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Official Publication of the Chicago Section • Institute of Electrical & Electronics Engineers • SEPTEMBER 1993



TIME SENSITIVE MATERIAL

CALENDAR OF EVENTS

For reservations please call IEEE Office at (312) 236-4333 before the stated deadline
The meeting details are stated in their relevant announcements inside

September 14 Tuesday	Chicago Section	Executive Committee	DeVry-DuPage 1221 N. Swift Rd. Addison, Il.	Food Service: optional Meeting: 7:15 PM
September 23 Thursday	PE/IA/IE Chapters/NWSS/FVSS	Co-axial Winding Magnetics: A Breakthrough in High Frequency Power Transformers	Motorola Center 1295 E. Algonquin Rd. Chicago, Il.	Social: 6:00 PM Food Service: optional Meeting: 7:00 PM
September 28 Tuesday	UNIFORUM-Chicago/ Communications & Computer Societies	A TCP/IP Tutorial	SHL Systemhouse Inc. 1901 N. Naper Blvd. Naperville, Il.	Meeting: 7:30 PM
October 9 Saturday	Chicago Section	★Centennial Celebration★	Museum Science & Industry 57th & Lake Shore Drive Chicago, Il.	Call for Details (312)236-IEEE
October 12 Tuesday	Chicago Section	Executive Committee	DeVry-DuPage 1221 N. Swift Rd. Addison, Il.	Food Service: optional Meeting: 7:15 PM
October 27 Wednesday	Fox Valley Subsection/ Communications Society	Converting Conventional Telephones to Cellular Phones	Jerry Sharko's 2225 Ogden Ave. Lisle, Il.	Social: 6:00 PM Dinner: 7:00 PM Meeting: 8:00 PM

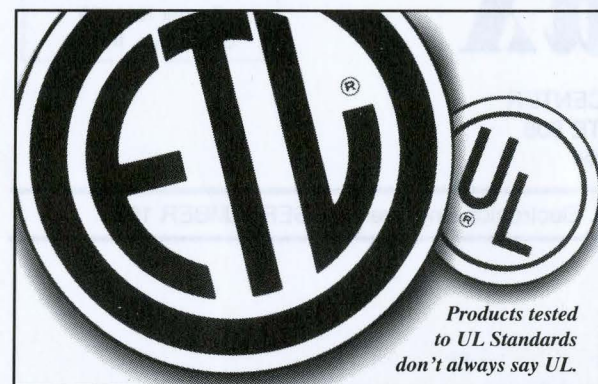
FROM THE CHAIRMAN OF THE CHICAGO SECTION

What strange twist of fate has put me in the position of Chairman of the Chicago Section on this, our 100th anniversary. I hope that I can live up to the traditions of the office. At this time we can look back at the successes of the past 100 years and thank those who have prepared the way for us, and look forward to the next 100 years and point the way for those who will follow.

Our accomplishments over the past years show what team work can do. By continuing to work together as a team we can achieve even greater accomplishments in the future. With your help I hope to make the Chicago Section more useful to our members, provide more and better meetings, services, and opportunities; and at the same time, we want to ask our members to participate and help us provide those services. A volunteer organization needs the help of all of its members, and we are counting on *you*. If you would like to participate in our programs, now is the ideal time to start — the start of a new century.

Len Cohen, your 1993/4 Chairman

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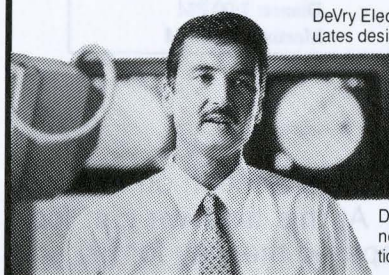
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James Carroll, Editor
Room 2H 205
AT&T Bell Labs
2000 N. Naperville Rd.
Naperville, IL 60566
(708) 979-8820
FAX (708) 979-8823

Bob Hofmann, Assisant Editor
(708) 979-3627
Ed Barrett, Advertising Director
171 Warwick Drive
Glendale Heights, IL 60139
(708) 773-4864

Joe Feitler, Assoc. Editor
(708) 505-9100 Ext. 277

Change of Address

Send change of address to Roseann Schulz, Member Services, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854-4150. Include your SCANFAX mailing label if possible or phone direct to: 1-800-678-4333. We cannot forward this information for you, so please do not send it to the local office.

