 James H Bondeson
 D E Bone
 Roland D Booker

Other Contributors

cont.

S P Bordeau
 Paul V Borlaug
 James H Boros
 Scott E Boswell
 Philip A Bottini
 Fernando H Bouche
 Daniel Bowden
 Keith Bowdler
 J R Bowen Pe
 Richard P Bowen
 I H Bowker
 John C Bownds
 William L Bowne
 John C Boyd
 J F Bradley Jr
 H B Brainerd
 Howard H Brauer
 Gerhard L Bremer
 S T Brewer
 Mark F Briana
 E Bridges
 N A Bries
 James E Brittain
 Mr. Brobst
 Richard G Broden
 M N Brodie
 Paul M Bronson
 George Broomell
 William T Brophy
 A Brown
 G. L. Brown
 Gazzi L Brown
 Kevin T Brown
 Lewis F Brown
 William H Brown
 P G Brown
 Charles Brugger
 J S Brugler
 Gene Brusckke
 C Brusman
 William Buchman
 Duane G Buck
 M W Buckley Jr
 E R Bunker Jr
 Richard G Burford
 Jack E Burgessson
 Thomas Burkhart
 B B Burkland
 W W Burmeister
 Donald A Burrridge
 Joseph W Burton
 A C Burwell Jr
 Chris T Bush
 Michael A Bushner
 U Buss
 Jonathan B Butterworth
 William Butuk
 Garrett T Butulis
 Kenvyn M Bwye
 Leonard I Byrne
 Luis F Cacho
 E T Calkin
 Edgar H Callaway Jr
 John P Cappello
 Samuel J Cardman Jr
 Herbert R Carleton
 G Carley
 William F Carnes
 Jose Carpio
 W N Carr
 Victor S Carrano
 J W Carson
 G Clifford Carter
 Joseph Caschera
 Paul A Casparro
 D H Castleman
 M Castro
 William J Cavanaugh
 Frank J Cervenk
 Thomas G Chadbourne
 Gerald D Chandler
 Gerry J Chandler
 Jonathan A Chandross
 Tinjin P Chang
 Tsin Y Chang
 Myung Hyun Chang
 Fan L Chang
 Henry G Chatroop
 Gary C Chatters
 Hsiao-Yu Chen
 Kao Chen
 Parkson Chen
 Yawn-Town Chen
 Sheu Chih Cheng
 Paul F Chester
 Vernon L Chi
 Lie-Shu Chiang
 Terrence K J Ching
 R T K Ching
 Stephen M Chisholm
 Richard F Choquez
 Ernst Christen
 Mark Christensen
 R W Christensen
 Chauncey L Christian Pe
 David E Christie
 Tae W Chun
 A J Churchill
 Alan G Chynoweth
 Hercules L Cinelli
 F D Clapp
 Stephen C Clark
 R C Clarke
 John E Clayton Jr
 M D Clayton
 Clifford B Cloonan
 John W Clothier
 Russell D Coan
 Harold F Cobin
 Arnold A Cohen
 E U Cohler
 J R Coil
 Robert H Coker
 H W Colborn
 Paul D Cole
 Samuel F Coleman
 Farley L Collins
 Mark E Collins
 J F Colwell
 Herbert Combs
 Cosimo M Comella
 R E Condon
 John B Conklin
 Kenneth A Connor
 Glenn E Conrad
 G Constantine Jr
 Esther M Conwell
 Roger D Cook
 Bradly J Cooke
 Peter F Corbett
 Burton L Cordry
 Jerry A Core
 Wells M Corliss
 W H Cornetet Jr
 Gerald E Corrigan
 J C Coulter
 M D Cousins
 Anthony C Cowin
 C W Cox
 Michael J Coyer
 Mary E Coyle
 Rowan J Coyle
 J Coyle
 R P Crago
 Robert L Craig
 J P Craig
 H Almer Crawford
 C M Crenshaw
 M C Creusere
 W R Crone
 James R Cunningham
 W E Currie
 Jeffrey B Curtis
 C I Cutler
 Elliott C Cutler Jr
 E C Cwiklo
 Terry J Dahlquist
 Celeste P Dalpiaz
 George F Dalrymple
