

# PHYSICS and SOCIETY

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PHYSICS AND SOCIETY is a quarterly newsletter of the Forum on Physics and Society, a division of the American Physical Society. The newsletter is distributed free to members of the Forum and also to physics libraries upon request. It presents news of the Forum and of the American Physical Society and provides a medium for Forum members to exchange ideas. PHYSICS AND SOCIETY also presents articles and letters on the scientific and economic health of the physics community: on the relations of physics and the physics community to government and to society, and the social responsibilities of scientists. Contributions should be sent to the Editor: John Dowling, Physics Department, Mansfield State College, Mansfield, PA 16933, 717-662-4275.

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News from the President of the Forum, Brian Schwartz.

#### SZILARD AWARD

The co-winners of the Szilard Award were Henry Kendall, M.I.T. and Hans Bethe, Cornell University for their contributions in the area of nuclear power and energy policy. There was no winner of the Forum Award.

#### Forum Meeting in January

The Forum Business Meeting will be at 11:30 a.m. following the Forum session on the MX missile. The Executive Committee will meet after this Business Meeting in Room 510. The tentative agenda items are as follows:

1. Minutes
2. Report of Secretary-Treasurer
3. Report of Vice Chairman on Forum Programs for 1981
4. Report of Editor of the Forum Newsletter
5. The Awards for 1981
6. Appointment of Nominating Committee
7. Appointment of Forum Awards Committee
8. Special Topics
  - a) Minorities
  - b) Human Rights
  - c) Arms Control
9. Duties and timetables for Forum Officers
10. Old Business
11. New Business

#### Update on the Dewitt Case

Lawrence Livermore Labs has withdrawn all charges against Hugh DeWitt for his actions in connection with the article on the hydrogen bomb in "The Progressive Case." In a private communication to the editor, DeWitt stated that he was obviously relieved that the charges were withdrawn and that the publication of his article in the Forum Newsletter, 9 No. 3, 11 (1980) helped his case. The Forum is pleased that it was able to help in the satisfactory resolution of DeWitt's case.

#### COMMITTEE ON OPPORTUNITIES IN PHYSICS: A Report by Earl Callen, Physics Department, American University, Washington, DC 20016.

At its September 27th meeting the Committee on Opportunities in Physics (COPS) worried about what the APS could do for refugee physicists, NSF funding, the shortage of high school physics teachers, funding young faculty at the universities, and several personnel matters.

The COPS (Chairperson Ralph Alpher, N. Benczer-Kollar, J. Budnick, E. Callen, J. Goldman, I. Jacobs and D. Kraft) will recommend to the APS Council that refugee physicists and emigrants from repressive regimes be given a one year free membership in the Society. This will at least plug these needy people in to the information and job network.

The NSF budget is a problem. NSF funding is annual, there seems to be no Congressional interest in longer-range scheduling, and beyond cost-of-living increases, the NSF pot is not going to get bigger. The continuing paucity of funds will be exacerbated at universities by the currently fashionable Congressional insistence on "accountability" and "effort reporting." This will be done at no small cost to universities and to contracts. It will also be detrimental to research funds in general.

Industrial physicists reported to the COPS that in the long run B.S. physicists do well in industry because of their versatility, but in the short run they are hard to use, and less favored by project managers than electrical engineers or two-year technical school-trained technicians. The electrical engineers and technicians can get right to work in the laboratory, but B.S. physicists lack hands-on experience with electronics and standard laboratory equipment.

There is a real shortage of qualified physics teachers in high schools. The cause of the shortage is not hard to find - they are grievously underpaid (in most of the U.S. about \$12,000). If asked, industry would probably be willing to provide free some of their excellent staff physicists to teach courses in local high schools. Perhaps state colleges would do the same. Private colleges, burdened with underutilized faculty, could perhaps get county school boards to pay some part of faculty salaries for teaching physics courses in the county schools. Such cooperation would undoubtedly raise the level of high school physics teaching. Whether the education establishment, with its professionalism based on "method", and its lack of commitment to "content" would go along, is a big question. The real solution is to make high school teaching attractive by paying a living

wage. To subvert the forces of the market place by doing it cheaply may be the worst thing. I for one would expect the teacher's unions to oppose such a scheme.

The COPS referred to the APS Publications and Education committees a proposal that the Society publish topical reprint volumes, *a la* the Japanese.

There has been consideration (Carruthers report) of whether NSF should fund salaries of young persons at the universities to maintain the vitality of research in time of aging tenured faculty. NSF says it can do it, but the money will come out of the research pot. It's a zero sum game. The COPS will ask the officers of the APS to propose that the Department of Education fund a program supporting young research faculty at the universities.

Israel Jacobs will attempt to find a knowledgeable party to organize an APS tutorial session or short course on how to become a consulting physicist. Volunteers should contact Jacobs at General Electric Research Labs, Schenectady, NY 12301.

