

10/13/81
received

1981 III

The American Physical Society

Division of Electron and Atomic Physics

BERND CRASEMANN, *Chairperson*
Department of Physics
University of Oregon
Eugene, Oregon 97403
(503) 686-4754

ALEXANDER DALGARNO, *Vice-Chairperson*
Center for Astrophysics
60 Garden Street
Cambridge, Massachusetts 02138
(617) 495-4403

PATRICIA M. DEHMER, *Secy.-Treas.*
Argonne National Laboratory
203-C153
Argonne, Illinois 60439
(312) 972-4187

October 1981

TO MEMBERS OF THE DEAP from Pat Dehmer

I. ELECTIONS

A ballot is enclosed for the election of one person to serve a three-year term on the Executive Committee. The postcard ballot must be returned to me by 18 November 1981. The 1982 Executive Committee will consist of:

Alexander Dalgarno, Chairperson
Daniel Kleppner, Vice-Chairperson
Patricia Dehmer, Secretary-Treasurer
Bernd Crasemann, Most Recent Past Chairperson
Ivan Sellin, Division Councillor (until 1-83)
Winthrop Smith, elected member (until 5-83)
Thomas Gallagher, elected member (until 5-84)

In addition, there will be one newly elected member who will serve until May 1985 and two members appointed by the Chairperson who will serve during his term of office. The vitae of the nominees for the contested office appear at the end of this Newsletter.

II. PHYSICS NEWS IN 1982

The DEAP Publications Committee annually has the task of commissioning contributions for the AIP booklet Physics News in 19XX. This booklet is intended primarily for journalists and science writers and is sent to numerous newspapers, wire services, trade magazines, and science magazines. However, copies are also sent to each member of Congress, to the chairman of each university physics department, to directors and division heads at government and industrial laboratories, and to numerous officials in research-related positions of the U.S. government. Needed are short, nontechnical stories calling attention to interesting and newsworthy developments in our field.

If you have an idea for such a contribution to Physics News in 1982, please send a letter to Eugen Merzbacher, Department of Physics and Astronomy, University of North Carolina, Chapel Hill NC 27514. The DEAP Publications Committee will select half a dozen essays for this purpose next summer.

III 1891

III. AN INVITATION TO DEAP MEMBERS FROM THE NAS-NRC COMMITTEE ON ATOMIC AND MOLECULAR SCIENCE

On Monday, 21 September 1981, Ivan Sellin, Chairman of the Committee on Atomic and Molecular Science (CAMS), met with Alexander Dalgarno, Daniel Kleppner, and Frank Pipkin to discuss the groundwork for a forthcoming study entitled "Opportunities in Atomic and Molecular Science." It is anticipated that this study will produce a booklet presenting recent new developments and future scientific opportunities in the field of atomic and molecular physics. This document will be used both to acquaint graduate students with the opportunities in our field and to tell physicists and chemists in other areas of specialization about the current advances in atomic and molecular science. The motivations for and the details of execution of this study will be discussed at the DEAP Business Meeting to be held on Friday, 4 December at 11:00 a.m. in the Terrace Suite of the Roosevelt Hotel. Both CAMS and DEAP urge you to attend this meeting and to participate in the discussion. If you are unable to attend and you have thoughts or suggestions for the committee, please write to Alexander Dalgarno (Center for Astrophysics, 60 Garden Street, Cambridge MA 02138), Daniel Kleppner (Massachusetts Institute of Technology, 26-231, Cambridge MA 02139), Frank Pipkin (Lyman Laboratory, Harvard University, Cambridge MA 02138), or Ivan Sellin (Oak Ridge National Laboratory, Building 5500, PO Box X, Oak Ridge TN 37830). Participation by the scientific community in this venture is actively sought.

IV. THIRTEENTH ANNUAL DEAP MEETING IN NEW YORK CITY

In celebration of New York University's 150th birthday, the Thirteenth Annual Meeting of the Division of Electron and Atomic Physics will be held in New York, New York, 3-5 December 1981 (Thursday through Saturday). The scientific program will consist of contributed and invited papers, and symposia. The Department of Physics of New York University will act as host, with the organizing committee consisting of Henry Stroke and Benjamin Bederson. The local committee comprises Denise Caldwell (Yale), Philip Eisner (Exxon Research), Alvin Halpern (Brooklyn College), William Happer (Princeton), Sven Hartmann (Columbia), Keith Jones (Brookhaven), Paul Liao (Bell Labs., Holmdel), Michael Lubell (City College, CUNY), Harold Metcalf (SUNY, Stony Brook), Olav Redi (NYU), Norman Tolk (Bell Labs., Murray Hill), Paul Vincent (Rutgers), and Jim Wynne (IBM, Yorktown). They are responsible for arranging the visits to their institutions, as detailed below.

