

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, Department of Physics and Astronomy, Michigan State University, E. Lansing, MI 48824-1116, 517-353-9179.

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Forum Questions for APS Candidates

Each year the Forum asks candidates for the APS offices of Vice President and Councillor at Large to respond to a set of questions. The following questions were constructed by Dave Hafemeister (Cal Poly), and John Dowling, Peter Schroeder, and Michael Harrison (all three from Michigan State University). The questions were approved by selected members of the Forum Executive Committee.

1. The Forum has run a number of Invited Paper Symposia at APS meetings. How well do you think the Forum has achieved its goals of presenting topical, exciting, and balanced symposia? What are some interesting topics that the Forum should address in future sessions?
2. In the "Letters" section of *Physics Today* (June, 1985, pg. 9) Herbert Lin writes, "More than anyone else, scientists should recognize and articulate to the public and the political leadership the limits of science and technology; if we do not, who will?" How would you suggest members of the APS go about the process to "recognize and articulate" the limits of science and technology to the public and the political leadership?
3. Of course the APS does not set specific guidelines for research priorities. However, what type of guidelines do you think are appropriate for universities whose faculty seek and receive contract funds related to the Strategic Defense Initiative?
4. While the APS is not the arbitrator of how research funds are distributed, do you see a role the APS could take in resolving any possible conflict between funds for projects needing billions of dollars and funds for small scale research in our nation's institutions of higher education?

CANDIDATES FOR VICE-PRESIDENT OF THE AMERICAN PHYSICAL SOCIETY

Ernest M. Henley, Department of Physics FM-15, University of Washington, Seattle, WA 98195

1. The sessions of the Forum that I have attended have been on timely subjects with interesting speakers. Thus I believe that the Forum is achieving its goal and is performing a noteworthy service to the Society. Possible future topics are: a) the SDI; b) freedom of communication; c) the refereeing issue (for scientific buildings); d) arms control and nuclear disarmament. Some of these topics have been aired previously, but they remain of interest today.
2. Physicists who have studied, and thus have particular knowledge of the issues involved, generally do and should speak out on them. They do so in civic groups, in newspapers and journals and through other similar forums. They can also inform the political leadership. As a professional society, we have committees (e.g., POPA) to study such issues and to inform the officers and members of their findings. These findings should be articulated to the public, to the governmental leadership and to our elected representatives.
3. As for other grants and contracts, students should be able to participate in the work, and the results of the research should be publishable without restrictions.

4. The role of the APS is to make sure that our field remains healthy. To me, personally, this implies a reasonable balance of support for both large and small scale facilities. Thus, the APS should make sure that the funding of large scale research will not be carried out at the expense of smaller scale research at our universities.

George Vineyard, 510 F, Brookhaven National Laboratory, Upton, NY 11973

1. I feel that the Forum has done a reasonably good job of achieving these goals, particularly in recent years. As to future sessions, many ideas suggest themselves: Armaments and disarmament, which continue to provide many urgent problems. Wavering patterns in the funding of science, which are a crucial issue. The interaction between physics and the social sciences could be addressed. It might be interesting to have a discussion on the unexpected effects scientific advances may have on society over the next 20 years.

2. The studies that have been sponsored by the APS provide a great deal of valuable information. Reactor safety, radioactive waste disposal, photovoltaics for solar energy, and other topics have been studied, and SDI is now being addressed. These studies, among many others, can be excellent aids to our members in recognizing limits of science and technology. Of course, many channels for communication exist. I would particularly stress the importance of writing carefully thought out letters to the editors of newspapers and to congressmen, particularly the individual's own representatives. Except for a few vocal individuals, physicists as a whole seem to be unduly reticent about speaking out in the forums of our larger society.

3. Most universities have already adopted guidelines on doing classified and military research. Research related to SDI is not different in principal from research already covered by such guidelines. Individual investigators should have leeway to work on problems of their choice. However, I feel strongly that, except in times of national emergency, classified research and research from which foreign scholars are excluded is not appropriate on university campuses.

