

SEAC

communications

President's Message

It's nice to have an opportunity to write a few words to my SEAC colleagues. This is my first President's Message and I am writing it in the relatively unhurried month of July having just returned from six months of sabbatical leave in the laboratories of Marcin Majda at Berkeley. This was a wonderful period devoted to uninterrupted sessions of thinking and writing, activities nearly impossible to pursue when immersed in the press of normal business. Anyway, I've returned with batteries recharged (a little electrochemical metaphor there) and ready to slay a few more dragons (mix those metaphors, Dennis). We will see how much charge remains when you (and I) read these words in the SEAC newsletter this autumn.

In any case, I must begin by expressing my thanks to Royce Murray who has served us so well as President for the last two years. Under his leadership, our Society has continued to prosper and he and our Board of Directors have identified several new opportunities and challenges for the growth and continued health of the organization. The intensity of effort that he has applied to the job of President is impressive, all the more so when one considers the myriad of other responsibilities he shoulders. Thank you Royce!

Readers will recall that our new SEAC logo was announced in the last issue of SEAC Communications (SEAC Commun. 1993, 10 no. 2). I hope that the membership will find this new logo to be as appealing and refreshing as I do. You will be interested to know that Royce was able to incorporate the new logo into the official award certificates for the 1993 SEAC Young Investigator Awards to Leonidis Bachas and Werner Kuhr.

Elsewhere in this issue you will find announcements of the 1994 C. N. Reilley Award and 1994 Young Investigator Award. Let me add my hearty congrats to the awardees, (former SEAC president) Barry Miller and Adrian Michael. Joe Rosamilia has assembled a fine award symposium which we will all enjoy at PITTCON94, February 27-March 4, 1994, in Chicago.

Finally, I must comment on the challenge presented to former Reilley Award winners by our honorable editor, Dick Durst (see Editorial, SEAC Commun. 1993, Vol. 10, No. 2). SEAC has been publishing short articles containing remembrances of the good old days by former awardees but Dick has noted that five of us are tardy in supplying such articles. Personally, I find that my own efforts of this type range from the maudlin to just plain silly but I will gladly take up the challenge (for the next SEAC Communications) if my cohorts will join in. How about it, fellas?

Dennis H. Evans

Editorial

I think I've died and gone to **heaven!** I have already received enough material for this issue without having to resort to **heroic** efforts to **fill** it as I normally do. Thanks to everyone who contributed material.

Speaking of dying and going to heaven, the other good news is that I have not heard of any other notable scientists in our field having passed away. This is a very pleasant change from the past few issues of the newsletter. I hope this is the start of a long hiatus from **obituaries**.

Speaking of obituaries, cold fusion **is still** not dead. In case you haven't heard, there is a new book out. "Bad Science: The Short Life and Weird Times of Cold Fusion" by Gary Taubes (Random House, **503pp**, \$25). I haven't read the book but, from the **title** and the review I read, it clearly is not complimentary. Also, I understand Pons and Fleischmann have recently **published** a paper in Phys. Letters A. I haven't read this either, but would be interested in comments from **SEACers** who have read one or the other of these.

I want to welcome Ann M. Tyler to the "staff" of SEAC Communications. Ann works at BAS and has been assigned the **responsibility** for getting the newsletter material retyped and printed from the copy that I send in.

Finally, since Dennis Evans has provided us **with** a very meaty President's Message, I shall take this opportunity to shorten my usual verbose **editorial**. I know this will disappoint many of you who **and** my inane comments amusing and perhaps sometimes even **informative**, but most of you **will** probably breathe a **sign** of relief and **consider** it a **welcome** reprieve from the **(ab)norm**.

But I do want to add my best wishes to those of Dennis and congratulate Barry Miller for his selection as the **Reilley** Award recipient for **1994** and Adrian Michael for the Young Investigator Award. Joe **Rosamilia** is organizing the **Reilley** Award Symposium and has supplied me with some **preliminary** information on the meeting and a short biography on Barry. The next issue of the newsletter, which will appear before **PITTCON '94**, **will** contain the final program and more about Adrian.