The scientific sessions will be held at the Roosevelt Hotel, Madison Avenue at 45th Street, except that the Thursday afternoon sessions will be held at New York University. All DEAP members and their families who plan to attend should fill out the form included with this Newsletter and return it to H. H. Stroke. The local committee will handle the hotel registrations. If timely, these will be at the Roosevelt Hotel where 250 rooms have been set aside. Otherwise, comparable accommodations will be sought. Please do not send money for hotel accommodations. The hotel will confirm the reservations directly to the DEAP members. Details of travel instructions to the Roosevelt Hotel from New York City airports and train stations are published in the May/June issue of the Bulletin of the American Physical Society.

Registration will take place in the Oval Suite of the Roosevelt Hotel from 5 to 9 p.m. on Wednesday, 2 December. On the other days, registration will start at 8 a.m. in the Terrace Suite Foyer. On Wednesday evening from 7 to 9 p.m. there will be an informal reception in the Oval Room.

Visits to laboratories will be arranged for Wednesday. Interested DEAP members should fill out the form included with this Newsletter and return it by 9 November to H. H. Stroke. This will allow the individual laboratories to plan the visits and to send back travel instructions directly to the DEAP members. Prior approval and indication of citizenship are required for some of the organizations. Visits will be possible to Bell Telephone Laboratories (Holmdel: VUV picosecond, Raman spectroscopy; Murray Hill: electron-molecule collisions, quantum interference in heavy particle collisions, multiphoton ionization, laser induced orientation, integrated circuit processing, surface and condensed matter studies); Brookhaven National Laboratory (accelerator-based atomic and molecular physics - tour of van de Graaff facility and National Synchrotron Light Source); Brooklyn College, CUNY (Dynamitron accelerator and solid state-solar energy research laboratories, Bremsstrahlung, trace analysis, materials research); City College, CUNY (picosecond laser, resonance Raman studies of biological chromophores, laser atomic beam interactions, electron-atom scattering, polarization studies in electron-atom collisions); Columbia University (optical coherent transient experiments in solids and atomic vapors); Exxon Research and Engineering (laser chemistry, surface science, charge injection into insulating fluids, electrical breakdown); IBM Thomas J. Watson Research Center (laser spectroscopy, ion beam physics, atomic and molecular collision phenomena); NYU (electron-atom collisions, atomic and molecular polarizabilities, studies of the interaction between intense electromagnetic fields and plasmas, laser and magneto optic hfs and isotope shift studies, solar spectroscopy, positron laboratory, accelerator facility for high energy atomic collisions, atomic fluorescence yields, muonic isomer shifts); Princeton University (laser spectroscopy, magnetic resonance, parity violations, acousto-optic spectroscopy); Rutgers (tandem accelerator facility including laser spectroscopy, inner shell ionization, hyperfine interactions studies); SUNY - Stony Brook (laser spectroscopy laboratory); Yale University (general open house including all atomic physics experiments in Gibbs Laboratories, the new laser laboratory, and selected experiments in the Department of Engineering and Applied Science).

On Thursday afternoon, 3 December, the scientific sessions will take place at New York University, following an official welcome in the Eisner and Lubin Auditorium on the occasion of the NYU sesquicentennial. At 6 p.m. there will be a reception with cash bar preceding the traditional conference dinner. On Saturday evening, 5 December, to conclude the meeting, there will be a Chinese banquet at 7 p.m. As seating may be limited, please order your tickets early.

The Annual Business Meeting will be held in the Terrace Suite at 11:00 a.m. on Friday, 4 December. The meeting will be conducted by Bernd Crasemann as retiring Chairperson. During the meeting King Walters will report on the work of the NSF Subcommittee that he chaired for evaluation of the NSF Atomic, Molecular, and Plasma Physics Program; and Ivan Sellin will discuss a new CAMS study to assess opportunities in atomic and molecular science (see also item III of this Newsletter).

