

ECS Receives Largest-Ever Bequest



ECS received a generous bequest from the estate of **ROBERT DEAN HANCOCK**, founder of the Micromanipulator Company. The bequest was a cash gift of over \$208,000, along with stock shares in the company. While Dr. Hancock was not a member of ECS, he

greatly admired the *Journal of The Electrochemical Society*, and fittingly, his bequest will be added to the Society's Publications Endowment (see "Pennington Corner" on page 7). This is the largest gift received by the Society to date. Dr. Hancock's company created leading edge analytical probe stations and accessories for semiconductor probing professionals.

Along with the notice of the bequest, ECS received a very interesting biography about Dr. Hancock from Alfred Escalante, Trustee for the estate, and a close friend of Dr. Hancock's. The reminiscence was so engaging, that we are excerpting it here.

"The instruments that he (Dr. Hancock) manufactured were pieces of artwork that looked and moved like fine pieces of jewelry performing non-destructive testing at the sub micron level. This required strong magnification utilizing great optics to view the layers within the wafers.

"He also developed and produced manipulators and probes for non-destructive failure analysis within the silicon wafers. His company developed a large quantity of variable probes along with hybrids requested by end user customers for their proprietary analysis of future products. These instruments were operated manually in the beginning and graduated into step and repeat computerized movements. These instruments became more complex as the industry graduated into larger wafer sizing. These instruments were sensitive to minute vibration and temperature variables. To make things more complex, the XY movements of the stage carrying the wafer to be tested had to maintain their capability and integrity of conducting a completion of analysis.

"In order to perform these requirements, these instruments had to be assembled by special people having great mechanical aptitudes and giving special attention to detail. To produce

these scientific instruments required that all pieces be 100% inspected, especially the XYZ movements that traveled on precision rods and bearings.

"Stan developed and created the first manipulator in his garage in Escondido, California thus inventing the analytical probing industry. This gave birth to the Micromanipulator Company in 1956.

"The Micromanipulator Company celebrated fifty years in probing expertise in 2006, celebrating at trade shows, seminars, and conferences around the world.

"Today the Micromanipulator Company manufactures analytical probing equipment and accessories for semiconductor wafers, solar cells, nanotechnology, and MEMS devices.

"While President and CEO, he had a great passion for precision work especially in machine works and engraving. ... The technology for producing and manufacturing a good portion of the scientific products required disciplines in the physical sciences... (including) electrochemistry.

"He always wanted his end user customers to have the best scientific instruments to help them achieve and perform beyond requirements that their competitive industry required, therefore he always instructed his sales team and customers with the following directive: 'Don't suffer in silence. Let us know what you need and how our instruments are performing.'

"He would discuss with me his future vision in the world of non-contact probing utilizing harmonics along with the next generation of cell structures that would absorb more data in smaller geometries and would also resolve heat dissipation concerns.

"It is difficult to try to condense a man's life who lived in such a complex physical world. I hope I have given you a glimpse of him and his contributions that have made our world a better place." ■

Division News

Division Officer Slates Announced

New officers for a 2011-2013 term have been nominated for the following Divisions. Election results will be reported in the winter 2011 issue of *Interface*.



Electrodeposition Division

Chair

Lili Deligianni, IBM

Vice-Chair

Giovanni Zangari, University of Virginia

Secretary

Elizabeth Podlaha-Murphy, Northeastern University

Treasurer

Stanko Brankovic, University of Houston

Senior Member-at-Large

Philippe Vereecken, IMEC

Junior Members-at-Large (one to be elected)

