



NEWSLETTER

Published by the American Society for Photobiology

8000 Westpark Drive, Suite 400 • McLean, Virginia 22102 • (703) 790-1745

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• • • • No. 115 Jun/Jul 1988 • • • •

Snowballs Fly at the Broadmoor

This year's 16th Annual ASP Meeting in Colorado Springs featured, among other things, a snowball fight! There was just enough snow, at the Meeting which was held in spring instead of summer this year to facilitate our participation in the 10th International Congress on Photobiology in Jerusalem this fall. The scientific program included 9 symposia, 132 contributed papers, 4 school lectures, and a workshop on correlation of *in vitro* and *in vivo* experimental results in human photobiology. Special lectures were presented on "Photosensitization in Light Scattering Media" (L. I. Grossweiner), "Psoralen Photochemistry—A link to the Structures of Nucleic Acids" (J. E. Hearst), and "Sequence-Targeted Photochemical Reactions in Nucleic Acids" (C. Helene). The 1988 ASP Research Award was presented to Peter H. Quail, who lectured on phytochrome and the autoregulated expression of its genes. The abstracts of the scientific presentations are published in the January 1987 Supplement to Volume 47 of *Photochemistry and Photobiology*. The special Journal issue on Photodynamic Therapy published in November



1987 is now available hard-bound for \$35 (Pergamon Press, Inc., Maxwell House, Fairview Park, Elmsford, NY 10523).

The annual business meeting included the announcement and introduction of President-Elect, Thomas P. Coohill, and new Councilors, John E. Hearst, Margaret L. Kripke, Roy Pottier, and Michael Wasielewski, and the ceremonial transfer of presidential office from Leonard I. Grossweiner to

Christopher Foote. President Foote stressed that he felt a mission to foster cooperation and good will among all photosciences including the ESP, other photobiology societies, and the various photochemical societies. Secretary-Treasurer David Kessel reported that the total membership increased from 1,562 in March 1987 to the current 1,730 members and that the projected 1987 budget surplus is approximately \$15,000, pending the official audit to be available May 15, 1988. In other actions, the membership approved the revised annual dues rate for student members of \$10 including a subscription to the Journal

See "Snowballs" on page 5.

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POSTDOCTORAL FELLOW

The University of Connecticut seeks a Ph.D. to participate in spectroscopic and structural studies of crystalline photosynthetic pigment-protein complexes. Salary \$18-22,000 depending on experience. Available 8/1/88, 1 year appointment, renewable by mutual consent. Experience desired in one or more of the following: photosynthesis, magnetic resonance, fast optical kinetics, x-ray diffraction, instrumentation/computers. Biochemical skills helpful. Send *vita* and names of 3 references to:

Professor H.A. Frank
The University of Connecticut
Department of Chemistry, U-60
Storrs, CT 06268

Screening will begin immediately and continue until position is filled. (Search #8A357)

Affirmative Action/Equal Opportunity Employer.

Light Reactions

Topics in Photosynthesis, Volume 8
Edited by J. Barber
Elsevier Science Publishers (Amsterdam)
\$225.95, 595 pages, 13 chapters

Photoinhibition

Topics in Photosynthesis, Volume 9
Edited by D.J. Kyle, C.B. Osmond and C.J. Arntzen
Elsevier Science Publishers (Amsterdam)
\$122, 315 pages, 11 chapters

Photobiology of the Skin and Eye

Edited by Edward M. Jackson
originally published as Nos. 3&4 of J. Toxicol.: Cutan.
Ocular Toxicol., Volume 4 (1985)
\$55 (U.S. and Canada), \$65 (elsewhere)
168 pages, 7 chapters, illustrated

Available from: Marcel Dekker, Inc.
270 Madison Avenue
New York, New York 10016

Newsletter Policies/Deadlines

Exciting Opportunities!!!

Tired of writing those dull, drab scientific papers? Want to sit down and write something with a little life in it? Have we got a deal for you! There's an opportunity for everyone. The Newsletter relies on contributions from the membership to provide up-to-date information on the issues that interest photobiologists. Have you acquired a recently published book in photobiology? How about writing a short critique to let the rest of us know the merits and problems with the work? Perhaps you've just returned from an interesting photobiological meeting. Tell us what's happened there. These days there certainly isn't enough time (or money) to attend every meeting of interest. A short synopsis of the proceedings can be a big help. Meeting organizers might wish to consider writing a meeting review, or asking someone else to do so.