Dick Durst

Address Changes

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Dear Dick: Will you please change my address to reflect my move to:

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Since you solicited info on awards and honors in the latest newsletter, I should tell you that I rec'd the latest NSF Young Investigator Award (NYI) of our membership.

Keep up the good work.

Dick Crooks
[Congratulations on your NSF award - Editor]

The Society For Electroanalytical Chemistry

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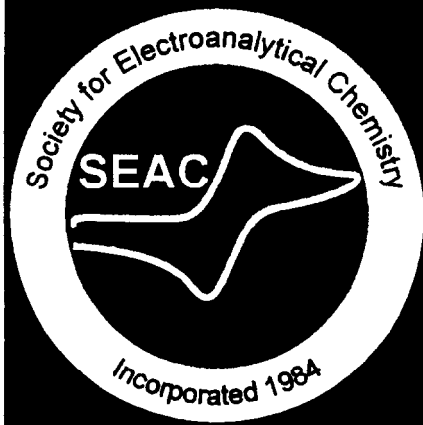
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Larry Faulkner chosen Vice Chancellor for Academic Affairs

Larry R. Faulkner, Dean of the College of Liberal Arts and Sciences at the University of Illinois at Urbana - Champaign, has been selected as the Vice Chancellor for Academic Affairs effective January 1, 1994. He succeeds Robert M. Berdahl, who left January 20 to assume the Presidency at the University of Texas at Austin.

Faulkner will be the first major appointment under the campus administration of Michael T. Aiken, who became Chancellor on July 1, 1993. Aiken, who played a role in the selection process, voiced praise for the recommendation of Faulkner: "I am delighted that Larry Faulkner has agreed to become Vice Chancellor for Academic Affairs. He has served with great distinction as Dean of Liberal Arts and Sciences, and has earned a national reputation both as an outstanding administrator and as an outstanding scientist. He will be, in my judgment, a superb Vice Chancellor, and I am looking forward to a close association with him in the years ahead.

Faulkner, 48, has been Dean of Liberal Arts and Sciences since 1989, and was head of the Chemistry Department during the five years prior to that.

He earned a bachelor's degree in 1988 from Southern Methodist University and a doctorate in 1989 from the University of Texas at Austin. After three

years on the faculty of Harvard University, he joined the UI Chemistry Department in 1973 and taught for 10 years. He then taught one year at Texas before returning to the UI in 1984 to become a department head.

Faulkner is a member of the American Chemical Society and is a past president and vice president of the Electrochemical Society. He is vice president of the International Society of Electrochemistry. He was U.S. regional editor of the Journal of Electroanalytical Chemistry from 1980 to 1985, and has been on the editorial board of the Journal of the Electrochemical Society.

Among his recent honors, Faulkner received the American Chemical Society Award in Analytical Chemistry in 1992, and in the same year was named a fellow in the American Association for the Advancement of Science.

Faulkner said he saw his main role as one of supporting the new chancellor and his policies. "I'm impressed with him as a person, and I think we can work well together," he said.

Faulkner was selected following a nationwide search process that considered the credentials of 97 people, eight of whom were selected as finalists and three of whom were interviewed by campus administrators, deans and directors.

TREASURER'S REPORT

SOCIETY FOR ELECTROANALYTICAL CHEMISTRY
FISCAL YEAR 1993
JULY 1, 1992 TO JUNE 30, 1993

In Fiscal Year 1993 the net worth of the Society increased by approximately \$5,500 to \$42,103. The assets of the Society consist of an endowment fund to sustain the Charles N. Rellley Award (\$19,806), an endowment fund created from payment of Life Membership Dues (\$12,215) and a working fund (\$10,083). These assets are deposited in the Lafayette, Indiana branch of NBD Bank, N.A. (formerly Indiana National Bank). The majority of the Rellley Award endowment funds (\$17,827) are held as a certificate of deposit.