Natasa Vasiljevic, University of Bristol

Xiaoyan (Ingrid) Shao, IBM

Srikanth Gopalan, Boston University

Turgut Gur, Stanford University

David Helmick, Carpenter Technology

Ellen Ivers-Tiffée, University of Karlsruhe

Silvia Licoccia, Università di Roma Tor Vergata

Xingbo Liu, West Virginia University

Torsten Markus, Forschungszentrum Juelich

Toshio Maruyama, Tokyo Inst. of Technology

Patrick Masset, TU Bergakademie Freiberg

Nguyen Quang Minh

Mogens Mogensen, Risoe National Lab for Sustainable Energy

Jason Nicholas, Michigan State University

Juan Nino, University of Florida

Elizabeth Opila, University of Virginia

Subhash Singhal, Pacific Northwest Labs

Mark Swihart, University at Buffalo

Anil Virkar, University of Utah

Steven Visco, Lawrence Berkeley National Laboratory

Eric Wachsman, University of Maryland

Werner Weppner, Christian-Albrechts University Kiel



High Temperature Materials Division

Chair

Jeffrey Fergus, Auburn University

Vice-Chair

Timothy Armstrong, Carpenter Technology

Secretary

Xiao-Dong Zhou, University of South Carolina

Treasurer

Greg Jackson, University of Maryland

Members-at-Large

Stuart Adler, University of Washington

Mark Allendorf, Sandia National Laboratories

Fanglin (Frank) Chen, University of South Carolina

Elisabetta DiBartolomeo, Università di Roma Tor Vergata

Koichi Eguchi, Kyoto University

Emiliana Fabbri, Nanomaterials for Fuel Cells Group

Fabio Fonseca, IPEN

Paul Gannon, Montana State University

Fernando Garzon, Los Alamos National Laboratory

Robert Glass, Lawrence Livermore National Lab



Luminescence and Display Materials Division

Chair

John Collins, Wheaton College

Vice-Chair

Baldassare Di Bartolo, Boston College

Secretary

Anant A. Setlur, GE Global Research

Treasurer

Madis Raukas, Osram Sylvania

Members-at-Large

Holly Comanzo, GE Global Research Center

Uwe Happek, University of Georgia

C. Hunt, University of California, Davis

M. Kirm, University of Tartu

David Lockwood, National Research Council - Canada

Alok Srivastava, GE Global Research Center

ECS Staff News



ELIZABETH SCHADEMANN joined ECS in July 2009 as a Journal Production Assistant. Prior to joining the Publications team at ECS, she worked for Thomson Tax & Accounting, Research & Guidance Group NY as a Supervisor. There, she was directly responsible for updating online, CD, and print items for many products associated with the Internal Revenue Code. Schademann holds a Bachelor's degree in art history from Douglass College, Rutgers University.

Additionally, at Thomson, Schademann worked as a Data Support Coordinator, whose responsibilities included performing quality assurance of data delivered to internal CD-ROM and Web products, and resolving data and composition errors.

With ECS, Schademann's current responsibilities include assisting in the timely and accurate production of the ECS journals, by performing duties related to the complete production process of manuscripts, from submission through to the final publication. Further, she works with authors and reviewers on the submission of manuscripts and facilitates the file submission process.



HEATHER MCALINN joined ECS in October 2010 as a Publications Production Assistant for *ECS Transactions* (ECST). McAlinn is a graduate of Temple University where she earned a Bachelor's degree in communications with an English minor. She also attained an Associate's Degree in journalism from Bucks County Community College.

Prior to joining ECS, McAlinn worked for 11 years as an Assistant Production Manager for CDC News, a nationally-based provider of public and private commercial construction leads. Heather was responsible for delegating layout work to production assistants and managing press night operations. She was accountable for ensuring all 26 nationally-based issues of CDC News print publications were put together from start to finish twice a week in a high paced deadline driven environment.

Prior to working at CDC News, McAlinn worked as a Graphics and Production Coordinator for Associated Printing Services, an offset printing company located in Trevoze, Pennsylvania. Some of her responsibilities included providing quotes for clients and creating design layouts for print jobs. McAlinn also worked as a liaison between the pre-press and print departments.

McAlinn's current responsibilities at ECS include assisting with the production of ECST, with managing manuscript data and quality checking, and with final article preparation for printing.

"We're delighted to welcome Beth and Heather to ECS. Both bring a wealth of experience and talents to their positions. Now is an exciting time to join the ECS publications team. We have recently undertaken comprehensive strategic planning for the journals leading to some exciting developments," said Annie Goedkoop, ECS Director of Publications. "*ECS Transactions* has proven to be an unmitigated success. Technology is pushing ECS to adapt to the ever-increasing pace of advancement in the publishing world. ECS will stay ahead of the curve with help from Beth and Heather."