Notices of new books, positions available/wanted, and upcoming meetings are always welcome. Please refer to a recent Newsletter issue for style and length. For meeting announcements, please provide a short paragraph describing the intent of the meeting. Deadlines for submission are the first of the month before the publication date. For example, the deadline for the Aug/Sep issue is July 1, material for the Oct/Nov issue is due Sep 1, and so on.

Still haven't found your niche in all of this? Well, don't despair the Editor has a number of opportunities for eager amateur journalists who would like to become more involved

in Society affairs. Several stories are just waiting for the right person to come along to pen the words. Could that person be you? It can be if you just call the Editor at the number listed below the masthead on the first page of this issue. I'm waiting for your call.

—Dennis Valenzano

FYM* Courtesy of Dr. Alan Morgan,
University of Toledo

With all the talk these days of ceramic engines for automobiles, I've recently learned that scientists at one time thought that they had developed a wooden car. It had a wooden chassis, wooden wheels, wooden engine and wooden frame. The only problem was it wooden go!

The editor, the Secretariat, and the ASP assume no responsibility concerning the veracity of this claim.

* For Your Misinformation

Announcements

7th International Conference on Photochemical Conversion and Storage of Solar Energy

July 31-August 5, 1988
Chicago, IL

Contact: Dr. R.J. Norris
Chem. Div. Bldg. 200/F137
Argonne National Laboratory
Argonne, IL 60439-4831

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39th Annual Meeting of the American Institute of Biological Sciences: Biological Diversity

August 14-18, 1988
University of California - Davis, CA

Fourteen biological societies hold a joint meeting which includes 27 scientific field trips, 17 hands-on workshops, 5 days of contributed paper and poster sessions, outstanding symposia and society-sponsored social events.

Contact: Louise Salmon, Meetings Manager
AIBS
730 11th Street N.W.
Washington, D.C. 20001
Tel.: 1-800-992-2427

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Principles and Applications of Lasers in Medicine

September 6-7, 1988
Glasgow, U.K.

Contact: General Secretary
Institute of Phys. Sci. in Medicine
2 Low Ousegate
York YO1 1QU, U.K.

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Organic Free Radicals

September 18-23, 1988
Zurich, Switzerland

Contact: Dr. H. Paul
Univ. Zurich-Irchel
Winterhurerstrasse 190
CH-8057 Zurich, Switzerland

Second International Conference on Laser Scattering Spectroscopy of Biological Objects

August 29-September 2
Pecs, Hungary

Contact: Prof. L. Kozma
Janus Pannonius University
Department of Physics
Ifjusag u. 6
Pecs, H-7624
Hungary
Tel.: 72-12622/190

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International Congress on Optical Science and Engineering

September 19-23, 1988
Hamburg, F.R.G.

Contact: The Internat. Soc. for Optical Engineer.
Dr. Leo H.F.J. Beckmann
TPC Chair
Oldelft, The Netherlands

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5th International Symposium on Bioluminescence and Chemiluminescence

September 25-29, 1988
Florence-Bologna, Italy

Contact: Professor Mario Pazzagli
Endocrinology Unit
University of Florence
Viale Morgagni 85
50134 Florence, Italy

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Vth Symposium on Optical Spectroscopy

September 26-28, 1988
Eisenach, G.D.R.

Contact: Prof. D.H. Fassler
Section Chemie
Fredrich-Schiller University
Philosophenweg 14
6900 Jena, G.D.R.

ACS Schoellkopf Medal to Thomas Dougherty

ACS release – The 1988 Jacob F. Schoellkopf medal was awarded to Dr. Thomas J. Dougherty, principal cancer research scientist at Roswell Park Memorial Institute and President of the Oncologic Foundation of Buffalo (NY), on May 17, 1988 in Amherst, NY. In making this fifty-eighth selection the Jury of Award of the Western New York Section of the American Chemical Society cited Dr. Dougherty for: **“His pioneering research in photodynamic cancer therapy and the identification and effective application of photosensitive drugs for the selective destruction of malignant tumors.”** The contributions of Dr. Dougherty and his co-workers to the economic and technological well-being of the Niagara Frontier are well recognized. In common with preceding Schoellkopf medalists, he has pioneered yet another milestone in technological achievement unique to the scientific community of Western New York.