AIP has reduced its small manpower monitoring program by one full-time staff slot. There is now no scientist working for AIP on manpower problems. The COPS urge the AIP, and will ask the APS to urge the AIP, to reinstate the billet for a scientist to work on manpower.

The Committee on Women in Physics wants NSF to broaden the criteria of its fellowship training program to include persons in mid-career transition. The COPS will work with the Women in Physics Committee to promote the extension of the NSF fellowship program to eligible immigrants, refugees, those needing retooling, and young persons seeking training.

#### FORUM SESSIONS IN NEW YORK

A wide range of topics will be featured in six general-interest sessions sponsored or co-sponsored by the Forum at the January meeting in New York. These sessions will deal with the MX missile, energy and the environment, human rights, physicists in unusual settings, elementary-school science, and communications of science to the public. All sessions will be in the N.Y. Hilton Hotel.

In chronological order, the Forum-sponsored sessions are the following:

**Monday, 26 Jan 1981, 9:00 a.m.**

AAPT Session, co-sponsored by the Forum, chaired by John B. Johnston.

#### ELEMENTARY-SCHOOL SCIENCE PROGRAMS

Clifford E. Swartz, "Elementary-School Science by a Quantitative Approach: Revisited"  
 Robert Karplus, "The Science Curriculum Improvement Study: Looking Back and Looking Forward"  
 Joseph M. Dasbach, "SAPA-Science-A Process Approach: in Retrospect and in Prospect"  
 Morris H. Shamos, "COPES-Conceptually Oriented Program in Elementary Science: Another Look"

**Monday, 26 Jan 1981, 7:30 p.m.**

Sponsored by the Committee on International Freedom of Scientists (CIFS), co-sponsored by the Forum, chaired by Edward Gerjuoy.

#### HUMAN RIGHTS AND THE LEGISLATIVE PROCESS

George Brown, "Human Rights and the Legislative Process"  
 Robert J. Cox, "Scientists and Human Rights in Argentina"  
 Yori Yarym-Agayev, "U.S. - U.S.S.R. Scientific and Technological Exchange and Human Rights Movement in the Soviet Union"  
 Kurt Gottfried, "A Review of APS Activities on Behalf of Scientific Freedom and the Human Rights of Scientists"

**Tuesday, 27 Jan 1981, 9:00 a.m.**

Forum session, chaired by Leo Sartori

#### MX MISSILE

S. L. Zeiberg, "The MX Missile MPS Basing: A Status Report"  
 Major General Jasper Welch, "Strategic and Arms Control Implications of MX Deployment"  
 Paul Warnke, "Strategic and Arms Control Implications of MX Deployment"  
 W. Feiro, "Environmental Implications of MX Deployment"  
 Air Force Speaker, "MX Basing Alternatives"  
 Richard Garwin, "MX Basing Alternatives"

Wednesday, 28 Jan 1981, 2:00 p.m.

Forum session, co-sponsored by AAPT, chaired by David W. Kraft.

**PHYSICISTS IN UNUSUAL OR ALTERNATIVE SETTINGS**

- Gary W. Carriveau, "Physics in a Fine Arts Museum"
- Gary A Baum, "A Physicist in the Paper Industry"
- Herbert I. Fufeld, "The Evolution of a Physicist: Things to People to Money to Policy"
- Paul Horwitz, "Am I Using My Physics Ph. D.? I Don't Understand the Question"

Thursday, 29 Jan 1981, 9:00 a.m.

Forum session, chaired by Irvin Glassman

**TEN YEARS OF ENERGY AND ENVIRONMENTAL STUDIES AT PRINCETON UNIVERSITY - SOME PHYSICISTS' VIEWS**

- George T. Reynolds, "The University Response to Interdisciplinary Research"
- Frank von Hippel, "Innocents Abroad"
- Robert H. Williams, "Exploring Alternative Futures"
- Margaret F. Fels, "Energy Data from a Physicist's Perspective"
- Robert H. Socolow, "Lived-in Houses as Physical Systems"

Thursday, 29 Jan 1981, 9:00 a.m.

AAPT Session, co-sponsored by the Forum, chaired by Gerald F. Wheeler

**PERSPECTIVES ON COMMUNICATING SCIENCE TO THE PUBLIC**

- Panel
  - Walter Sullivan, Senior Science Editor, New York Times
  - Rae Goodell, M.I.T., author of **The Visible Scientists**
  - Eustace Mendis, Head, Science Department, Ontario Science Centre

**FILM SHOW**

In addition, the Forum is co-sponsoring an AAPT Film Festival scheduled for the noon hours on Monday through Wednesday and for Tuesday and Wednesday evenings. Films shown during the noon hour (most of them short) are devoted principally to pedagogical topics; the evening films deal with the arms race.