Preregistration will greatly facilitate the planning and functioning of the meeting. The registration fee will be \$40.00 up to 9 November and \$45.00 thereafter. The fee for unsupported students and unemployed members is \$3.00. Please use the preregistration form provided in this Newsletter and indicate whether you will attend the conference dinner and/or the Chinese banquet. Checks for registration, conference dinner, and Chinese banquet should be made payable to "DEAP--New York."

The Program Committee consisted of G. Birnbaum, L. G. Christophorou, E. Commins, D. Dill, J. Doering, A. Glassgold, W. Happer, S. Harris, R. Johnson, R. Junker, M. O. Krause, T. McIlrath, W. Moos, R. Mowat, D. Norcross, D. Pritchard, L. Spruch, W. Stwalley, D. Watson, and J. C. Weisheit. The sessions were arranged by A. Dalgarno, P. M. Dehmer, K. Kirby, and W. H. Parkinson.

Contributed papers will be given in parallel sessions. AN OVERHEAD PROJECTOR WILL BE PROVIDED, BUT A 35-MM PROJECTOR WILL NOT BE PROVIDED EXCEPT UPON ADVANCE NOTIFICATION OF THE LOCAL COMMITTEE.

V. SYMPOSIUM ON THE ORION NEBULA

There will be a special symposium on the Orion Nebula on 4-5 December 1981 (Friday and Saturday) at New York University. The session titles are:

- I. "The Orion Nebula and Its Large Scale Environment"
- II. "Star Formation in Orion"
- III. "Communicated Papers"
- IV. "Integration and Interpretation"

Sessions I and II will be on 4 December and Sessions III and IV will be on 5 December. In addition, there will be a special Friday evening session entitled "Henry Draper and His Legacy."

Note that this meeting, which is hosted by New York University, runs concurrently with the DEAP Meeting, and it is anticipated that there may be considerable mutual interest. Further information on this meeting may be obtained from Alfred Glassgold, Physics Department, New York University, 4 Washington Place, New York NY 10003, telephone (212) 598-2020.

VI. INVITED TALKS AT THE THIRTEENTH DEAP MEETING

The following symposia are scheduled for the Annual Meeting in New York City:

- A. THE THOMAS-FERMI ATOM, B. Crasemann, presiding.
- J. Schwinger, "The Thomas-Fermi Atom."

B. SPECTROSCOPY AT NEW YORK UNIVERSITY, H. Stroke, presiding.

- L. A. Bornstein, "Spectroscopy in the First Sesquicentennial."
- O. Redi, "Hyperfine Spectroscopy Today."
- W. Brandt, "Inner-Shell Excitation by Charged Particles."
- P. R. Berman, "Laser Spectroscopy at New York University."
- P. J. Huggins, "Some Recent Results in Astronomical Spectroscopy."

C. ATOMIC AND MOLECULAR PROCESSES RELATING TO STAR FORMATION, G. Victor, presiding.

- J. H. Black, "Atomic and Molecular Processes Relating to Star Formation."
- M. Simon, "High Resolution Infrared Spectroscopy of Regions of Star Formation."
- J. M. Moran, "Maser Emission in Regions of Star Formation."
- W. D. Langer, "The State of Ionization in Dense Molecular Clouds."

D. LONG-RANGE INTERACTIONS, B. Bederson, presiding.

- L. Spruch, "Long-Range Potentials and Their Effects."
- W. R. Garrett, "Consequences of the Long-Range Dipole Potential in Electron-Molecule Interactions."
- W. E. Baylis, "Long-Range Forces in Atom-Atom Interactions."
- F. Linder, "Experimental Aspects of Long-Range Forces in Low-Energy Electron and Ion Scattering from Molecules."

E. THE THREE-BODY PROBLEM, R. S. Berry, presiding.

- C. H. Greene, "Doubly Excited States of the Alkaline Earth Atoms."
- M. E. Kellman, "Group Theoretic Approach to Collective Motion in the Three-Body Problem."
- G. S. Ezra, "Interparticle Correlation in Three-Body Systems."
- F. Iachello, "An Algebraic Approach to Triatomic Molecules and Other Problems."

F. PHOTODISSOCIATION AND PHOTOFRAGMENT SPECTROSCOPY, J. Moseley, presiding.

- D. L. Huestis, "Half-Collision Spectroscopy of Molecular Ions."
- M. L. Gaillard, "Molecular Polarization and Laser Photopredissociation in the Presence of a Magnetic Field."
- R. C. Dunbar, "Photodissociation of Trapped Ions."
- R. Bersohn, "Photodissociation of Neutral Molecules."