Dr. Dougherty initiated his investigation of this new approach to the selective treatment of various types of cancers at Roswell Park Memorial Institute in 1976. It was determined that certain photosensitive materials, identified as hematoporphyrin derivatives had the unique property of being selectively retained in diseased tissue after intravenous injection. This allowed their detection by their fluorescence.

Subsequently, these materials, when activated by red light from a laser source, produce singlet oxygen. This could then selectively destroy the diseased tissue. Since the early clinical evaluation of photodynamic therapy began, over 3600 people have been treated, with positive results in over 70% of the cases. Presently, extensive Federal Food and Drug Administration sponsored clinical trials are now underway to clear the way for unrestricted use of the drugs which have been developed. Concurrently, the multidisciplinary involvement of chemistry, biology and physical interests geared to improving PDT are being coordinated by Dr. Dougherty and his associates in the Oncologic Foundation of Buffalo. The commercial interests of bringing this treatment to market have been assumed by the Johnson & Johnson Company.

Dr. Dougherty received his undergraduate degree from Canisius College (Buffalo, New York) and his doctorate in physical-organic chemistry from Ohio State University. Among many other honors he received the Distinguished Alumni Award from Canisius College in 1985. An ASP member since 1977, he received the 2nd ASP Research Award in 1987. He is the author of over 65 publications and has contributed to more than 25 books.

Filters for Photoperiodism

Westlake Plastics Company currently produces a red filter which may be useful in studies of photoperiodism. Due to low demand they are considering discontinuation of this product. However, they do not want to do so if a need exists. Thus, they have asked that our membership be alerted.

Working in conjunction with the Rohm & Haas Company and based upon consultation with and encouragement received from the late Dr. H. A. Borthwick and Dr. R. J. Downs, during their association with the U.S. Department of Agriculture, FRF 700 filters were developed to effectively eliminate light transmission in wavelengths below 690 nm.

FRF 700 filters the upper range of the UV spectrum and almost 100% of the visible light spectrum in the 400 to 700 nm range.

Utilizing FRF 700 filter sheets and fluorescent lighting, plant growth can be artificially induced, and similarly using FRF 700 sheet and incandescent lighting, plant growth can be artificially inhibited. Several brochures describing photoperiodism in complete detail can be obtained through Westlake Plastics Company.

FRF 700 sheet is available in one sheet size only - 0.125" x 24" x 48". It is normally maintained in stock for immediate shipment. Price per sheet is \$125 - FOB Lenni, PA. It can be shipped via UPS. For more information contact Westlake Plastics Company, P.O. Box 127, Lenni, PA 19052.

Travel Grants to Jerusalem

The Society will provide partial support for **young investigators** wishing to attend the Xth International Congress on Photobiology, Jerusalem, 30 October – 6 November 1988. Requests for application forms for support should be addressed to the ASP Secretariat (8000 Westpark Drive, Suite 400, McLean, VA 22102; (703) 790-1745). **The deadline for application forms will be 29 July 1988.**

Additionally, the Society is attempting to obtain support monies for scientists wishing to attend the Congress. It is expected that some funds will be available to provide partial support. Application forms can be obtained by contacting the ASP Secretariat at the same address given above. **The deadline for application forms will be 29 July 1988.**

Can We Have Your Number, Please?

It's time to gather information for a new membership directory. Please check your mailing label on page 8. It will show you the information that will appear in the 1988 membership directory, scheduled to be published in the fall. Please take special care in checking your phone number (see second line in example below). It has come to our attention that many phone numbers are incorrect. Often when people move, they send us a change of address, but forget to send the new telephone number. In addition when cities are assigned new area codes or institutes get new telephone systems which change the phone numbers, members forget to send us a correction.

IF WE DO NOT RECEIVE CORRECTIONS/MODIFICATIONS FROM YOU BY 12 SEP 1988, THE INFORMATION WILL APPEAR IN THE DIRECTORY AS IT APPEARS ON THE MAILING LABEL. It is to your benefit to respond promptly.

The information on the mailing label is in the following format. Top line: (a) your membership number; (b) membership type - F/Full, E/Emeritus, S/Student; (c) expiration date - month and year through which your membership dues have been paid (as of 25 May 1988) (d) the year you joined the Society; (e) subspecialties.