Highlights from ECS Sponsored Meetings

The XXVI Meeting of the Mexican Electrochemical Society and the 4th Meeting of the ECS Mexican Section

The XXVI Meeting of the Mexican Electrochemical Society (SMEQ) and the 4th Meeting of the ECS Mexican Section of ECS was held in Mexico City, from May 30 to June 3rd, 2011. The local organizing committee included Francisco Rodríguez Gómez (President), Atahualpa O. García, Vianey Torres-Mendoza, Sergio López-León, Fernando Flores-Álvarez, and students from the Corrosion Laboratory of the Universidad Nacional Autónoma de México (UNAM).

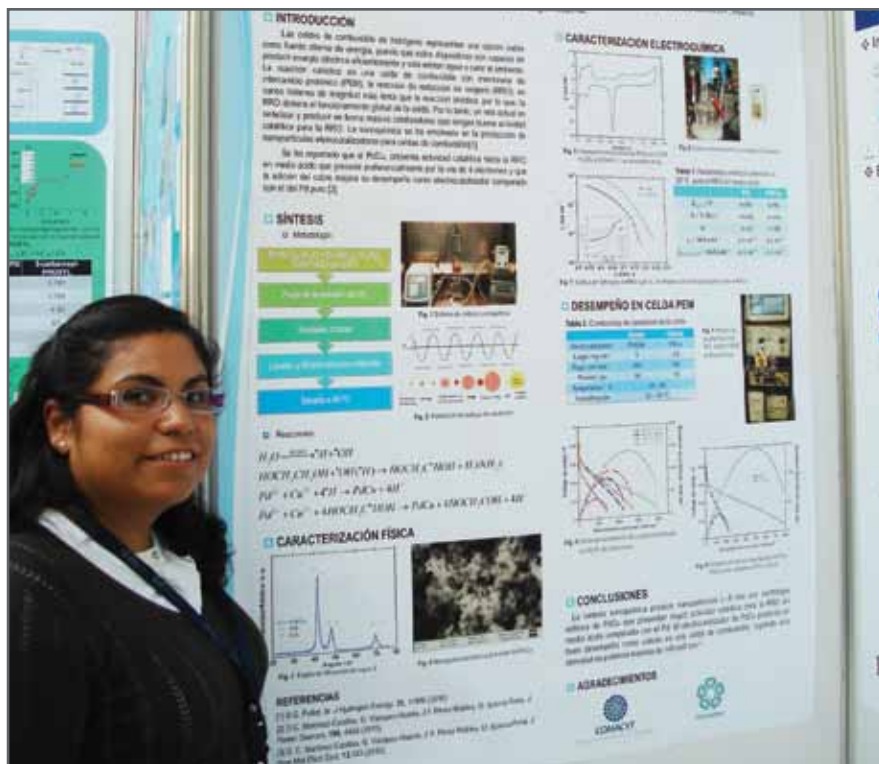
The meeting focused on the use of electrochemistry as a tool for sustainable development and had a broad audience, including members of SMEQ, individuals from industry, students, and distinguished international professors. There were more than 250 oral and poster presentations and six plenary lectures delivered by distinguished professors including Mark E. Orazem (USA), Ray Taylor (USA), Bernard Tribollet (France), Vincent Vivier (France), María Lorenza Escudero-Rincón (Spain), and Carmen M. Abreu-Fernández (Spain). Important topics that were covered included: conversion and energy storage, corrosion and surface treatment, education in electrochemistry, electrodeposits and surface modification, environmental electrochemistry, electro-analytical, molecular and bioelectrochemistry, electrochemical engineering and technological applications, nano-electrochemistry, and nanotechnology. The local organizing committee acknowledged and thanked Bernard Tribollet, representative of ECS, Mark Orazem, President and representative of the International Electrochemistry Society (ISE), and Vincent Vivier, for their willingness to come to Mexico to participate in the meeting.

The poster competition's best poster was awarded to Diana Cristina Martínez Casillas, a PhD candidate in chemistry sciences under the supervision of Omar Solorza-Feria, in the Department of Chemistry at CINVESTAV-IPN (Center for Research and Advanced Studies of the National Polytechnic Institute) in Mexico City. She received her BS degree in chemical engineering from UNITEC (Technological University of Mexico). Her PhD project is based on the synthesis, physical, and electrochemical characterization of novel Pd-based nanocatalysts, to be used for the oxygen reduction reaction in acid medium and as cathode electrodes in PEM fuel cells.