The Society operated in the black by approximately \$2,100 during FY 1993. Expenditures were kept within budgeted projections. The Society awarded the Charles N. Rellley Award for the tenth consecutive year and a Young Investigator Award in Electroanalytical Chemistry for the first time in 1993. A Finance Committee consisting of Therese Cotton, Joe Gordon, Bruce Parkinson and the Treasurer has been appointed to study the long-term financial posture of the Society. The Committee, which reports to the SEAC Board of Directors at its annual meeting during the Pittsburg Conference, welcomes comments from the Membership.

Respectfully submitted,
Franklin A. Schultz, Treasurer
July 8, 1992

(Note: See balance sheets at the end of the newsletter)

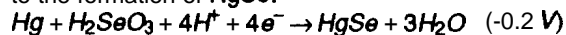
Unexplained Phenomena

Electrolysis with No Current Flow – How Can It Happen?

Gary D. Christian

The resurrection of the “unexplained phenomena” column by **Heinrich Meyer** and Karl **Cammann** in the February issue of SEAC Communications reminded me of a weird experiment I performed 30 years ago (can it be that long?) as a graduate student with **Bill Purdy**. I was studying the polarography of selenium (IV), and was running a series of controlled potential coulometry experiments to get a handle on electron-change values for the several waves that occur at **different potentials**. Some reductions at the mercury pool cathode gave red elemental **selenium**, so selenium powder was **electrolyzed** to see if it might be an intermediate on the way to formation of selenium (-2). The red powder was not **commercially available**, but the black powder was.

Let me lay some groundwork for these **experiments**. In **acid** solution, as many as three polarographic waves occur, depending the **pH**: a 4-electron irreversible wave at about **0.2V** vs. SCE, a **2-electron reversible** wave at about **-0.6V**, and a 6-electron **irreversible** wave at about **-1.2V**, which is the only one seen in alkaline solution. To make a long story short, the first wave is due to the formation of **HgSe**:



The **Se(IV)** is reduced in a **6-electron** step to **Se(-2)**, but this is countered by a P-electron oxidation of the **HgSe** formed:

$$\text{HgSe} + 2\text{H}^+ + 2\text{e}^- \rightarrow \text{Hg} + \text{H}_2\text{Se} \quad (-0.6 \text{ V})$$

The third wave is from the direct reduction of **SeO3²⁻** to **Se²⁻**:

$$\text{SeO}_3^{2-} + 6\text{H}^+ + 6\text{e}^- \rightarrow \text{Se}^{2-} + 3\text{H}_2\text{O} \quad (-1.2 \text{ V})$$

Now the dilemma. When suspended black Se powder at **pH 2.5** is “electrolyzed” at **-0.8 V**, nothing appears to happen for **30 minutes**; no current flow, no **visual** changes. But then **H₂Se** starts to evolve and red colloidal Se is formed, but still no current flow! If the black powder is “electrolyzed” at **-0.35V** for up to an hour, no change is observed. But a shift to an applied potential of **-0.8V** results in **immediate** evolution of **H₂Se** and formation of red colloidal Se, with no current flow. So the first “electrode reaction” occurs at the more **positive** potential. Can you figure it out? For a proposed answer see page 6.

By the way, I don't have an answer for the potentiometric Immunoassay mystery of Meyer and **Cammann**, but the key **experiment** they performed **which** threw them in a quandary is what I call one of Christian's Axioms and one of the most **difficult** for students to learn: Run a **Blank!**

Charles N. Reilley Award Symposium

J. H. Rosamllia

Introductory Remarks -

The 1994 **Charles N. Reilley Award will be presented to**

Barry Miller of Case Western Reserve University
by **Dennis Evans**

The 1994 **Young Investigators Award of Electroanalytical Chemistry will be presented to**

Adrian Charles Michael
by **Dennis Evans**

Award Address--Some Recent **Electrochemical** Glances at Carbon and **Silicon**, **B. Miller**, Dept. of Chemistry, Case Western Reserve University

Electron Transfer Across Self-Assembled Monolayers, **C.E.D. Chidsey**, Dept. of Chemistry, Stanford University

Amperometric Biosensors Based on Electron Conducting **Redox** Hydrogels, **Adam Heller**, Dept. of Chemical Engineering, The University of Texas at Austin