SCANFAX DEADLINES

ISSUE	COPY DUE	MAILED ON
OCT	AUG 26	SEP 15
NOV	SEPT 24	OCT 15
DEC	OCT 27	NOV 15
JAN 94	NOV 25	DEC 15
FEB	DEC 21	JAN 15
MAR	JAN 26	FEB 15
APR	FEB 25	MAR 15
MAY	MAR 25	APR 15
JUNE	APR 28	MAY 15

THESE ARE FIRM DEADLINES FOR ADS AND COPY!!!

Job Fairs Update

IEEE cosponsored job fairs are tentatively scheduled at these locations during the remaining months of 1993.

September 13-14	San Jose Section (LG)
September 20-21	Detroit Section (PE)
September 20-21	Nat'l Capital Area Council (LG)
October 11-12	Santa Clara Section (W)
October 18-19	Cleveland Section (LG)
October 18-19	Boston Section (LG)
October 18-19	Dallas Section (LG)
October 25-26	Detroit Section (LG)
November 8-9	Detroit Section (PE)
November 8-9	Nat'l Capital Area Council (LG)
November 15-16	San Jose Section (LG)
December 6-7	Santa Clara Section (W)

Job fairs are open to all engineers. For more information concerning the locations of the job fairs marked (LG), please call (800) 562-2820; Virginia residents should call (800) 533-1827. For fairs marked (PE), call (800) 338-4530; and for fairs marked (W), call (408) 970-8800. In all cases, ask for the IEEE Career Fair Coordinator. ♦

WELCOME: FIRST IEEE MEETING FOR ALL CHICAGO SECTION MEMBERS

JOINT MEETING

POWER ELECTRONICS and INDUSTRIAL APPLICATIONS/ INDUSTRIAL ELECTRONICS CHAPTERS

Co-axial Winding Magnetics A Breakthrough in High Frequency Power Transformers

Professor Donald Novotny
E&CE Dept - University of Wisconsin-Madison

One of the important concerns in high frequency power conversion is magnetic component design, particularly at high power levels. The use of co-axial winding geometry has been shown to be an extremely effective design configuration which results in low winding and core loss, very low leakage inductance and easily calculated transformer parameters. Experimental results that verify the basic co-axial design concepts will be described for several transformers including a 600 VA, 1 MHz device and a 50 Kva, 50 KHz unit (total weight, 8.4 lbs.).

The coaxial winding design concept also lends itself to inductive, non-contacting power transfer to stationary or moving objects. Examples of such applications include power transfer in hazardous locations, non-contacting battery charging and as a replacement for sliding contacts in a variety of moving vehicle applications. Funded application projects for work on non-contacting battery charging, underwater power transfer and high power density converters sponsored by EPRI, NASA and others will be described.

Papers reporting on the basic co-axial winding concept and its application to non-contacting power transfer have won awards at the 1991 IEEE-IAS Meeting and the 1993 Power Conversion Conference in Yokohama, Japan.

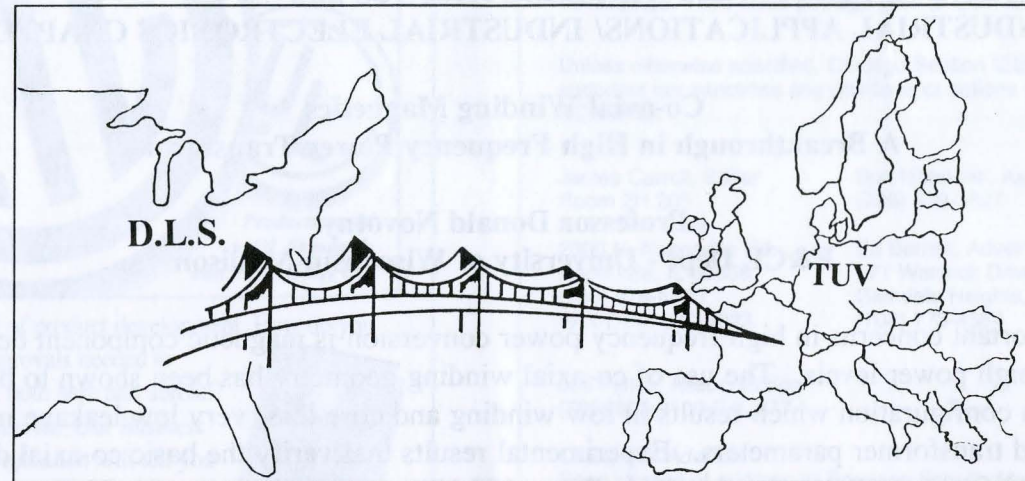
Dr. Novotny is Grainger Professor of Power electronics and founder and Co-director of Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC). He is presently an Associate Director of the University-Industry Research Program and is a past Chairman of the Electrical and Computer Engineering Department. His teaching and research interests include electric machines, variable frequency drives and power control of industrial systems. He has published over 90 technical articles and has coauthored a textbook on electromechanical systems. Dr. Novotny is an IEEE Fellow.