4. The APS has already sponsored an invited session at one of its recent national meetings in which this issue was discussed. I believe the most important role the Society can play is to encourage sessions in which proposed projects are expounded and debated, and opportunity is given for diverse views to be heard. The conflicts mentioned are often less severe than feared because the total of research funds is not a fixed number. Nevertheless, the best possible use of public monies is desired, and wide participation of the various scientific communities in the discussions will help to approach this ideal.
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CANDIDATES FOR COUNCILLOR AT LARGE
OF THE AMERICAN PHYSICAL SOCIETY

L. C. Hebel, Xerox Palo Alto Research Centre, 3333 Coyote Hill Rd., Palo Alto, CA 94304

1. The Forum has done an excellent job in conducting symposia that have been interesting and informative. In my view, there are three areas of special interest for the near future: 1) arms control and disarmament, especially the evolving Strategic Defense Initiative and a possible complete or low-threshold Nuclear Test Ban; 2) the continuing conflict over national security and the openness of scientific communication; 3) the health of small-scale physics research as affected by large, albeit important research facilities for particular fields of physics in the face of an overall national budget hiatus.

2. This subject should receive more attention than it does by our members. As individuals we can seek and obtain opportunities to speak out at a local level if we are willing to take the time to do so. Beyond that, the APS Forum and other APS bodies usefully could sponsor symposia and workshops on specific topic areas.

3. Not being a university administrator, I do not have a well thought-out position; on this issue. In general, I believe that universities should resist any contract funds that bring with them restrictions on the flow of basic scientific communication.

4. There are several roles that the APS can take in dealing with the growing conflict between the needs of "small-scale" and "large-scale" physics. My main concerns are to maintain a healthy balance among the subfields of physics, as discussed in my article in the recent special issue of Physics Today. I endorse the roles for the APS that were proposed by POPA and summarized in the editorial by Millie Dresselhaus in the special issue.

Daniel Kleppner, Room 26-237, M.I.T., Cambridge, MA 02139.

1. I cannot judge the success of the Forum's Symposia since I have not attended one.

2. First, by informing themselves thoroughly about the relevant issue - perhaps the Forum could be helpful in this - and then by speaking out through letters, editorials and articles in newspapers, magazines and journals. Beyond these, direct discussions with members of Congress, their staffs and other government policymakers can be helpful.

3. I believe that universities should not engage in classified research. Except for the most immediate ethical issues, however, as might occur when human experimentation is involved, I oppose any attempt to restrict a faculty member's choice of research because it would constitute a loss of academic freedom.

Every scientist must take personal responsibility for the conduct of his or her research and its social implications. If the academic community seriously disagrees with national policy it should use its powers to educate the public and the government. Unwise policies should not be balked - they should be changed.

4. The relation between expenditure for big facilities and small scale research is by no means obvious. Different areas of physics are funded by different agencies for different purposes, and no one seems to know just how the budgets interact. The APS should take an active role in informing the academic community about the nature of the proposed facilities, as in last March's issue of Physics Today. Also, the APS should provide guidance to Congress in the formulation of general scientific policy, as in the current Science Policy Study of the House Committee on Science and Technology.

Wulf Kunkel, Lawrence Berkeley Lab 4-230, University of California, Berkeley, CA 94720

1. In my view, generally the Forum is doing a fine job in arranging symposia on topics involving Physics and Society. These efforts should continue; I am convinced that they serve a good purpose. Society members' appreciation can of course be measured directly by the level of attendance. It would be desirable in this regard, to avoid such sessions in parallel with technical sessions whenever possible. We had a debate on the Strategic Defense Initiative in an evening session during our last meeting of the Division of Plasma Physics, and the Grand Ballroom was packed.

Here are some suitable topics:

1. The sorry state of our primary and secondary education in mathematics and physics. What can be done about it? How do other countries fare in this respect?
2. The "cost-benefit" balance of very expensive experiments. Where is the limit?
3. What can science do to alleviate world hunger?
4. Should research on genetic engineering be controlled?

Some of these may have been tackled before, but repetition of important topics like these and others seems justified.

2. I am not sure that I understand the question correctly. It is certainly true that there still exists a large communication gap between scientists and the public or the political leadership. It is evident that we have to work diligently at reducing this gap, mingle with the public, and make every effort to increase our access to the political leaders. The APS should urge and encourage the members to get involved, to get in touch with the public, to speak out more, to seek contact with politicians, or even to become politicians and to run for offices. We need more scientifically educated people in our government.

It seems self-evident to me that improved contact between scientists and the public and politicians would automatically lead to better recognition and articulation of the limits of science and technology.

3. Many universities have decided to restrict research on their campus to the unclassified domain. This is probably a good idea because work that has to be kept secret, for whatever reason, is simply not compatible with the search for knowledge and the obligation to disseminate the findings, for which these institutions of higher learning have been created.