RECESS

Award Address--Adrian C. Michael, Title: TBA

Myoglobin Electron Transfer and Ligand Binding Reactions, Fred M. Hawk-

ridge, Dept. of **Chemistry**, Virginia Commonwealth University, **Bertha C. King, David J. Cohen**

1994 **Reilley Award Recipient:**

Barry Miller

Barry Miller became the Fank Hovorka Professor of Chemistry at Case Western Reserve University on August 1, 1993. Previously he had served as a Member of the Technical Staff at AT&T Bell Laboratories in various departments of the present Physical Sciences Research Division. **Dr. Miller** received the A.B. degree **summa cum laude** in chemistry from Princeton University in 1955 and the Ph.D. in **chemistry** from M.I.T. in 1959. After three years as Instructor in chemistry at Harvard University, he joined AT&T.

His research has mainly been in the field of **electrochemistry**, stemming from his **training** in electroanalytical chemistry. These interests have also included photoelectrochemistry, corrosion **science**, electrosynthesis, **interfacial** kinetics, and materials stability and processing. He has published about 125 papers in these areas and holds 15 U.S. patents.

Dr. Miller was appointed Editor of the Journal of the Electrochemical Society for a five-year term **beginning** January 1, 1990. **Within** The Electrochemical **Society** he has also served as Chairman of the Physical Electrochemistry **Division**, as a member of the Board of Directors, and as co-organizer of numerous symposia. In 1991, he received the David C. Grahame Award of the Physical Electrochemistry Division and in 1992 he was made a Fellow of the Society.

He was President of the Society for Electroanalytical Chemistry 1969-1991 and a Director 1966-1991. He has also been Chairman of the Gordon Conference on **Electrochemistry**, U.S. **National** Secretary of the International Society of Electrochemistry, and Associate Member of the Electrochemistry Commission of IUPAC. He is a member of Phi Beta Kappa, Sigma Xi, and the American Chemical Society. As an invited speaker at a number of international conferences and institutions, he has given lectures in England, Switzerland, Israel, and Australia. In recent years he has served on a number of Government Panels, including several for the Department of Energy.

MICROELECTRODES AND MICROENVIRONMENTS: FUNDAMENTALS AND APPLICATIONS

Debra R. Rolison

Henry White and I are throwing a **microparty** during the **184th Meeting** of the Electrochemical **Society** in New Orleans, 1 Oct-5 October 1993. The papers to be presented during the three days of our symposium on "**Microelectrodes** and Microenvironments" are enclosed to whet the **appetites** of the SEAC membership. We sought (and **received**) papers exploring electrode processes at **ultramicroelectrodes** as well as the uses of **microelectrodes** in small domains and microenvironments. New Orleans, **microelectrodes**, and **cafe au kilt**: what more does one need in **life**?

Monday, October 11, 1993

H. S. White, Chairman; D. R. Rolison, Vice-Chairman

10:00 Electrochemistry at Collector-Generator Assemblies: Direct Experimental Evidence on the Dichotous Nature of Diffusion at Microelectrodes - C. Amatore, B. Fosset, K. M. Manes, and R. M. Wightman

10:30 Steady-State Currents at Electrodes with Rotationally Invariant Surfaces. Conical and Spherical Segment Electrodes - C. G. Zoski, A. J. Bard, and M. V. Mirkin

11:00 Effects of Microelectrode Geometry - K. B. Oldham

11:30 Migration, Diffusion, and Microelectrodes: A new Modeling Approach Applied to Pitting Corrosion - M. W. Verbrugge, D. R. Baker, and J. Newman
R. J. Nowak, Chairman; A. G. Ewing, Vice-Chairman

2:00 Probing the Chemical Microenvironment around Biological Cells with Carbon-Fiber Microelectrodes - R. M. Wightman, J. A. Jankowski, T. J. Schroeder, E. L. Ciolkowski, and J. M. Finnegan

2:30 Neurotransmitter Dynamics at Single Nerve Cells and Nerve Cell Processes - A. G. Ewing, R. Zhou, G. Chen, and T. Chen