 Alberto Dams
 R F Darmsted
 Warren M Dasczynski
 Richard S Davies
 P R Dax
 D R Daykin
 C A Dean Jr
 John J De Franco
 Harry B Degroot
 R Dehoney
 Chris L Demarco
 G R Desmarais
 David Dettinger
 Lorenzo M Deustua
 Charles G Devoe
 Srinivasa Dhruvan
 Lily Diaz
 Sergey Dickey
 Bradley W Dickinson
 Stanley R Dickstein
 Robert F Diels
 Fred G Dietz
 H O Dietze
 Eugene J Dieulesaint
 Gareth Digby
 Tjeerd M H Dijkstra
 Robin A Dillard
 B L Dillinger
 Daniel E Dimmock
 Albert Dirr
 David E Dixon
 Steven R Doctor
 Alfred R Dole
 Christine F Donaldson
 T Donaldson
 B F Doolin
 Gery D Dorazio
 J Dorfman
 Herbert Doring
 Henry N Dorris
 Douglas E Dow
 M H Drazen
 Robert L Druce
 John H Dubois
 James M Dudenhefer
 Richard F Dudley
 Edward M Duffy
 Michael T Duffy
 Michel A Duguay
 Dominic F Dunlop
 Irvin D Dunmire
 G K Durfey
 R E Dwyer
 Robert S Eanes
 Robert S Eanes
 Katsuhiko Ebata
 Gregory P Eckersley
 E H Eckert
 Charles M Edwards
 James M Edwards
 Kenji Egashira
 Alan M Ehrlich
 Thomas H Einstein
 Morton Eisenberg
 Edwin Vivian El-Kareh
 C H Elbert
 Richard E Elder
 William J Ellenberger
 W C Ellis
 Evan D Emmett
 R H Engelmann
 Hubertus W Erbe
 Mustafa Erdem
 Ashok C Erramilli
 James D Ervin
 F J Vaquero Esparza
 Michael H Estabrooks
 Michael Evan
 N L Evans Jr
 Rodney M Foley
 A Fong
 David W Ford Pe
 Albert E Forknell
 Edward J Fowlkes
 M E Fox
 Paul J Fox
 John E Frank
 Konrad Frank
 W C Franke
 Mark A Frankford
 G R Fraser
 Frank J Fredericksen
 James H Freed
 E G Gill Jr
 B E Gilman
 Grace E Giras
 C E Glasco
 Rolf H Gluth
 Mark A Godlesky
 Daniel F Goessling
 Alan R Goff
 S H Gold
 Daniel L Goldberg
 M Goldberg
 S Goldberg
 Erich Goldbohm
 G M Goldenstern
 Charles P Golding
 Stephen L Goldman
 Keith W Golke
 Steven E Golsen
 M Del R Sandoval
 Gomez
 Jack Gonzalez
 Sergio Gonzalez
 C Gonzalez-Gallego
 David J Goodman
 Edward M Goodstein
 Kenneth R Goodwin Jr
 K Gopalan
 Gerald W Gordon Pe
 Jacob V Gore
 Michael J Gorman
 Richard J Gorzegno
 Robert O Gosswiller
 F Cecil Grace
 Anders Granhall
 James E Grant
 James P Gray
 S V Greco
 Leonard N Green
 Paul A Green
 Alden F Greenlaw
 S Greenwald
 E C Gregory
 Thomas N Grigsby
 R A Grimes
 Mogens P Gronlund
 K K Gross
 William A Gross
 Ramon N Grossi Jr
 Arthur A Grossman
 Tim P Groth
 Warren S Grundfest
 J J Guarerra
 Chris G Guenther
 David R Guevara Jr
 John W Guidry
 J L Guilbeau
 G L Guinther
 K C Gunsagar
 Daniel H Gunther
 Richard G Gutowski
 Vytas B Gylys
 H H Haas
 Carl A Hagson
 Jongsik Hahm
 Gerhard E Fahne
 G A Hajek
 Choi Hakkuen
 A J Haley
 C M Hall
 H M Hall
 Owen P Hall Iii
 James M Ham
 Roxana Hamedani
 D H Hamilton
 R E Hamilton Jr
 James R Hampton
 Patrick E Hanan
 Ernest K Hanaoka
 Tod M Handera