The research and teaching program in electric machines and power electronics at the University of Wisconsin-Madison has become the largest in the U. S. with five faculty members and over 50 graduate students. WEMPEC provides the base financial support for this program and has 45 industrial sponsors.

Meeting Information Sept. 23 -- Motorola Schaumburg Campus, (directions below) -- Social hour (coffee and donuts) 6:00 to 7:00 PM -- Meeting 7:00 - 8:00 PM - Dinner may be purchased at low cost in cafeteria starting at 5:30 PM if desired. -- Please register by calling the IEEE Message Center by noon, Sept. 21 -- (708) 236-4333. -- Call George Studtmann with any questions -- (708) 392-7189.

Directions Use westmost gate labelled "A GATE, VISITORS" on Algonquin road. Push button at entry gate and tell guard "IEEE meeting in building 1301". Park in first lot on your left and enter door 13 (under MOTOROLA sign) of the 6 story building adjacent to parking lot. A guide will be at the reception desk in the lobby.

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OCTOBER MEETING ANNOUNCEMENT
Joint with Communications Society

CONVERTING CONVENTIONAL TELEPHONES TO CELLULAR PHONES

Presented by George Claudio, Jr. of Telular Company

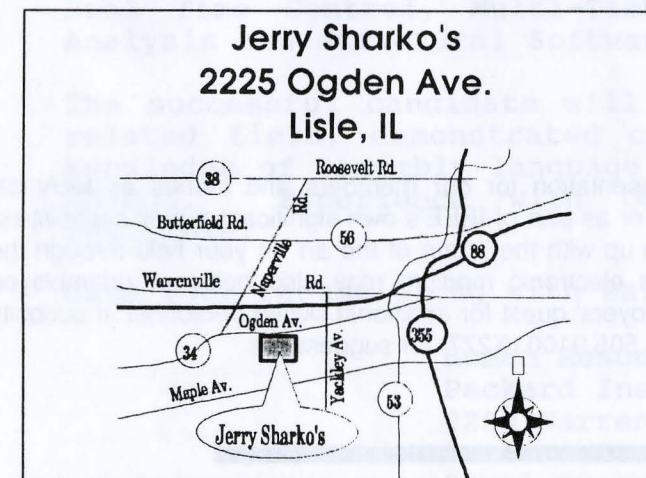
Wednesday, October 27, 1993

Since the beginning of time man has been seeking solutions to his communication problems. Technology has progressed yet we are once again seeking that vital solution. **How do we provide reliable telephone service to all corners of the globe?** Standard copper wires provide the features we demand but it can be a slow and costly process to string wires wherever we need telephone service. Portable cellular phones allow freedom, but forfeit features. **Fixed cellular is the missing link, the next generation of telecommunications.**

If you're really interested in a real answer to our global communication problem, come join us in a discussion about the technology that provides that solution. Topics discussed will include:

- **The Wireless Advantage** (Cellular Vs Land Line Communications)
- **Fixed Cellular Station** (Overview)
 - a) Typical Cellular Transceiver (Fit, Form, Function)
 - b) World Wide Power Supply Requirements
 - c) Cellular to Tip and Ring Telephone Interface
 - 1) Creating a telephone company on a board
 - 2) Miniature, sine wave, high voltage, ring generator
 - 3) Generation of telephone system supervisory tones
 - 4) Solid state two to four wire audio conversion
 - 5) Low cost -48VDC power source
 - 6) Communicating with a cellular transceiver
- **Fixed Cellular Applications**

Mr. Claudio is vice president of technology at Telular and has been with the company since its inception. He has been integrally involved in the design and evolution of the company's patented technology and products. Mr. Claudio is internationally recognized for his leadership in developing cellular technologies. He has sixteen year's experience in various segments of the electronics and radio telecommunications industries. Mr. Claudio has worked with several companies in technical management and engineering.