Additional guidelines, however, that would restrict a faculty member's freedom of choice in the work he or she does, or from which agency he or she accepts funding, seem wrong. Universities should be the last places to interfere

with any individuals personal views. The decision to seek or to reject contract funds related to the Strategic Defense Initiative must be left to the individuals to be guided by their conscience.

Open debates of the implications should, of course, be encouraged.

4. Protective legislation to safeguard federal funds for small scale research may well be needed. We have legislation to support small business ventures, to protect the elderly, to help the disadvantaged. Thus, why not reserve a certain fraction of the budget for small scale research?

It is not clear, however, what role the APS could play here. It is my impression that the Society cannot engage in any lobbying activity aimed at helping its members. Such activity would endanger its tax-free status. But the APS could provide information and guidance to its members who should in turn transmit their views and concerns to their representatives in Congress. This seems roundabout and awkward, but this is the way our democratic system works.

June Matthews, Dept. of Physics, Room 26-435, M.I.T., Cambridge, MA 02139

1. Although I have not been able to attend many of the Symposia sponsored by the Forum, I have heard very good reports on them from my colleagues. Arms control, environmental problems, and science education are vital issues on which the Forum should continue to organize Symposia.

2. I agree that the public generally has a poor awareness of what science is, what scientists do, and indeed what science and scientists can or cannot do. Not all practicing scientists are inclined toward public statement or debate; those who are should make the effort to speak out, in public lectures and panels, and in the press. Those who are not so inclined can still be effective within their own (say, university) context, through thoughtful discussions with colleagues, students, employees and friends.

3. I am opposed to SDI research, on both scientific and political grounds. Furthermore, I believe that military-related research of any sort, has no place on a university campus. Although universities must respect the academic freedom of their faculties, I believe that they can and should establish guidelines as to what is and is not appropriate research activity at an educational institution.

4. I don't necessarily see a conflict between the support of billion-dollar and small-scale research. Different types of projects, equally valuable, require funding at different levels. However, I feel that it is particularly vital that sources of funding be maintained for research by faculty and students at colleges and universities. Equally important is that the quality of such research be maintained. Although the APS does not have funds to disburse, it does have ample expertise for the evaluation of research proposals.

Robert M. White, Control Data Corp., 8100 34th Ave. South, Mail Station HQS08A, Bloomington, MN 55440.

1. No comment.

2. The APS might consider establishing lectureships for this purpose. Individuals would be chosen to give maybe half a dozen talks during the year with the APS publicizing this program and paying the expenses.

3. I believe it is dangerous and difficult to try to establish a link between what a scientist perceives as a fundamental research problem and how a funding agency might perceive the same work. Large computers, for example, are essential in the development of weapons. Does this mean that special guidelines should be established for research on computers? I believe the guidelines currently employed by most universities are adequate. What would concern me more would be the situation in which the SDI would become so focused and dominant that individual initiative was stifled. In this case the APS should take a strong stand.

4. As I mentioned in my candidates's statement this is definitely an area where the APS could provide advice.

M. Wilkinson, Solid State Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831

1. The Forum has done a very good job of organizing symposia on topics that are timely and of interest to physicists. Short courses, such as the recent one on "Energy Sources: Conservation and Renewables," seem to have been very effective. Topics of current interest that might be considered for future symposia include the increased restrictions on scientific freedom, the importance of both big science and little science, and various aspects of the Strategic Defense Initiative.

2. It might be worthwhile to ask Herbert Lin exactly what he meant, but I do not believe that this was intended to be a general comment. In his letter to Physics Today, the reference was made to a specific issue, the feasibility of missile defenses. On any specific issue of this type, symposia organized by the Forum can help APS members in understanding the issue and in determining the role of science and technology. Individual opinions on the issue can be expressed to the public and to the political leadership through regular channels.

3. The guidelines for university faculty members on any topic should be established by the administration and faculty of each university. My personal opinion is that university faculty members should not accept contract funds with any restrictive clauses relating to the performance, discussion, and publication of the research, but there are probably justifiable exceptions.

4. The possible conflict concerning funds needed for major facilities and funds needed for university research is a very serious issue that all of us must address. Both needs are very important, and they must be considered in parallel. Perhaps the APS can help by organizing symposia that emphasize the importance of and necessity for both types of research. It is essential for scientists in universities, industries, national laboratories, and government organizations to work together in establishing long-range goals and in developing plans to achieve such goals.