**26 Jan 1981, Monday Noon:** Golden Oldies (shown in Gibson Suite)

- 12:00 Angular Momentum
- 12:30 Anti-Matter
- 12:45 Ee Yi Ee Yi Oh
- 12:57 Einstein

**27 Jan 1981, Tuesday Noon:** Golden Oldies (shown in Gibson Suite)

- 12:00 Flatland
- 12:13 Frames of Reference
- 12:43 Million to One
- 12:50 Powers of 10
- 1:00 Schlieren
- 1:20 Wondering About Things

**27 Jan 1981, Tuesday Evening:** Arms Race (shown in Nassau Suite B)

- 7:30 Boom!
- 7:41 Building of the Bomb
- 8:55 Fable Safe
- 9:05 Hiroshima/Nagasaki, August 1945
- 9:22 Survival or Suicide
- 9:50 Operation X-70

**28 Jan 1981, Wednesday Noon:** Physics (shown in Gibson Suite)

- 12:00 Accelerated Motion and Angle of Lean
- 12:10 Demonstrations in Acoustics
- 12:40 Here Today...Here Tomorrow

**28 Jan 1981, Wednesday Evening:** Arms Race (shown in Nassau Suite B)

- 7:30 A is for Atom, B is for Bomb
- 8:32 Return to Hiroshima
- 8:45 Trillion Dollars for Defense
- 9:45 War Without Winners

**FORUM SESSIONS IN PHOENIX**

There will be two Forum sessions in Phoenix 16-20 March 1981.

**SOLAR POWER SATELLITES**

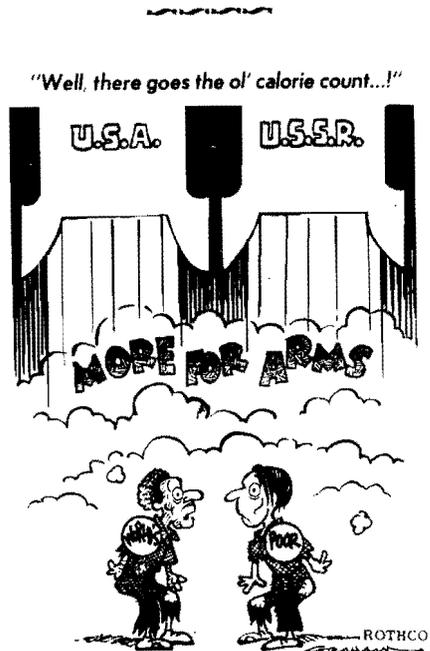
Chaired by Joseph V. St. Amand.

F. Komanoff (DOE) will summarize the background and status of solar power satellites. P. Glaser (Arthur D. Little) will speak as a proponent and R. Garwin (IBM) will speak as an opponent. M. Casper (Carleton College) will discuss political and non-technical issues.

**NUCLEAR ISSUES: REACTOR SAFETY AND WASTE DISPOSAL**

Chaired by Kenneth Ford.

W. Stratton (Los Alamos) will discuss reactor safety, especially the hazards of radioactive iodine. J. Beyea (Audubon Society) will discuss emergency planning for reactor accidents. G. Griswold (Tecalote Corporation) and P. Witherspoon (Lawrence Berkeley) will speak, respectively, on salt and crystalline rock as media for nuclear waste storage.



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Graham - Arkansas Gazette, Little Rock

**FILM REVIEW - by John Dowling**  
**'1,000,000,000,000 for Defense** Produced by Martin Kougham for Bill Moyers' Journal. Distributed by WNET/13 Media Services, 356 W. 58th St., New York, NY 10019. 3/4" videocassette, color, 60 min., 1980. \$385 purchase, \$60 rental.

The Bill Moyers' Journal production, **'1,000,000,000,000 for Defense** is a welcome addition to an informed discussion of the arms race. Projected U.S. military expenses are \$548 million dollars per day, which over the next five years totals the one trillion dollars in the title. Moyers is attempting to learn **why and how and should** the U.S. spend so much money on the military, whether it is being spent wisely, and how ordinary citizens can influence the whole process.

Much of the film is shot at an arms exhibition where manufacturers display their latest high technology weapons systems. Visits to the exhibit are interspersed with interviews of exhibitors and V.I.P.'s and promotional clips of dynamic weapons systems in action.

Moyers raises some very important issues in these interviews. Besides examining what the weapons systems do, he examines the alleged sad state of the forces in general, the state of unreadiness of the U.S. military, the high cost and increasing technological complexity of weapons systems, and why young people would want to go into the service (and how to keep them there).