Suspension Insulators, 1907

W A Fails
 Francis E Fairman 3rd
 Mohamed J A Fakhroo
 Larry W Falb
 W H Falls
 J R Fancher
 V W Farat
 David J Farber
 Herman Farber
 J E Farley
 W S Farley Jr
 Ghaffar Farman-Farmaian
 W E Farris
 W R Du Fau
 Anthony Faulise
 Guy C Fedorkow
 Algje A Felder
 John Feldman
 Samuel Feldman
 Sidney Feldman
 Carl B Felien
 Stanislaus E Fenyi
 Richard Ferranti
 D L Fett
 W C Fifer
 David M Findling
 Andrew E Finkelstein
 Patrick J Finnigan
 R H Fish
 D L Fisher
 H G Fisher
 Lawrence T Fisher
 Morton D Fisher
 Alla Fishkin
 J B Fitch
 Michael J Fitzmorris
 A O Fitzner
 Read T Fleming
 Dennis J Flood
 F R Fluhr

B Freeman
 J T Freeman
 G G Frick
 Michael Friedewald
 F J Friedlaender
 John E Frohman
 M Fromer
 Charles L Frush
 Satoshi Fujii
 Masayuki Fujino
 Tadashi Fukao
 Masao Fukata
 Hiroyuki Fukuchi
 K E Fultz
 J W Gagne
 J C Gaige
 Zoran Gajic
 James E Galloway
 Aaron A Galvin
 Alessandro Gandelli
 Carmelo A Garcia
 Lorenzo Garcia
 Kenton Garoff
 J T Garrard
 Gerardo Ayala Garza
 J R Gaul
 H A Gauper Jr
 Michael J Gay
 Mr. Gayek
 Carl C Gebhardt
 Alan Gehami
 L C Geiger
 Alain Geiger
 Stanley W Gery
 John W Gesink
 A O Gialotto
 Adolf J Giger
 Josef Gigmayr
 P R Gillette

Other Contributors

Donald E Stevenson
James L Stevenson
G E Stewart
Harry C Stewart Jr
H Thomas Stewart
Robert W Stewart
V N Stewart
Steven N Stitzer
Allen H Stix
D C Stock
E F Stockwell Jr
Dennis E Stoneberg
Fred J Stover Jr
F Strauss
C A Strom Jr
R L Stubblefield
Carl F Stubenrauch
Oskar E Stuerzinger
Branislav Stupar
James C Sturm
Tan Kia Suan
Roger W Sudbury
Torahiko Sugiura
Takashi Sukegawa
Jon M Surprise
Hironori Susaki
Hiroshi Suzuki
Shiro Suzuki
Yukinori Suzuki
Paul Svetz
Bernard T Svihel
E L Swallow
Ross L Swanson
Robert S Swanstrom
E W Sweeney
J Morris Swiger
J T Synnott
Karen R Taglieri
Bok Ah Tak
Tasuku Takagi
Kiyoshi Takahashi
Yasuhide Takeda
Makoto Takeya
Hiroshi Takuma
Aryeh Tal-Nir
R J Tallent
Masatomo Tanaka
Shigeru Tanimoto
Glenn M Tanimura
Shigeru Tanisawa
Oscar Tapia

John F Van Savage
Anil K Varma
Petr V Vassioukevitch
C Vecchio
Peters J Vecrumba
Maribel F Velez
N G Verschuren
John E Vetack
Walter W Vollenweider

Tsuyoshi Watanabe
Toyohide Watanabe
Cleveland F Watkins
Robert T Watson
C B Watts Jr
Ben M Webberman
Arthur F Webster
Gerald E Weed
Charles W Weesner

G L Wilcox
Lee F Wilderman
John F Wilhelm
C S Williams Jr
Laird C Williams
Michael J Williams
Paul A Williams
R H Williamson
Scott D Willingham