3:00 The Effect of Analyte Charge on the Electron-Transfer Properties of Carbon-Fiber Microelectrodes as Determined with Electrochemically Generated Luminescence - W. G. Kuhr, P. Hopper, and P. Pantano

3:30 Ten-minute Intermission

3:40 Electrochemical Behaviors of Dopamine at IDA and Polymer-Modified IDA Electrodes - O. Niwa, M. Morita, and H. Tabei

4:10 Scanning Electrochemical Microscopy of Iontophoretic Fluxes Through Mammalian Skin - H. S. White, E. R. Scott, J. B. Phipps, and A. I. Laplaza

4:40 Electrochemistry at the MicroITIES - P. D. Beattie and H. H. Girault

5:10 Effect of Splanization of the Electrochemical Behavior of Sputtered Ir Film Ultramicroband Electrodes - T. L. Rose, U. M. Twardoch, and P. J. Marren
Tuesday, October 12, 1993

Dr. R. Rolison, Chairman; M. I. Montenegro, Vice-Chairman

9:00 Voltammetric Waves of Weak Acids in the Absence of Supporting Electrolyte - J. Osteryoung, M. Ciszowska, and Z. Stojek

9:30 Fables, Folklore, and Ferrocene Electrochemistry - J. F. Rusling, G. N. Kamau, G. Gounill, and T. M. Saccud

10:00 Redox-Dependent Binding with a Viologen Host in Low Ionic Strength Media - D. K. Smith

10:30 Ten-minute Intermission

10:40 Microelectrodes as Probes in Low Electrolyte Solutions: The Reduction of Quinone in Acidic Solution - B. D. Pendley and R. T. Robertson

11:10 Electrostatic Effects on Transport Phenomena in Nanometer-Size Galleries - A. Fitch, J. Du, J. W. Stuckl, and M. Caple

11:40 The Double-Beam Analog of the Electrochemical Cell: Using a Modified Standard Working Electrode to Calibrate a Practical Reference Electrode that Requires No Salt Bridge - B. R. Shaw and C. -L. Wang
R. W. Murray, Chairman; R. L. McCarley, Vice-Chairman

2:00 Synthesis and Characterization of Arrays of Zero Dimensional Ultramicroelectrodes - R. M. Crooks, O. Challa-pakul, C. B. Ross, J. Schorer, and L. Sun

2:30 Electrochemical Properties of Films of Gold Patterned with Micrometer-Scale Regions of Self-Assembled Organic Molecules - N. L. Abbott and G. M. Whitesides

3:00 New Routes for Selective Modification of Microelectrodes - J. Fritsch-Faules and W. R. Everett

3:30 Electrochemistry of Two-Dimensional Systems: Investigation of the Kinetics of Electron Transfer in Monolayers of the Redox-Active Molecules at the Air/Water Interface - M. Majda, D. Anvar, and R. Baydo
Wednesday, October 13, 1993

B. R. Shaw, Chairman; R. J. Nowak, Vice-Chairman

8:30 Ultraslow Diffusion to Electrodes - R. W. Murray, M. W. Poupard, Z. Porat, O. Haas, and C. Velazquez

9:00 AC Admittance Techniques Using Ultramicroelectrodes in Media of High Resistance - M. Fedurco, W. R. Fawcett, and M. Opallo

9:30 Electrochemistry at Microelectrodes in Supercritical Chlorodifluoromethane - D. E. Tallman and S. A. Olsen

10:00 Electrochemical Studies in Nonconventional Conditions - M. I. Montenegro, M. F. Bento, M. D. Geraldo, M. J. Medeiros, D. Pletcher, and C. Amatore

10:30 Ten-minute Intermission

10:40 A New Kind of Viscometer Based on the Electrochemical Measurement of Diffusion-Limited Currents at Microelectrodes and Microelectrode Arrays - S. Fletcher, R. L. Deutscher, and V. A. Vcente-Beckett

11:10 Electrocatalysis with Metal Microparticles in a Synthetic Glassy Carbon Host - R. L. McCreery, N. Pocard, D. Alsmeyer, M. Huston, W. Huang, and M. Callstrom