(a) (b) (c) (d) (e)
 ASP06634 F 1285 84 1315
 Telephone number
 Name
 Mailing Address
 Mailing Address
 City, State (or country if foreign) Zip Code

Please make any changes/corrections next to the mailing label and return to: ASP Secretariat, 8000 Westpark Drive, Suite 200, McLean, VA 22102. Remember - we must receive these changes by 12 September 1988.



PHOTOS BY FARRINGTON DANIELS, JR.

Continued from page 2.

New Members

New Student Members

David C. Barber
 University of Rochester
 Sharilyn S. Bultje
 Corsica, SD
 Gwendolyn Farrell
 Buffalo, NY
 L. Lee France
 New York University
 Greta M. Garbo
 University of Toledo
 Karen D. Gillum
 Houston, TX

Eitan Gross
 Bar-Ilan University
 Susan Ann Hatlevig
 Phoenix, AZ
 Wilfredo Hernandez-Muniz
 Penn State University
 Lothar Lüge
 Mass. General Hospital
 Wilma L. Lingle
 University of Georgia
 Carolyn McGinnis
 Roswell Park Memorial Inst.
 William E. Pierceall
 University of Missouri

Mathias Senge
 Marburg/Lahn W. Germany
 Debra Ann Simonsen
 Rock Valley, IA
 Barbara M. Smith
 University of California
 Sunil Datta Soni
 Roswell Park Memorial Inst.
 Marlon L. Walker
 Atlanta, GA
 Scott A. William
 Montana State University
 Tish Young
 Arizona State University

Continued from page 1.

Snowballs

(formerly \$15), and a change in the by-laws that shifts the start of the fiscal year from January 1 to September 1, to coincide more closely with the terms of officers, councilors, and committees. The membership approved a constitutional change that extends the term of the editor of *P&P* from three to four years, which must be ratified by mail ballot.

The outstanding recreation facilities of the Broadmoor were fully utilized by the participants during the free afternoons. While some chose the official ASP snowball fight which highlighted one afternoon, others chose to visit the spectacular Garden of the Gods (see photos). The opportunity to watch the practice sessions of our Olympic figure skaters was a special treat. The next Annual Meeting will be held in the Lafayette Hotel in Boston from July 2-6, 1989. Additional details will be announced in forthcoming issues of the *Newsletter*.

-Leonard I. Grossweiner
 Dennis P. Valenzano

Opinion

From the Editor's Desk

American Society for Photobiology - Is that what we really are? Fully 40% of our membership is from outside the USA, and the vast majority of that 40% from outside the Americas. A society is nothing more than its membership and our membership is truly international. Is it time to consider dropping "American" in favor of simply Society for Photobiology?

There is a tendency toward fragmentation in our restricted area of science. We have a Japanese Federation of Photobiology and, of course, the new European Society for Photobiology in addition to a number of other national organizations. We even have a new journal, the ESP's *Journal of Photochemistry and Photobiology*. All of these may be signs of vigor and growth, or they may indicate dissension and dissolution. The ASP, as the largest photobiology society, with the most diverse, worldwide membership, must lead the way to ensure cooperative progress. We can ill afford petty jealousies and angry words. Many of us hold joint memberships in other photobiology societies, because we are first and foremost photobiologists, not ASP or ESP members. Our elected officers and councilors must give the highest priority to the future of photobiology. Regional photobiology societies have a valuable place in our scientific community, but such societies do not lessen the need for an international organization holding yearly meetings. In large part ASP has filled this need quite successfully for a number of years. We should continue to do so, but we must be sensitive to all of our membership. Does the Society's name disenchant non-US photobiologists? Can two photobiology journals exist successfully? How can the ASP best serve the international photobiology community? These are the critical questions that we, and our elected officials, must address. Our officers and councilors should hear your opinions on these matters. Let them know by sending your comments to the Newsletter office at the address listed on the first page. In a future issue we'll publish your responses and pass your letters along to Council.

SOCIETY HIGHLIGHTS

The 1988 ASP Research Award was awarded to Peter H. Quail for his work in molecular photomorphogenesis at the XVIth Annual Meeting in Colorado Springs. Dr. Quail and his collaborators were the first to isolate, characterize and determine the complete 124 kilodalton sequence of phytochrome. An expanded account of Dr. Quail's accomplishments can be found in the March issue of P&P.