Martínez Casillas is also working on theoretical studies of oxygen reduction reaction on metallic Pd-based clusters, and has published two ISI papers and written two chapters in a Spanish electronic book on hydrogen-oxygen fuel cells. The prize, sponsored by ECS, includes a registration fee for the 220th ECS meeting in Boston Massachusetts, and travel support.

Other activities included the appointment of new members for the Mexican Electrochemical Society Committee, and the election of Facundo Ameraya-Calderón (CIMAV) as Vice-President for the 2011-2013 term. In addition to Prof. Almeraya, the new committee consists of Norberto Casillas (UDG), appointed President of the SMEQ; Juan Manríquez-Rocha (CIDETEC), Secretary; and Juan Manuel Peralta-Hernández (CIANTEC), Treasurer. Officers of the SMEQ include Marina E. Rincón (CIE-UNAM), Mario A. Alpuche (University of Nevada, Reno), and Bernardo Frontana Uribe (UAEM, UNAM).

In his inaugural speech the new President of the SMEQ, Prof. Casillas encouraged his Mexican colleagues to keep working hard to increase and strengthen the number of electrochemistry research groups in Mexico. He also recognized the advances of the SMEQ and presented awards to the previous committee members, including Manuel E. Palomar-Pardave (former President), Roel Cruz-Gaona (former Secretary), and Leonardo Bernal-Haro (former Treasurer). He also thanked the local organizing committee, the representative officers from ECS and ISE, as well as all the sponsors and invited speakers. Finally, he encouraged the participants to attend the XXVII Meeting of the SMEQ and the fifth Meeting of the ECS Mexican Section to be held in the city of Toluca, Mexico, during the last week of May 2012. ■



DIANA CRISTINA MARTÍNEZ CASILLA was the winner of the best student poster award at the joint SMEQ/MES meeting. The winning poster was entitled, "On the Sonochemical Synthesis of PdCu and Its Activity as Catalyst for the RRO in a PEM Fuel Cell."

ECS Sponsors IC4N: From Nanoparticles and Nanomaterials to Nanodevices and Nanosystems



From *Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N)* held its third iteration on the Greek island of Crete in June. Session Chair **KRISHNAN RAJESHWAR** (left) joined **PHAEDON AVOURIS** (center), a keynote speaker, and **STATHIS MELETIS** (right), IC4N organizer.



ECS sponsored the Best Poster Award at the IC4N meeting in June. From left to right are: **C. POLITIS** (Univ. Patras, Hellas, IC4N co-organizer), **HADIYAH-NICOLE GREEN** (Best Poster Award winner), and **STATHIS MELETIS** (IC4N organizer).

Sandy beaches, the blue Mediterranean Ocean, a beautiful seaside resort, and materials science all came together nicely in the Greek island of Crete in late June for the **3rd International Conference: From Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N)** and the Cretan Workshop on Global Challenges and Opportunities for Nanotechnology. This latest edition of the conference series came on the heels of two very successful predecessors held in Halkidiki and on the Greek island of Rhodes respectively. Both these earlier conferences as well as the 3rd IC4N (www.uta.edu/ic4n) were co-sponsored

by ECS and the latest edition was also co-organized by the European Federation of Biotechnology. The 3rd IC4N featured four keynote lectures, of which the one given by Phaedon Avouris (“Graphene-Based Electronics and Optoelectronics”) perhaps represented a topic most familiar to the ECS membership. The technical program featured both invited and contributed oral talks spanning eight parallel symposia ranging from Energy Conversion & Storage to Functional Nanomaterials and Nanomedicine/Biotechnology.

A vigorous and actively-subscribed poster presentation program at the conference featured 80-odd presentations

of which 13 were presented by U.S. students in a graduate student competition funded by the NSF. The Best Poster Award was sponsored by ECS.