R A Woodman Jr
Malcolm T Wright
Ronald C Wright
Hsien Tsu Wu
Ruay-Nan Wu
Kris H Wulputte
Goro Yabe
Takashi Yahagi
Keiji Yajima
Ikuo Yamada
Yohtaro Yamazaki
Andrew T Yanchak
Nicholas W Yang
H Yanofsky
Lawrence H Yao
Hiroshi Yasuda
Leo D Yau
Bradley Yearwood
Kuo S Yeh
Swee-Ping Yeo
Hiromichi Yokoyama
Nobuharu Yokoyama
Ryuzo Yokoyama
Kenji Yonei
Hyo Sub Yoon
Kayoko Yoshida
Ryuichi Yoshioka
Toshiaki Yoshizumi
D Young
J A Young
Patrick S Young
Scott Young
William J Young
Cheng-Cheh Yu
Young-Uk Yu
Henry S Zablocki
Anthony Zadina
Mehmet S Zaim
Nick Zajerko-Mckee
Jakob Zalcberg
Raymond A Zalewski
David J Zawislak
Richard C Zbikowski
German Zelalia
S Zelencik
Ningyan Zhu
Barry A Ziegenfus
C Zierdt
W O Zimmerman Jr
John F Zingg
Jeffrey W Zink
F J Zupancic
R Zweigle



IRE staff, December 1948

Willi G Vollenweider
Oi Khiun Voon
R W Vreeland
Robert V Wachter
Seiji Wada
Thomas O Wade
Katsumi Wakatsuki
Paul C Wakefield
J D Wallace
R M Walser
Michael P Walsh
Ralph E Walter
Cheng-Nan Wang
A John Ward
David B Ward
Paul T Ward
Neil H Wasserman
Tomoyuki Watanabe

James H Weidner
Max T Weiss
Chester B Wells
Nilly Welzel
Steven Wesolowski
Cecil D West
L E West
R G West
B H Weston
Terry E Weymouth
A D White
Harlan P White
Stanley A White
P R Whiteley
Eugene C Whitney
Jimmy W Wickiser
Alan Wignall
C E Wilcox Jr

Our sincere thanks to everyone who has contributed to the Center. This list of 1995 contributors is complete through August 15, 1995.

Business History Project

The Minnesota Historical Society and the Hagley Museum and Library hold the nation's largest collections of corporate records, and are collaborating on a project to deal with the issues surrounding the documentation of American business and industry. Through their Records of American Business Project, the two organizations hope to promote the preservation and use of documents revealing business operations, decision making, and strategic planning, which they fear are often neglected in favor of records that concern quantifiable output, efficiency, and economic impact. With a grant from the

National Endowment for the Humanities, the MHS and the Hagley are sponsoring a symposium, a publication of major papers from the symposium, and a records appraisal document for corporate archival records.

The symposium is scheduled for 12 April 1996, with publication of the appraisal guidelines and the book of essays to follow. The symposium will be open to all interested participants. For more information, contact James E. Fogerty, Minnesota Historical Society, 345 Kellogg Boulevard West, St. Paul, MN 55102.

A new exhibit entitled "It's Alive! The Science and Myth of Frankenstein" opened at the Bakken Library and Museum in Minneapolis on September 9 and will be on display throughout August 31, 1996. In addition to the first and later editions of Mary Shelley's book, the exhibit features works by members of her literary circle, relevant scientific books of that era, a replication of Victor Frankenstein's laboratory, and a selection of scientific instruments and medical devices related to the show's theme. For further information about the exhibit or its accompanying programs, contact David Rhees, Director, The Bakken, 3537 Zenith Ave. So., Minneapolis, MN, (612) 927-6508, drhees@aol.com.

Book Reviews:

Note: The Newsletter's "Bibliography" section will return next issue.

Emerson W. Pugh. Building IBM: Shaping an Industry and its Technology. Cambridge, MA: MIT Press, 1995. xvi + 405 pp.