CALL FOR NOMINATIONS

The ASP solicits nominations for the 1989 ASP Research Award which will consist of an inscribed plaque and a monetary award of \$1,000 to be presented to a scientist

who has made recent significant contributions to photobiology. Any scientist who has conducted or directed the research on which the nomination is based in a clearly independent manner within a 10-year period prior to the nomination is eligible for the prize. Letters of nomination from at least two individuals, and a nominee's pertinent publications, should be submitted for each candidate. Nominations and requests for information should be directed to the ASP Secretariat (8000 Westpark Drive, Suite 400, McLean, VA 22102). All material must be received in McLean no later than September 26, 1988.

SIDELIGHTS

The Swelling of the Ranks

With this issue the Society officially welcomes 36 new full members and 20 new student members who have joined in February, March, and April.

New Full Members

Antonio R. Antunez
Div. of Radiation Oncology

Raymond Bonnett
Queen Mary College

Hugh D. Burrows
Universidade de Coimbra

Rodney D. Bush
Cincinnati, OH

H. Gregg Claycamp
University of Iowa

Sydney H. Dromgoole
Herbert Laboratories

Marc L. Eckhauser
Cleveland, OH

Paul M. Erickson
Bausch & Lomb, Inc.

Helen H. Evans
Case Western Reserve Univ.

Judit Fidy
Simmelweis Medical Univ.

Mary Anne Fox
Austin, TX

Bruce M. Greenberg
University of Waterloo

Cyril Heitner
Pulp & Paper Research

Greg G. Hillebrand
Fairfield, OH

Anthony L. Imbembo
Cleveland Metro Gen. Hosp.

Heinrich E.A. Kaase
Universitat Berlin

Sol Kimel
Technion-Israel Inst. Tech.

Ilona Kiss
Buffalo, NY

Dieter M. Kockott
UV-Technik

W. Clark Lambert
UMD-New Jersey Med. Sch.

Julia Levy
Univ. of British Columbia

David H. Lynch
Univ. of Utah Med. Center

Michael J. Manyak
Takoma Park, MD

Elsa Melloni
Fisica Sanit.-Ist. NA2 Tum.

Amir Neori
Israel Ocean. & Limnol. Res.

Thomas L. Netzel
Amoco Research Center

Nancy L. Oleinick
University Hospitals

D. Cruz Ponciano, Jr.
UTHSCD

George Renzoni
Ultra Diagnostics Corp.

Anna Maria Richter
Quadrologic Technol., Inc.

John A. Schmidt
Pulp & Paper Res. Inst.- Can.

Roy C. Taylor
Henry Ford Hospital

Sharon Thomsen
UTSCC/MD Anderson Hosp.

Rodney N. Tilbury
Leighton, WA Australia

Hans C. Wulf
Rigshospitalet

Eric van Leengoed
Amsterdam Holland

See "New Members" on page 5.

Is Photobiology a Field?

When I was a post-doc, there were few UV photobiologists. It was clear to most scientists that, with medical X-rays and A bombs, ionizing radiation must be more important. But, since life had originated in a world of UV light, and had learned to harness the energy of light (photosynthesis) and to use it in highly sophisticated ways (plant morphogenesis and vision), we felt that the study of light and life was an area bound to be fruitful and fundamental. Gradually, more workers became interested in UV photobiology; it was primarily these people who developed the structures that led to the ASP.

In the year that the Setlows published their first work on the role of pyrimidine dimers (1962), Ken Smith started his San Francisco bay area group, and Doug McLaren founded P&P. Later, the NRC Committee on Photobiology urged us to develop other regional photobiology groups. This we did, in the northeast (Farrington Daniels, Jr., 1967) and in the Texas area (myself, 1969). We included all areas of photobiology because we felt that the basic techniques and mechanisms must be similar.

In 1972, Ken Smith organized the ASP (*P&P* 35, 597, 1982). This was an Herculean effort, not least because many of us, while supportive of the idea of a national society, were not enthusiastic. Some questioned whether photobiology was a "field". Why?

I was trained as a "biophysicist". Yet the small number of biophysics departments in the country did not grow. Is biophysics a "non-field"? There is a society and a journal. But the field is small. It developed because some physicists (notably Delbruck) felt that there would be special physical problems and perhaps new physical principles in biology. The new principles did not emerge, and most of the physical problems, like DNA structure or proton translocation, can be considered parts of fields such as physical chemistry.

Similarly, "photobiology" represents an area of interest in which people use similar techniques and must, to some extent, have similar backgrounds. But most photobiologists consider themselves primarily something else, such as a biologist, a molecular biologist, or physical chemist.