6:00 PM Social Hour

7:00 PM Dinner \$13.50

Stir Fry Beef Entree with Salad, Rolls, Coffee, and Desert
Dietary and vegetarian meals can be requested at the time of making your reservation

8:00 PM Guest Speaker George Claudio

For Reservations:

Please call IEEE Message Desk at
(312) 236-4333

by Friday, Oct. 22, 1993

UNIFORUM-CHICAGO (ALSO KNOWN AS /usr/group/chicago) AND THE CHICAGO CHAPTERS OF IEEE'S COMMUNICATIONS, ENGINEERING MANAGEMENT & PROFESSIONAL COMMUNICATIONS, COMPUTER SOCIETIES INVITE YOU TO THEIR JOINT MEETING

DATE and TIME: Tuesday, Sept. 28, 1993 at 7:30 PM
TOPIC: A TCP/IP Tutorial
SPEAKER: Ted Socolofsky, Lachman Technology, Inc.
LOCATION: Lachman Technology, Inc. and SHL Systemhouse, Inc.
1901 N. Naper Blvd
Naperville, IL 60563
(SW corner of Warrenville Rd & Naperville Road,
just north of the I-88 Naperville Road Exit)

Please contact Joe Feitler at 708.505.9100, X277 if you need more detailed travel directions

A TCP/IP TUTORIAL

This tutorial covers only the salient points of TCP/IP, and therefore represents only the "bare bones" of TCP/IP technology. It omits the history of development and funding, the business case for its use, and its future as compared to ISO OSI. Indeed, a great deal of technical information is also omitted. What remains is a minimum of information that must be understood by the professional working in a TCP/IP environment. These professionals include the Systems Administrator, the Systems Programmer, and the Network Manager.

This tutorial on the TCP/IP protocol suite (RFC 1180) focuses particularly on the steps needed to forward an IP datagram from a source host to the destination host through a router.

First there is an overview, followed by a description of the protocol suite "from the bottom up": Ethernet, ARP, IP, UDP, TCP, and network applications. The tutorial concludes with some pointers to sources of more information.

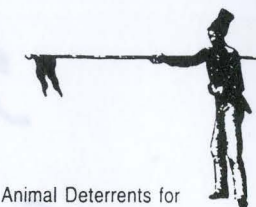
SPECIAL NOTE:

Our sponsoring organizations offer this introductory-level presentation for our members and friends as technical background for using electronic mail (such as in your business or as part of IEEE's own significant e-mail capabilities) to communicate with your professional colleagues and to keep up with the "state of the art" in your field through the pertinent electronic *netnews* groups. If the need arises, this electronic medium may also help our unemployed members find potential job openings, or support our local employers' quest for additional skilled personnel. If curiosity about e-mail overwhelms you, please contact Joe Feitler at 708.505.9100 (X277) for suggestions.

ABOUT OUR SPEAKER

Ted first got paid to network computers in a Biochemistry lab at Kansas State University where he earned his BS in Biochemistry. In 1981 he earned his MS in Computer Science and got a job at Bell Labs in Denver, CO. During the 8 years at Bell Labs he was a C/UNIX Software Engineer and then became a networking expert for the computer center. Part of his duties were to teach the computer support staff about TCP/IP. From there he went to Spider Systems Limited in Edinburgh, Scotland, for 3 years, where he was a Project Leader for developing a terminal server supporting telnet, rlogin, OSI-vt, and LAT. While at Spider Systems he wrote a TCP/IP tutorial for a DECUS (DEC's User Group) conference seminar; later he converted it into RFC 1180. Ted has been at Lachman Technology, Inc. in Naperville, IL, for one year, where he serves as Project Leader for the OEM software contract which provides TCP/IP networking capabilities for SCO UNIX.