There is also a three-way discussion between Moyers and Senators Sam Nunn and Gary Hart. Their discussion ranges over the disturbing reports of grounded planes due to lack of parts, maintenance funds, and personnel; the shift of priorities to sexy high tech weapons over mundane operations and maintenance needs; the complexity of equipment and the need for specialized personnel; the volunteer Army; and the SALT II Treaty. But the primary point raised is what is the role of Congress and the presidency in establishing a coherent strategy for carrying out America's objectives.

Moyers concludes that there appears to be no consensus on what the military should be doing or what U.S. foreign policy should be. He wonders if spending **'1,000,000,000,000 for Defense** will "represent the triumph of technology and the failure of wisdom." More programs like this will help insure that such is not the case.

**GROUND ZERO**

A Report by L. Sartori, Arms Control and Disarmament Agency, ISP/SA, Washington, DC 20451

A group called Ground Zero is being organized with the aim of conducting a week-long country-wide set of educational activities on the general theme of nuclear war. The Three basic questions to be addressed are:

- How could a nuclear war start?
- What would be the consequences of a nuclear war?
- How can nuclear war be prevented?

Ground Zero Week is tentatively scheduled to take place during April 1982, with perhaps some pilot projects to be carried out earlier. The organizers hope to have an impact on national awareness comparable to that of Earth Day.

Ground Zero Week will combine local and national initiatives to focus public attention on the topic of nuclear war. Emphasis will be on direct citizen participation wherever possible, through neighborhood or community groups, churches and synagogues, schools and colleges, local libraries, ad hoc discussion groups, local media, government, and professional, civic, and labor groups.

A national effort will be undertaken both to promote activities of a national scope and to help foster local interest. A major part of this effort will be to aid regional and local efforts through the preparation of resource packages for local groups, including press kits, video and audio public service spots, film lists, information on speakers, and other publications. The nature of this national effort will be established as the Ground Zero concept develops.

Ground Zero as an organization will be nonpartisan and will take no positions on political issues such as SALT, the defense budget, civil defense, etc. Its principal aim is to educate the public, and particularly those who do not normally pay significant attention to the critical issues of nuclear war, in part because there is little opportunity for them to learn about and to express their feelings on the subject.

I attended the first two meetings of the organizing committee, representing the Forum and APS. Present were representatives of over forty organizations including scientific, religious, educational, labor,

veterans, women's groups, etc. Several of these are already formally affiliated with Ground Zero, e.g., American Public Health Association, National Council of Churches. The National Academy of Sciences will very likely affiliate. This is not going to be a half-hearted project--it will have a full-time staff and a budget of several hundred thousand dollars, to be sought from foundations, corporations, and individuals. There are tentative indications that the needed funds will be available; some seed money has already been granted. A great deal of volunteer participation is, of course, essential to the success of the project.

It seems to me that this is a most worthwhile endeavor, and one to which Forum members can make a large contribution, both by organizing and participating in activities in their own communities and by helping to produce materials that can be widely disseminated. Local committees will no doubt be set up in the near future. I intend to propose at the next Forum Executive Committee meeting that APS council be asked to give its formal support to the project, but even if this is not forthcoming there is much that the Forum and its members can do.

Additional information will be provided in future issues of the **Newsletter**. In the meantime, if you have comments or suggestions concerning Ground Zero, or would like to be involved in the planning, please write to me, at the address given above.

If you wish to contact Ground Zero directly, their address is:

P.O. Box 40797  
Washington, D.C. 20016

**RELEASE ANDREI SAKHAROV**



Federation of American Scientists (F.A.S.)

**PROFESSOR DIETRICH SCHROEER  
DEPARTMENT OF PHYSICS AND ASTRONOMY  
UNIVERSITY OF NORTH CAROLINA  
CHAPEL HILL, NORTH CAROLINA 27514**

FROM THE PRESIDENT OF THE FORUM

Dear Forum Member:

The last decade has seen a period of involvement of physicists with issues of science and society. The Forum has shared this concern and hopes to do more with your help. The Forum has been instrumental in the development of the CONGRESSIONAL FELLOWS PROGRAM, THE FORUM AWARDS, CONFERENCES ON PHYSICS EDUCATION AND EMPLOYMENT CONCERNS, Symposia at national meetings, and the establishment of the APS Panel on Public Affairs.

At present The Forum membership numbers approximately 2,700. For the next year, there are no Forum dues for current APS members. The Forum will, however, be given \$2.00 per member to support the Newsletter and other Forum initiatives. As a member of the Forum, I would like you to recruit at least one (preferably more) of your colleagues to join The Forum. To do this you (or your colleagues) should send this form with names and addresses to the Secretary of The Forum: Professor Dietrich Schroerer, Department of Physics and Astronomy, University of North Carolina, Chapel Hill, North Carolina 27514.

This form can be detached, folded and mailed. The reverse side is already addressed.

Very truly yours,

Brian B. Schwartz, President  
Forum on Physics and Society

YES, I want to join the Forum on Physics and Society

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