Report of the Committee on Opportunities in Physics (COP), Meeting 17 July 1985, by I.S. Jacobs, General Electric Corp., Res. & Dev., P.O. Box 8, Schenectady, NY 12301.

Major portions of this meeting were occupied with manpower matters. The Committee met with Beverly Porter, who heads the AIP Manpower Statistics Division, resuming a dialogue started in Sept 1984. In addition COP met later in the day with Beverly Citrynell, who manages the AIP Manpower Placement Division. In each case, COP members were very favorably impressed with the quality of these AIP functions. Concurrently, we perceived some ways to improve the impact of these services/resources on the APS membership, and we shall pursue these in the coming months.

Porter reviewed the scope of the regular surveys carried out by the Manpower Statistics Division, some going back over 20 years. These include undergraduate and graduate level enrollments in physics programs, BA/BS production, PhD production (each has turned upward in the past 4 or 5 years), starting salaries by degree level (for potentially permanent positions), data on numbers and origins of non-US citizens in graduate programs and in post-doctoral positions, shifts in subfields from graduate study to employment, proportion of women PhDs in physics compared to other science and engineering areas (physics and astronomy remains the lowest, and almost unchanging at 3%, despite overall increases in other fields), etc. As an interesting note she found that only 58% of members in AIP affiliated societies identify themselves primarily as physicists, while for APS this number is about 75%.

Relevant to COP interest is the forthcoming wave of retirements from academia. Porter's statistics on the academic age structures of physicists are of special interest. We need to compare these with the age structure for all academics to facilitate planning by physics department heads and deans concerning new posts or alternative retirement options. Porter has also been surveying members leaving the organized physics community as well as determining the characteristics of new members. The former data could be very useful for the APS Industrial Physicist Panel convened last year, with a broader group scheduled for October 1985.

These brief remarks barely scratch the surface of the information available. COP members were fascinated by these statistics and their implications. How are they used and/or disseminated? This is a natural question. Porter described how frequent requests arrive at her office from government (legislative and executive) agencies as well as from the private sector (employers), and from academics following physics enrollment trends. In addition she usually addresses the periodic meetings of Physics Department Chairpersons. There will also be a significant contribution in the NAS Physics Survey ("Brinkman Report") when it appears. The committee felt that avenues for broader distribution of this statistical information could be valuable in a number of quarters. This topic will be explored in future COP meetings.

The meeting with Citrynell was the first for COP (at least in the past 6 years), and followed on a suggestion from Bill Havens. The AIP Placement Division operates to serve physicists and employers seeking physicists. In addition to the "familiar" Placement Service at meetings, they run a year-round Employment Referral Service and a Counseling Service which sees a few hundred physicists per year at AIP in New York. Some two or three placement service centers are operated each year at APS meetings, as well as at others within the AIP family. (Individual membership

is not a requirement.) The process of bringing job-seekers and potential employers together involves several steps at which the staff seems quite skilled. Nominal fees are charged. The success ratio, i.e., number of registrants hired or offered positions (as of, say, 60 days later) to the number of openings really posted with interviewers present, runs from 20% to about 50%. (I know these results are impressive!) Incidentally, most registrants are at the PhD level. Beyond this, many employers leave listings of openings for a Summary Book which makes its way to academic departments (Employment Information Officers) where they are well used, according to reports.

This Manpower Placement Division is more immediately sensitive to the current pulse of the job market than is the Statistics Division which can be a few years behind. The monthly technology employment index (prepared by a commercial group) goes up and down. Citrynell expects more unemployment will show at the April 1986 Materials Research Society meeting on the West Coast where she has been asked to operate the Placement Service Center. This is anticipated from the current downturn in the semi-conductor industry. In recent years there has been a noticeable aging of the registrants, with the 40 to 50 year old cohort now equalling the 25 to 40 year olds.

She also tries to sound out applicants about their willingness to teach on the high school level. Contacts with various State Departments of Education are possible through her office.

A recognized problem area is how to improve service to physicists on the BA/BS level. Currently this group constitutes about 10% of the applicant pool at the Placement Service Centers. COP members will try to help improve the forms to be filled out so as to make them more useful for the BA/BS people. Other suggestions will be considered to improve the awareness of the APS membership of these functions.