RECENT IEEE STANDARDS PUBLICATIONS



Antennas and Propagation

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802.5m-1993, Supplement to ISO/IEC 10038:1993 [ANSI/IEEE Std 802.1D, 1993 Edition], Source Routing (published as a part of ISO/IEC 10038:1993)

1016.1-1993 IEEE Guide to Software Design Descriptions (ISBN 1-55937-297-4) [SH16071-NUW] \$40.00

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Join in the Celebration!

Chicago Section Centennial

1893

The International Electrical Congress convened at the 1893 World's Columbian Exposition. Chicago area engineers of the American Institute of Electrical Engineers (AIEE) petitioned the AIEE to allow the holding of local technical meetings resulting in Chicago becoming the first Institute section outside New York. At the Exposition, the Palace of Fine Arts held priceless works of art. It was only one of many imposing structures.

1993

The Chicago Section remains active with 50-plus technical meetings each year and with over 7000 members. The Palace of Fine Arts, the only surviving structure from the 1893 Fair, became the Museum of Science and Industry, and it will be the setting for the centennial celebration of the IEEE Chicago Section.

October 9, 1993 at 6:30 p.m. join us as we celebrate 100 years of engineering contributions by the IEEE and a walk into history at the **Museum of Science and Industry**, 57th Street and Lake Shore Drive, Chicago, Illinois.

IEEE members and guests will enjoy after hours access to selected exhibits and the seven galleries commemorating the 1893 World's Columbian Exposition "Building MSI: 1893 to the 21st Century." Dine amid the historical banners in the Rotunda at the Museum and enjoy listening to the keynote speaker and awards presentation. Continue your after hours access to the Museum until 11:00 p.m.

To participate in this centennial celebration submit your check payable to the IEEE Chicago Section (30 N. Michigan Avenue, Suite 508, Chicago, IL 60602) with the attached form. Please contact the IEEE office with any questions regarding this celebration at **312•236•IEEE**.



NAME: _____

COMPANY: _____

STREET: _____

CITY: _____ STATE: _____ ZIP CODE: _____

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CHICAGO SECTION TO CELEBRATE 100 YEARS

This year marks the centennial anniversary of the founding of our Chicago Section. During the World's Columbian Exposition of 1893, the need for holding meetings outside of New York was addressed, resulting in the appointment of a local honorary secretary representing the interests of Chicago members. Shortly afterwards, technical meetings were held, a practice that continues today.

At 6:30 p.m. on Saturday, October 9, 1993, the Chicago Section will host a celebration of our first 100 years. The festivities will take place at the Museum of Science and Industry, 57th Street and Lake Shore Drive, Chicago.

During a cocktail reception, which begins promptly at 6:30 p.m., IEEE members and guests will enjoy after-hours access to the Museum's seven galleries commemorating the 1893 World's Columbian Exposition, "Building MSI: 1893 to the 21st Century," other selected exhibits, and the Chicago Section's historical documents and displays.

The Rotunda, decorated with historical banners, will be the setting for the centennial dinner, keynote speech, and awards presentation beginning at 7:30 p.m. After dinner and the presentation, guests are encouraged to continue enjoying the selected displays at the Museum including the all new "Communications" exhibit. The Museum will remain open until 11:00 p.m.

DID YOU KNOW?

—FUN FACTS FROM THE FAIR OF 1893—

- **First large-scale demonstration of electricity**, including the kinetoscope, phonograph, the electric chair and electric cooking

- **First movable sidewalk**

It was predicted that this device would be the wave of the future, but the "people mover" disappeared with the fair.

- **Introduction of Cracker Jack**

- **First and biggest Ferris wheel**

It took George Ferris only 20 minutes to sketch his vision of the giant wheel and the engineering specifications necessary to build it.

- Up to 60 people could ride in each of the wheel's 36 cars.

(continued on back page)

Black tie apparel is welcomed but not required.

Shortly after the celebration, a centennial book will be published commemorating the event. It will be sent to all IEEE Chicago Section members.

This evening has been planned to be memorable and we extend an invitation to you and your guests to attend. Tickets are available at \$50 each from the IEEE Chicago office.

ADVERTISE IN THE CENTENNIAL BOOK

As part of our Centennial Celebration the IEEE Chicago Section will be publishing a special centennial book commemorating the event to be held at the Museum of Science and Industry on Saturday, October 9, 1993. At this celebration, we will be recognizing 100 years of electrical engineering contributions by Chicago area engineers and companies. There will be exhibits and displays from our members and special recognition for Chicago area companies that have supported our local organization.