Emerson Pugh's fourth book on the history of IBM provides an excellent overview of the corporation's technical and business history, from its roots in Herman Hollerith's tabulator company to its travails of the past decade. More general than his earlier, technically focused volumes, *Building IBM* integrates technical, business, and human factors to explain IBM's successes and failures in developing and marketing new information processing products. Pugh argues convincingly that IBM's financial success depended on its leaders' commitment to coordinating research and development with manufacturing and customer requirements: "They understood the importance of technology and were continually active in the crucial interfaces between technical developments and business strategies" (321-322).

Topics covered by the book include Hollerith's tabulating machines, used in the 1890 U.S. Census; the formation of IBM from three independent companies; management styles and strategies of Thomas J. Watson, Sr., Thomas Watson, Jr., and other key personnel; involvement with academic and government-sponsored projects such as the Mark I, NORC, and SAGE; the transition from electromechanical to electronic machines; and the growing importance of software. Pugh describes in detail the development of IBM's major computer lines—701, 1401, 360/370—explaining the business rationale for introducing these systems and showing how designs were chosen from among alternatives. Coverage of more recent years is sketchy, perhaps reflecting IBM's own faltering performance: only 20 pages are devoted to post-1970 developments, with the IBM PC relegated to a single page. Several appendices provide useful data on the company's revenues, patents, and products.

Overall, Pugh offers a remarkably balanced, lucid, and insightful account of the rise of this computing industry giant.

Donaldson, Barry, and Bernard Nagengast. Heat & Cold: Mastering the Great Indoors. Atlanta, GA: American Society of Heating, Refrigerating and Air-Conditioning Engineers, 1994. xxvii + 339 pp.

This book, subtitled *A Selective History of Heating, Ventilation, Air-Conditioning and Refrigeration from the Ancients to the 1930s*, was published to commemorate the 100th anniversary of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. Following an introductory essay by Gershon Meckler on the scientific roots of the technology, the book begins its survey of technical developments, moving swiftly from ancient times through the 18th century and into the 19th century, and most of the book concerns the late 19th and early 20th century. There is much of interest for historians of electrical technology. The two largest



GOLD or SILVER

WHICH SHALL BE THE STANDARD?

People cannot agree, but everyone agrees that both gold and silver can be saved by using a HEAT REGULATOR to control any style of heating plant, and maintain automatically an EVEN TEMPERATURE.

Well informed people agree also that there is but one "STANDARD" Regulator, which was FIRST and is still BEST. Sold by Heating Trade generally. No Agencies.

SEND POSTAL FOR DISCOUNT AND TERMS.

W.M. R. SWEATT, Secretary,
Electric Heat Regulator Co.
Twenty-sixth Street and A Ave.
MINNEAPOLIS, MINN.

89-91 Centre St., NEW YORK CITY.

1895 advertisement—could electrical technology solve all of America's problems?

chapters, entitled "Electric Power Changes the Industry" and "The Early Twentieth Century:1900-1930", give central places to the development of suitable electric motors and that of electrical control systems.

The book, handsomely produced in large format, is extremely well illustrated, showing in more than 450 illustrations, some of them in color, the people, the inner workings of the technology, the technology in its architectural setting, and the advertisements for the technology. It is written in an engaging way, with historical anecdotes and quotations of contemporaries. Though the emphasis is on the technical developments themselves, there is also a great deal of information about the inventors and engineers, about the companies marketing the technology, and about the social and political setting of the technical story. The book is also impressive as a scholarly work, as the authors have relied principally on primary sources and carefully recorded, in endnotes, the provenance of information.

Centre for the History of Defence Electronics

The Centre for the History of Defence Electronics (CHiDE) has recently been established at Bournemouth University in Great Britain. This exciting new initiative, functioning under the umbrella of the University's School of Conservation Sciences, will be a UK pioneer in the use of advanced electronics and information technology to promote the public understanding of the history of electronics.

The recollections of those involved in early technical developments and associated work will form a key component of the archive and the Centre is interested in making contact with those who are interested in contributing material of all kinds, either for archiving or directly to the Virtual Museum.