All in all, this event fully fulfilled the over-arching goal set forth for the forum in identifying current barriers and promising research avenues in the area of nanoscience and nanotechnology. The pleasant surroundings, very congenial weather, and the high quality of the talks and posters further contributed to a stimulating environment for interactions and networking. ■

In the **NEXT** issue of **INTERFACE**

- **DIELECTRIC SCIENCE AND TECHNOLOGY** is the featured topic in the winter 2011 issue, guest edited by **Durga Misra**. Featured articles include “High k on High Mobility Materials,” by Durga Misra; “Progress on Ultra-Low Dielectric Constant Materials for Logic Devices,” by Uros Cvelbar; and “Noise,” by Purushothaman Srinivasan.
- Don’t miss the next edition of **WEBSITES OF NOTE** which gives readers a look at some little-known, but very useful sites.

- **MEETING HIGHLIGHTS FROM THE FALL 2011 MEETING IN BOSTON...** The winter issue will take a look at the happenings at the 220th ECS Meeting in Boston, including photos and stories from the first-ever **Electrochemical Energy Summit**.
- **TECH HIGHLIGHTS** will continue to provide readers with free access to some of the most interesting papers published in the ECS journals.



IE&EE Division NET Award



The **IE&EE Division's New Electrochemical Technology (NET) Award** recognizes excellence in the commercialization of new electrochemical technology (see *ECS Interface Summer 2010*, p. 45, for more details), which typically represents a multidisciplinary team approach. The 2011 NET Award was given to the **U.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL)**, Champaign, IL; and **Electro Tech CP**, Accord, NY are the joint recipients of the 2011 IE&EE Division's NET Award, in recognition of their development of electro-osmotic pulse (EOP) technology.

The IE&EE Division presented the 2011 NET Award at the ECS meeting in Montréal last spring. IE&EE Division Chair **VIJAY RAMANI** (far left) presented awards to the recipients (from left to right): (Ramani); **ILKER R. ADIGUZEL**, ERDC-CERL; **ORANGE S. MARSHALL, JR.**, ERDC-CERL; **PAUL A. NOYCE**, Electro Tech CP; **VICKI VAN BLARICUM**, ERDC-CERL; and **VINCENT F. HOCK, JR.**, ERDC-CERL.

ECS Co-sponsored Conferences for 2011

In addition to the regular ECS biannual meetings, ECS, its Divisions, and Sections cosponsor meetings and symposia of interest to the technical audience ECS serves. The following is a list of the cosponsored meetings for 2011. Please visit the ECS website for a list of all co-sponsored meetings.

- **EuroCVD 18**, September 4-9, 2011, Kinsale, Ireland (Sponsored by ECS High Temperature Materials Division)
- **Electrochem 2011**, September 5-6, 2011, Bath, UK (Sponsored by ECS European Section)
- **12th International Conference on Advanced Batteries, Accumulators, and Fuel Cells**, September 11-14, 2011, Brno, Czech Republic
- **62nd Annual Meeting of the International Society of Electrochemistry**, September 11-16, 2011, Niigata, Japan
- **4th International Conference on Electrophoretic Deposition: Fundamentals and Applications (EPD 2011)**, October 2-7, 2011, Puerto Vallarta, Mexico (Sponsored by ECS Electrodeposition Division)
- **Fuel Cell Seminar & Exposition**, October 31-November 3, 2011, Orlando, Florida, USA
- **Fray International Symposium on Metals and Materials Processing in a Clean Environment**, November 27-December 1, 2011, Cancun, Mexico

To learn more about what an ECS co-sponsorship could do for your conference, including information on publishing proceeding volumes for co-sponsored meetings, or to request an ECS co-sponsorship of your technical event, please contact ecs@electrochem.org.

Corporate Member News

Spotlight on Metrohm USA, Inc.



With worldwide headquarters in Herisau, Switzerland, and regional offices spanning every continent, **Metrohm** is a global leader and innovator in both electrochemical measurement and ion analysis equipment for research and development, QA/QC, and general testing laboratories in industry and academia.

The company's products range from manual to fully automated systems (as well as accessories) for electrochemical, impedance, titration, liquid chromatography, sample preparation, and cell research and testing applications.

Developed and precision-manufactured in Switzerland and the Netherlands, the Metrohm brand represents a combination of ruggedness with sensitivity, simplicity with state-of-the-art technology, and high scores in user productivity and convenience. With modular designs and advanced software control systems, Metrohm systems are flexible to suit virtually any complex application and expandable to meet future needs down the road.