To strengthen the institutional ties between APS and these two AIP Manpower functions, COP should obtain a place on the AIP Manpower Advisory Committee which reviews the functions. We intend to request such an appointment to supplement the direct interactions just described.

Among other topics at this COP meeting was a brief report on the NAS meeting on "International Flow of Scientific and Technical Talent: Data, Policies and Issues" attended by COP members Joe Budnick and Roland Good. A strong contrast has developed between the growing numbers of excellent foreign students and difficulties they confront in obtaining employment, faced with barriers of legal, immigration and security restrictions. Our reporters felt there were no new suggestions of merit issuing from the meeting.

COP plans for a symposium at the 1986 Washington meeting concerning the impact on the physics profession of the SDI program are presently "on hold." The question turns on the availability of time/space slots at this crowded meeting. We are now seeking cooperation with the Forum, which has closely related plans.

Lastly, COP received and discussed reports from the APS Committee on Committees (COC) and the Executive Committee of the APS Council. These expressed concern that the scope of COP activities has been more diffuse than intended by Council, and they recommended that a clearly defined operational charge to COP be prepared. The present members and former chairpersons of COP have undertaken to respond in depth to these concerns and intend to work closely with COC representatives toward developing an appropriate charge under which the COP can continue to function. This dialogue is expected to get underway at the next COP meeting scheduled for 10 Sept 1985.

The Evolving Mode of Operation of
the APS Panel on Public Affairs (POPA)
by L.C. Hebel, Xerox Palo Alto Research Centre
3333 Coyote Hill Rd., Palo Alto, CA 94304

POPA is a "staff" arm of the APS Council. Originally created to help manage APS-sponsored studies, POPA serves as the Council's clearinghouse on all public affairs issues that affect the Society. POPA tries to anticipate emerging issues and do its homework before the need arises for possible action by the Council.

The ability to address public affairs issues has been greatly enhanced by the advent of the APS Washington office. This office has done an outstanding job of keeping POPA and the Council informed, and its director Bob Park, also has been successful at expanding informal channels of communication on public affairs issues with national leaders in the Washington, DC area. Consequently, POPA members found that they could spend less time fishing for information and concentrate on thinking about possible responses that Council could make, should the need arise.

Beginning in 1983 and 1984, POPA chairmen instituted several changes in its mode of operation. Rather than operating mainly as a committee of the whole on issues, POPA members grouped themselves into topic-oriented working groups in four areas:

- 1) physics research policy and funding;
- 2) arms control;
- 3) national security and scientific communication;
- 4) physics education.

Each working group selected a particular major issue as its focus and developed the pros and cons of various alternatives for POPA as a whole to consider. For example, Topic Group 1 examined the problems of small-scale and large-scale physics research; their work resulted in the organization of symposia on major physics research facilities at several 1985 Society meetings and also a special issue of Physics Today to better inform our membership. Topic Group 2, together with the POPA Subcommittee of Studies, discussed the Strategic Defense Initiative and an emerging APS-sponsored study; the study had been approved by Council in late 1983 and is now underway. Topic Group 3, together with the APS Washington office, focussed on emerging restrictions on scientific communication; their work resulted in a Council resolution on the subject. Topic Group 4 worked with the APS Education Committee in 1983-84 to draft Education Policy statements which were approved by Council. Finally, in 1984 POPA expanded its Subcommittee on International Scientific Affairs to better deal with issues involving physics and physical societies around the world.

This type of organization has been refined and continued by POPA in 1985. The net result has been a public affairs organization better able to anticipate issues and think through alternative courses of action for possible adaptation by Council.

Response to Questionnaire

In the April issue of Physics and Society (P&S) a questionnaire asked for input from Forum members. There were 72 returns, a 1.8% response rate - not bad for this type of questionnaire. Here are the results. The figures in the tables are the number of people who checked an item off out of the 72 respondents. Not all people checked off every item.

Areas of interest to Forum members. How do you rate P&S coverage of these areas:

	Do More	OK as is	Do Less	Don't Bother
Arms Control	13	44	8	3
Energy	24	41	3	
Special Needs of				
Women Physicists	2	46	11	9
Minority Physicists	5	41	12	9
Disadvantaged Physicists	9	36	9	10
Physics Employment	22	34	10	1
Environmental Problems	25	39	2	
Economic Issues	18	37	7	3
Public Education & Physicists	40	27		

Rate P&S - how does the newsletter do in the following areas:

	Very Good	Ok	Poor
News of Forum	33	27	3
News of APS	11	39	12
Overall Content	16	38	10
Format	16	35	12

Rating the Editor's Performance: 7.7 on a scale of 10, 47 rated this out of the 72 respondents.