Does this mean we should not call ourselves photobiologists? Not at all. A photobiologist studies the interaction of light and living matter. Our subject is tremendously heterogeneous (like biophysics) and some of our members never will talk very much to some others (like the ultravioletators *vis-a-vis* the photosynthetikers). But like Americans from Utah and Maine, we do have a lot in common, and we will advance our own field if we cooperate with those working in related fields. We might consider photobiology a federation of scientific groups with a common general purpose, but different specific purposes. Will such a federation last? It will last as long as there is a need. Now the need exists. *Vivant lux et vita!*

—John Jagger
Past ASP Historian

John Hearst

John Hearst, who became one of the Society's dozen councilors in March, has been an important figure in nucleic acid physical chemistry for more than twenty years, and an ASP member for the past ten. He assumes his new post with a desire to enhance the reputation and acceptance of both the Society and Journal. He wants to see growth with balance that retains both the clinical and fundamental science aspects which have served the Society so well thus far.



A 1961 graduate of Cal. Tech. with a Ph.D. in chemistry and physics, John spent a year with Walter Stockmayer as a Dartmouth postdoc, before joining the Chemistry Department at Berkeley. Since then, photobiological research has become standard procedure for John.

In the past seven years, John has concentrated much of his attention on the photochemical reactions of the psoralens with nucleic acids. Psoralens had been known as photochemically activated DNA crosslinking agents for many years, but they were not very reactive and they were not very useful. The Hearst lab and co-workers synthesized a series of new psoralen compounds which had enhanced reactivity with DNA, and for the first time also reacted with RNA. These molecules can be used to study the conformation of any nucleic acid in any environment.

The most exciting medical developments involve the production of vaccines of psoralen-inactivated viruses and tumor cells. This approach is exciting because psoralen photochemistry inactivates nucleic acid, but leaves antigenic proteins intact, an improvement over present methods which damage both nucleic acids and proteins. The goal is to produce much more effective and safe vaccines. Commercial tests of psoralen-inactivated vaccines by the Advanced Genetics Research Institute, a commercial concern formed by a Hearst student has the objective of producing veterinary vaccines. DuPont is presently marketing an AIDS antibody assay kit which utilizes HTLV-III photoinactivated with one of the psoralen derivatives developed in the Hearst lab.

With his two children in college, John finds time to pursue his hobbies which include backpacking, skiing, and jogging. He is also an avid swimmer and loves to travel.

CALENDAR OF EVENTS

- | | | | |
|--------------|--|-----------|---|
| Jul 17-22 | Toward a Broad Understanding of Photosynthesis – Stanford, CA [114] | Sep 6-7 | Principles and Applications of Lasers in Medicine – Glasgow, U.K. [115] |
| Jul 17-23 | XIIth IUPAC Symposium on Photochemistry – Bologna, Italy [114] | Sep 18-20 | Organic Free Radicals – Zurich, Switzerland [115] |
| Jul 19-21 | International Photodynamic Assoc., European Laser Assoc. & British Medical Laser Assoc. – London, U.K. [114] | Sep 19-23 | International Congress on Optical Science and Engineering – Hamburg, F.R.G. [115] |
| Jul 31-Aug 5 | 7th International Conference on Photochemical Conversion and Storage of Solar Energy – Chicago, IL [115] | Sep 25-29 | 5th Internat. Symp. on Bioluminescence & Chemiluminescence, Florence-Bologna, Italy [115] |
| Aug 7-11 | Illuminating Engineering Society of North America Annual Meeting – Minneapolis, MN [111] | Sep 25-30 | Symposium on Site-specific Photolabeling of Biomolecules – Los Angeles, CA [114, encl] |
| Aug 14-18 | 39th AIBS Meeting: Biological Diversity – Davis, CA [115] | Sep 26-28 | Vth Symposium on Optical Spectroscopy – Eisenach, G.D.R. [115] |
| Aug 15-18 | International Congress of Cell Biology – Montreal, Quebec, Canada | Oct 1 | Frontiers in Photochemical Sciences – Bowling Green, OH |
| Aug 29-Sep 2 | 2nd International Conference on Laser Spectroscopy of Biological Objects – Pecs, Hungary [115] | | |
- [] – Square brackets denote the Newsletter issue in which additional information may be found.

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AMERICAN SOCIETY FOR PHOTOBIOLOGY

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