All systems are backed by industry-leading warranties, service, application and software support and training - for as long as you own your instrument. Key products include: potentiostat/galvanostats, electrochemical cells and electrodes, voltammetry analysis systems, titration analysis systems, and ion chromatography systems. They are used by many industries and research facilities, including those involved with surface finishing/electroplating, batteries/fuel cells, nanotechnology, corrosion, materials research, sensors/biosensors, development, trace and analytical analysis, and educational institutions. Visit them on the Web at www.metrohmusa.com.

Spotlight on NuVant Systems, Inc.



Since its founding in 1999, **NuVant** has been conducting research and development in portable fuel cell technology. NuVant has patents in intermediate fuel cell electrolytes and in electrode component testing instrumentation. NuVant was the first to develop and patent array electrochemical reactors for high throughput evaluation of electrode components for energy conversion and storage devices. Their strategy for high throughput characterization of electrode components is a common counter/reference electrode and a segmented array working-electrode. High precision is enabled by elimination of performance variations at the counter electrode typical of single cell systems.

NuVant offers an Arraystat potentiostat that enables simultaneous evaluation of all electrodes or row-by-row evaluation of electrodes to mitigate reactant depletion when operating at low reactant stoichiometric ratios. The Array fuel cell, coupled with the Arraystat, enables evaluation of electrode components under actual fuel cell operating conditions. The Arraystat is also used by researchers worldwide to evaluate photoelectrochemical catalysts.

In 2009, NuVant expanded its product line to include low cost, high performance potentiostat/galvanostats including the EZStat and Powerstat series, which control fuel cell test stands, pumps, mass flow controllers, and more. NuVant is a one-stop shopping resource for electrode fabrication, including a recently introduced heated vacuum table for membrane-electrode-assembly (MEA) preparation (MEA fabrication is taught from an accompanying DVD or a hands-on short course offered twice yearly), ELAT[®] gas diffusion layers and polymer electrolytes. NuVant has established a high-throughput electrode characterization facility that provides electrode characterization services.

NuVant has created a Concept to Market (CTM) department to provide rapid prototyping services. In addition to fleshing out circuit designs, CTM tests circuit design components prior to generating a final CAD layout of the board. CTM procures and rapidly populate the PC boards using an in-house solder stencil machine, an automated pick-and-place machine and a reflow oven. CTM system-integrates the board and provides a final product, including light manufacturing of customer product lines. Visit them on the Web at www.nuvant.com. ■



websites of note

by Zoltan Nagy

Frequently Asked Questions about Lead-Acid Batteries

Detailed information about many practical aspects of car batteries: "car, power sports (including motorcycle), truck, boat, marine, recreational vehicle, solar, and other starting and deep cycle applications." Consequently, largely limited to lead acid batteries. Contains also hundreds of links to other battery informational sites, to battery manufacturers, and many battery related accessories (chargers, etc.).

- Car Battery and Deep Cycle Batteries (W. Darden)
- <http://www.batteryfaq.org>

Education about Lithium Batteries

"A resource that includes helpful articles on battery replacements, battery news, and battery technologies. Throughout this battery resource you will find articles covering a wide variety of battery topics." Limited mostly to lithium batteries and their uses, such as iPod batteries, digital camera batteries, etc.

- BatteryEducation.com
- http://www.batteryeducation.com/battery_article_index/index.html

General Battery Chemistry FAQ

A general battery site containing information about many primary and secondary battery types. "Batteries come in a lot of different varieties. The most common are carbon-zinc, alkaline, lead acid, nickel metal hydride, nickel cadmium, and lithium ion. But there are many other battery chemistries, each with their own advantages and disadvantages. The different battery designs currently used, some of the chemistry involved, and advantages and disadvantages of each design are discussed."

- PowerStream Technology
- <http://www.powerstream.com/BatteryFAQ.html>

About the Author

ZOLTAN NAGY is a semi-retired electrochemist. After 15 years in a variety of electrochemical industrial research, he spent 30 years at Argonne National Laboratory carrying out research on electrode kinetics and surface electrochemistry. Presently he is at the Chemistry Department of the University of North Carolina at Chapel Hill. He welcomes suggestions for entries; send them to nagy@email.unc.edu.

Have you moved or are you planning to move?

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(The Electrochemical Society, 65 South Main Street, Building D, Pennington, NJ, 08534-2839, USA)

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