11:40 Electrified Microheterogeneous Catalysis: With and Without Zeolite-Supported Microelectrodes - D. R. Rolison and J. Z. Stemple

H. S. White, Chairman; R. M. Penner, Vice-Chairman

2:00 Nanometer-Scale Electrochemical Synthesis of Electronic Materials Using the Scanning Tunneling Microscope - W. Li, G. Hsiao, S. Lee, J. A. Vrtanen, and R. M. Penner

2:30 Toward the Refinement of Nanoband Electrodes: Chemically Enhanced Metal Nucleation as Studied by Scanning Probe Microscopy - R. L. McCarley and D. J. Dunaway

3:00 Imaging and Modification of Au(111) Monoatomic Steps with the Atomic Force Microscope - J. C. Brumfield, C. A. Goss, E. A. Irene, and R. W. Murray

3:30 Fifteen-minute Intermission

3:45 Luminescence Imaging of Electrode Microenvironments - R. C. Engstrom and J. E. Vitt

4:15 Observations of Corrosion Pit Initiation of Aluminum Using Microelectrodes - K. Hebert, Y. Tak, and I. Obi

4:45 Disk Microelectrodes Fabricated by Excimer Laser Micromachining - B. J. Seddon and H. H. Girault

WCFIA 94

Gary D. Christian

Enclosed is an announcement for the 1994 Winter Conference on Flow Injection Analysts (WCFIA94). I would appreciate your listing this information in your next announcement of upcoming meetings in SEAC Communications.

1994 Winter Conference on Flow Injection Analysts

January 5--7, San Diego, California

The Sixth Winter Conference on Flow Injection Analysts (WCFIA '94) will be held Wednesday, January 5 through Friday, January 7, 1994 at the San Diego Princess Convention Center. In addition, short courses highlighting special topics will be offered by experts in the field, Friday through Sunday, January 7--9, in the following areas:

Principles of Flow Injection Analysis
Gil Pacey, Miami University, Oxford, Ohio

Sequential Injection Analysis
Jarda Ruzicka and Gary Christian, University of Washington, Seattle, Washington

Method Development/Optimization in FIA
Adrian Wade, University of British Columbia, Vancouver, British Columbia

Sampling Systems and Industrial Applications of FIA
Don Olson, FIA Solutions, Houston, Texas

Detectors/Automation in FIA
Sandy Dasgupta, Texas Tech University, Lubbock, Texas

FIA in Atomic Absorption Spectroscopy
Julian Tyson, University of Massachusetts, Amherst, Massachusetts

Electrochemical Methods and Sensors in FIA
Ari Ivaska, Abo Akademi University, Turku-Abo, Finland; and Joe Wang, New Mexico State University, Las Cruces, New Mexico

Chromatography Made Simple for FIA Practitioners
John Dorsey, University of Cincinnati, Cincinnati, Ohio

Titles for lecture or poster papers are solicited by October 15, 1993. Abstracts are requested by November 15, 1993.

For further information, contact:

WCFIA 94
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INCOME STATEMENT SOCIETY FOR ELECTROANALYTICAL CHEMISTRY FISCAL YEAR 1993 JULY 1, 1992--JUNE 30, 1993

| Income | | |
|---------------------------------|--------------------|--------------------|
| Account | Budgeted | Actual |
| Interest-Checking | \$719.00 | \$731.05 |
| Interest-Certificate of Deposit | 1,300.00 | 934.59 |
| Endowment Contributions | 400.00 | 430.00 |
| Working Fund Contributions | 4,331.00 | 4,897.48 |
| Annual Dues Payments | 4,700.00 | 3,832.00 |
| Life Dues Payments | 1,600.00 | 2,000.00 |
| | \$13,050.00 | \$12,825.12 |

| Expenses | | |
|---------------------------|--------------------|--------------------|
| Account | Budgeted | Actual |
| Symposium Expense | \$3,500.00 | \$3,000.00 |
| Relley Award Expense | 3,000.00 | 2,630.25 |
| Membership Expense | 2,000.00 | 791.64 |
| Newsletter Expense | 1,200.00 | 1,003.54 |
| Miscellaneous Expense | 50.00 | 110.77 |
| Allocations to Endowments | 3,300.00 | 3,364.59 |
| | \$13,050.00 | \$10,706.56 |
| Net | \$0.00 | \$2,118.56 |