During the reception, guests will have after-hours access to the museum's World's Columbian Exposition display entitled "Building MSI: 1893 to the 21st Century." Pictures from the celebration, as well as reprints of articles of historical significance, will be included in the centennial book. Area companies are encouraged to participate by purchasing event tickets, loaning artifacts or by purchasing advertisements in the centennial book.

An advertising application is available from the IEEE office at 312/236-IEEE. We welcome your standard advertisements or, if you wish, a congratulatory message to the Chicago Section. Our publisher, Graphix Products (Marsha Watt, 708/231-2425), is available to assist you in developing your message. You may wish to run an ad of an older product of historical significance to your company.

For those who purchase full or half-page ads there is the opportunity to submit editorial copy equivalent to the ad size. A copy of the editorial guidelines is included with the advertisement application. We would like to hear about your company's story regarding growth, technology contributions or your vision of the future. Consider honoring your own engineers by relating their story. If you like, you can devote your ad space completely to editorial.

We will be circulating 10,000 copies of the commemorative book to each of our members, regional affiliates, participating companies, and special guests.

This is a unique opportunity to participate and we look forward to your advertising submission.

WE ARE LOOKING FOR A FEW GOOD AMBASSADORS

The Centennial Committee is planning an exceptional event on October 9, 1993, for our Centennial Celebration. In addition, a Centennial Book will be published shortly after the event. Chicago area companies have been contacted asking for their participation either in the form of attending the event, purchasing a table, advertising or contributing an historical article in the Centennial Book, or loaning an artifact or poster display. We may have missed your employer as a potential participant. Could you, as a Chicago Section IEEE member representing the Chicago Section, approach your management and ask for their support? Even if we contacted your company, your management would be more responsive to our requests knowing their employees are active in IEEE. Information regarding company participation including advertising can be gained by contacting the Chicago Section IEEE office.

PREDICTING THE 21ST CENTURY

As part of our Centennial Book, we will be including predictions from our members regarding technology advancements in the 21st century. If you feel you have a knack for envisioning the future, we would be interested in your thoughts. Send your predictions to the Chicago Section IEEE office by October 4, 1993. You will be given credit for your future vision.

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Chicago Section Centennial

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INDIVIDUAL TICKETS @ \$50 each _____ TICKET(S) REQUIRED = \$ _____

TABLES (10 Settings Per Table) @ \$500 each _____ TABLE(S) REQUIRED = \$ _____

TOTAL DUE: \$ _____

HAVE ANY ARTIFACTS?

At the Centennial Celebration on October 9, we will be displaying posters, artifacts and prototypes representing electrical engineering achievements over the last 100 years. If you or your company have anything to display, contact the Chicago Section IEEE office. All articles will be displayed in an area just outside the "Building MSI" exhibit. If you can contribute your time by explaining the significance of the artifact at the event, that would be a plus. Our members are interested in your contributions.

WANT TO CONTRIBUTE AN ARTICLE?

You may have some memories or stories you would like to share with our IEEE Chicago Section membership. There is some limited space for member-contributed articles in our Centennial Book. Articles can address either professional or technical activities of the Chicago Section or technical achievements by Chicago Section engineers. Call the Chicago Section IEEE office for a copy of our editorial guidelines. Make your submission by October 4, 1993.

(continued from page 1)

- A single 1,000-horsepower engine drove the wheel.
- A ride on the Ferris wheel cost 50 cents, ten times the cost of the merry-go-round, but 92 percent of all visitors took a spin.

- **Introduction of the "hootchy-kootchy" or belly dancing**

- **First dishwasher**

Exhibited in the Women's Building, the first dishwasher was designed by Josephine Cochrane and immediately adopted by hotels and restaurants.

- **First use of concrete paving**

- **First side-buttoned lady's boot**

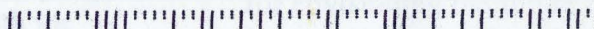
- **First American picture postcards**

Europeans had been sending them for a while, but this was the first chance for Americans.

- **First skating rink with artificial ice**

- **Introduction of aspirin**

- **First use of saccharin**



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