Sir Bernard Lovell, FRS, one of the foremost pioneers of radar development, and who was closely involved in the war-time work in the Isle of Purbeck, is serving as patron of the Centre. The Imperial War Museum and the Institution of Electrical Engineers are both major supporters of the project. Since its beginning, the Centre has worked in close collaboration with the Purbeck Radar Museum Trust, and enjoys support from the Royal School of Signals-Royal Signals Museum, The Communications and Electronics Museum, the Tank Museum, the Historical Radar Archive, the Defence Evaluation & Research Agency, and HMS Collingwood.

The broad aim of the Centre is to contribute to the study and public awareness of the history of electronics. Initially the Centre will concentrate on radar, sonar, communications, and electronic counter-measures and their wider social consequences. Work has already started on researching and collecting a range of material, including documents, photographs, film and oral recordings, which will be stored and retrieved electronically. A Virtual Museum will be created on the internet and on interactive CD providing easy access to the Centre's resources both for the public and for scholars. It will contain a bibliography and index to relevant sources at other locations, allowing the Centre to become a natural focus for researchers in the field. The Centre will also promote awareness of the subject through more conventional media such as displays, publications, conferences and day schools.

A brochure containing details of how organizations and the general public can support CHiDE is available on request. For more information, contact Dr. John Beavis, Bournemouth University, Dorset House, Talbot Campus, Fern Barrow, Poole Dorset, BH12 5BB, Great Britain, tel. 1202 595178.

Lipartito Wins 1995 Electrical History Prize

Each year the Society for the History of Technology (SHOT) presents an award for the best paper on the history of electrical technology published during the preceding year. The award is sponsored by the IEEE Life Member Fund and administered by the Center. At the recent SHOT meeting in Charlottesville, Virginia the award for 1995 was presented to Kenneth Lipartito for his article "When women were switches: technology, work, and gender in the telephone industry, 1890-1920," published in *The American Historical Review*, vol. 99 (1994), pp. 1074-1111.

In comparison with many European countries, the United States was slow to adopt automatic telephone switching. It was not until just after World War I that Bell System managers decided to develop and implement automatic switching. A great many factors played a part in this decision: the problems of maintaining good service as telephone use increased, the technical possibilities and difficulties of automatic equipment, the political vulnerability of AT&T at a time when many people thought that the Bell near-monopoly ought to be broken up or that telecommunications ought to be nationalized, and labor issues of high turnover, unionization, and wage costs. Lipartito ably explicates these and other factors, drawing upon work in technical history, labor history, women's history, business history, and government history, and thus illuminates the process of change in a large technological system. He demonstrates the social embeddedness of decisions about technologies, making clear their multicausality and their widespread consequences.

Center for the History of Electrical Engineering
Institute of Electrical and Electronics Engineers
445 Hoes Lane, P.O. Box 1331
Piscataway, NJ 08855-1331

Partnership Program

We are grateful to the organizations and individuals listed below who provide generous support to the center in the form of operating, endowment, and project funding. If you or your organization are interested in joining our Partnership Program, please contact the Director, Dr. Aspray.

Founding Partners:	IEEE Rutgers University IBM Corporation IEEE Foundation - General Fund IEEE Foundation - Life Member Fund Andrew W. Mellon Foundation Alfred P. Sloan Foundation
Senior Partners:	National Science Foundation
Partners:	AT&T Foundation Electron Devices Society Power Engineering Society Signal Processing Society
Colleagues:	Control Systems Society Microwave Theory and Techniques Society
Associates:	Antennas and Propagation Society Laurence R. Avins Earl Bakken John Bryant Central Research Institute of Electric Power Industry Electric Power Development Corporation, Tokyo Electro-Mechanics Company Environmental Research Institute of Michigan GE Yokogawa Medical systems, Ltd. HP Japan KBR Foundation Joseph F. Keithley Magnetics Society Eiichi Ohno Sematech Takashi Sugiyama Tokyo Electric Power Company Toshiba Yokogawa Electric Company

We are also grateful to the thousands of individuals and institutions who make annual contributions to our Friends Fund.

Non Profit Org.
U.S. Postage
PAID
IEEE
Permit #52
Piscataway, NJ