BALANCE SHEET SOCIETY FOR ELECTROANALYTICAL CHEMISTRY FISCAL YEAR 1993

| Assets | | |
|---------------------------|--------------------|--------------------|
| Account | Budgeted | Actual |
| Working Fund | \$7,964.00 | \$10,082.81 |
| Relley Endowment-INB | 1,949.00 | 1,978.65 |
| Relley Endowment-CD | 18,754.00 | 17,826.96 |
| Life Membership Endowment | 11,815.00 | 12,214.61 |
| | \$40,482.00 | \$42,103.03 |

| Liabilities | | |
|-------------------------|--------------------|--------------------|
| Account | Budgeted | Actual |
| Newsletter Payable | \$0.00 | \$0.00 |
| Membership Exp. Payable | 0.00 | 0.00 |
| | \$0.00 | \$0.00 |
| Net | \$40,482.00 | \$42,103.03 |

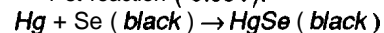
SOCIETY FOR
ELECTROANALYTICAL CHEMISTRY
ANALYSIS OF **WORKING FUND**
BUDGET FOR FY '93
JULY 1, 1992-JUNE 30, 1993

| Income | | |
|-----------------------------------|--------------------|--------------------|
| Working Fund Contributions | Budgeted | Actual |
| Pittsburgh Conference | \$3,000.00 | \$3,500.00 |
| BAS commitment | 1,331.00 | 1,331.00 |
| Miscellaneous | 0.00 | 66.00 |
| Subtotal | 4,331.00 | 4,897.00 |
| Annual Dues | 4,700.00 | 3,832.00 |
| Life Dues | 1,800.00 | 2,000.00 |
| Endowment Contributions | 400.00 | 430.00 |
| Interest | 2,019.00 | 1,666.00 |
| Total | \$13,050.00 | \$12,825.00 |

| Expenses | | |
|---------------------------------------------|--------------------|--------------------|
| | Budgeted | Actual |
| Symposium Expense | \$3,500.00 | \$2,628.00 |
| Newsletter Expense | 1,200.00 | 359.00 |
| Membership Expense | | |
| Dues collection | 500.00 | 360.00 |
| Membership activities | 500.00 | 831.00 |
| Elections | 250.00 | 135.00 |
| Directory | 500.00 | 0.00 |
| Miscellaneous | 250.00 | 0.00 |
| Subtotal | 2,000.00 | 1,326.00 |
| Relley Award Expense | | |
| Honorarium | 1,500.00 | 1,500.00 |
| Award Reception | 1,150.00 | 792.00 |
| Young Investigator Award | 250.00 | 500.00 |
| Miscellaneous | 100.00 | 220.00 |
| Subtotal | 3,000.00 | 3,012.00 |
| Allocation of Interest to Endowments | | |
| | 3,300 | 3,365.00 |
| Miscellaneous | 50.00 | 16.00 |
| Total | \$13,050.00 | \$10,706.00 |

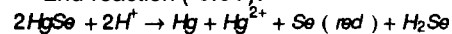
Answer

1 st reaction (-0.35V):



That is, the Se is reduced to Se(-2) and the Hg electrode is oxidized to Hg(II).

2nd reaction (-0.8V):



So, part of the Hg(II) is reduced, while the Se(-2) is oxidized, a sort of disproportionation reaction. I suppose actually both Hg(II) species are reduced, and one of the Hg atoms formed reacts with the released H₂Se to give back the electrons and Se⁰. So, here we have an electrolysis that requires an applied potential, but no energy is consumed! Could this be the answer to the energy crisis? Perhaps if we do careful thermal measurements, the overall reaction will be exothermic and give us positive energy output (move over cold fusion! -- where was the blank?)