VII. DEAP SPONSORED SYMPOSIA AT APS MEETINGS

APS ANNUAL MEETING IN SAN FRANCISCO (25-28 January 1982)

- A. Atomic/Molecular Physics Problems Posed by the Exploration of the Outer Planets, W. Moos, organizer.
- B. Relativistic and Quantum Electrodynamical Effects in Atoms, W. Johnson, organizer.

APS MARCH MEETING IN DALLAS (8-12 March 1982)

- A. Small Metal Clusters, J. L. Gole, organizer.
- B. Spin-Polarized Atoms, W. Stwalley, organizer.

APS SPRING MEETING IN WASHINGTON, D.C. (26-29 April 1982)

- A. Relativistic Effects in Atoms and Molecules
- B. Short Wavelength Lasers, J. Weisheit, organizer.

APS NOVEMBER MEETING IN PHILADELPHIA (3-5 November 1982)

- A. Atomic and Molecular Aspects of Combustion Research,
D. Crosley, organizer.

VIII. FUTURE DEAP MEETINGS

1. The XIV Annual DEAP Meeting will be held in Boulder CO, on Wednesday through Friday, 23-25 May 1983. David Norcross is head of the local organizing committee.
2. The XV Annual DEAP Meeting will be held in Storrs CT, on Monday through Wednesday, 28-30 May 1984, with the University of Connecticut acting as host.
3. Tentatively, the XVII Annual DEAP Meeting will be held in Eugene OR, in May 1986, with the University of Oregon acting as host. The site for the 1985 meeting has not yet been decided.

IX. OTHER MEETINGS

1. The XIIth International Quantum Electronics Conference will be held in Munich, Germany on 22-25 June 1982. The conference will include invited and contributed papers; the deadline for submission of a contributed paper abstract and summary is 31 December 1981. Further information may be obtained by writing the Optical Society of America, 12th IQEC, 1816 Jefferson Place, N.W., Washington, D.C., 20036.
2. The VIIIth International Conference on Atomic Physics will be held in Göteborg, Sweden on 2-6 August 1982. Further information may be obtained by writing ICAP, Department of Physics, Chalmers University of Technology, S-412 96 Göteborg, Sweden.
3. The International Conference on X-Ray and Atomic Inner-Shell Physics will be held in Eugene, Oregon on 23-27 August 1982. The conference continues the biennial series of meetings dealing with the fundamental and practical problems involving x-ray and Auger processes and related phenomena. Further information may be obtained from Bernd Crasemann, X-82 Conference, Physics Department, University of Oregon, Eugene OR 97403.

X. VITAE OF NOMINEES

COCKE, C. LEWIS, 40, BS 1962, Haverford College, PhD 1967, California Institute of Technology. NSF Postdoctoral Fellow, 1967-68, Research Associate, 1968-69, IRN, Strassbourg, France. Assistant Professor, 1969-74, Associate Professor, 1974-79, Professor, 1979- , Kansas State University. Visiting Research Associate, California Institute of Technology, Summer 1972, Guest Professor, University Aarhus, Denmark, 1977-78. Ion-atom collisions with highly charged projectiles, inner-shell electron capture and ionization, lifetimes and X-ray spectroscopy of highly ionized few-electron systems.

FREEMAN, RICHARD R., 36, BS 1967, University of Washington, AM 1968, PhD 1973, Harvard University. Staff Physicist, Research Laboratory of Electronics, Massachusetts Institute of Technology, 1973-74, Instructor of Physics, Massachusetts Institute of Technology, 1974-76. Member of Technical Staff, Bell Laboratories, 1976- . DEAP Program Committee, 1977, Program Committee, Gordon Conference on Atomic Physics, 1981, Co-chairman, OSA Topical Meeting on Laser Techniques for Spectroscopy in the Extreme Ultraviolet, 1982. Laser spectroscopy, nonlinear optics, development of laser techniques for VUV coherent light production, atomic beams, investigations of highly excited states of atoms and molecules.

LUNDEEN, STEPHEN R., 33, BS 1969, Trinity College, MA 1970, PhD 1975, Harvard University. Lecturer in Physics 1975, Assistant Professor 1975-1980, Associate Professor, 1980- , Harvard University. Chairman 1981 Gordon Conference on Atomic Physics. Precision fine structure measurements in one and two electron atoms, charge exchange collisions, Rydberg atoms.