Physics and Society is
extremely - 6
somewhat - 29
not at all biased - 26.

Readers usually
read all - 37
read things of interest - 28
skim - 6
Physics and Society

In terms of how often P&S should come out one person said 0 issues (and gave me a 0 rating), two said 2 issues, 53 said 4 issues, and seven said 6 issues per year.

There were many suggestions on what P&S should discuss. Here are some suggestions taken from the replies. Read them over and send in your articles.

Benefits and problems with technology and society.
Problems associated with industry, government and public relationships.
Applications of science (esp. physics) in maintaining apartheid, imperialism, exploitation in the 3rd world, etc.
More on public school education in science.
A very touchy pair of related subjects:
a) funding for "small" science
b) the problems caused to the rest of physics by the narrowness and economic irresponsibility of the particle physics community.

International issues please, esp. 3rd world.
Any discussion of arms control should discuss what to expect of the OTHER systems - radical Moslems, USSR, China, etc.
THE FINE, FAINT PRINT IS TERRIBLE FOR US OLDER GEEZERS.
Interdisciplinary and borderline physics.

The Forum should be concerned with the pressing national security and national survival issues of the time. It ought to be addressing strategic weapons and arms control, energy, pollution, etc. "Special needs" categories are important but they ought to be addressed by the APS at large, not just the Forum. Make comments and keep readers informed on SDI, the arms talks in Geneva, and nuclear winter.

UPCOMING FORUM SESSIONS

Strategic Defense: The Long View

APS Plasma Division Meeting, San Diego, CA, 4-8 Nov 1985

Chairperson/Organizer: G. Allen Greb, IGCC Q-060, UC San Diego, La Jolla, CA 92093 (619 452 3352).

"Perceptions of SDI" William Thompson, Physics Dept. B-019, UC San Diego, La Jolla, CA 92093 (619 452 4173).

"Strategic Defense and Crisis Stability" Dean Wilkening, RAND Corporation, 1700 Main St., P.O. Box 2138, Santa Monica, CA 90406 (213 393 0411).

"Arms Control in a Defended World" Peter Zimmerman, Strategic Programs Bureau, ACDA, Washington, DC 20451 (202 632 1542).

Technology and Risk

APS Annual Meeting, Atlanta, GA
27 - 30 Jan 1986

Chairperson/Organizer: Evans Harrell, School of Mathematics, Georgia Institute of Technology, Atlanta, GA 30332 (404 233 3381).

J. Donald Millar, Director, National Institute for Occupational Safety and Health, Atlanta. Topic open.

Irving Mintzer, World Resources Institute, Washington. Topic: Atmospheric Effects of Energy Technologies

Richard Wilson, Harvard. Topic: The APS Study Group on Radionuclide Release from Severe Accidents at Nuclear Power Plants.

NUCLEAR WAR EDUCATION CONFERENCE

George Mason University
April 11-12, 1986

This is a preliminary announcement of a two day national conference on nuclear war/peace courses and their context in the general education of college students. This conference is intended for faculty that have taught or are considering offering courses on nuclear war and peace. This preliminary notice is a call for papers in the following areas:

- A. Motivations. Why should nuclear war courses be offered? How do they fit within the context of a student's education? Why do students take them? Why are some institutions more or less receptive? How can obstacles be overcome in less receptive institutions? How can objectivity be assured?
- B. Model courses. Examples of courses now being offered and their context within the university program, including a discussion of the practical considerations of exams and assignments.
- C. Surveys. What nuclear war education is being offered in your country, state or region?
- D. Resources. What resources exist for use in nuclear war courses, including books, films, guest speakers, and computer software?
- E. Other. Other issues of relevance to nuclear war education.

PLEASE TEAR OFF AND RETURN

----- I am very interested and hope to attend this conference.
Please send me the final program announcement.

----- I would like to present a paper on the following topic:

NAME -----

ADDRESS -----

City State Zip code

PHONE -----
(area code)

Please return to

Robert Ehrlich
Physics Department
George Mason University
Fairfax, VA 22030

SLIDE SHOW ON STAR WARS "The Dream of an Impenetrable Shield: Ballistic Missile Defense in the Nuclear Age" describes the Strategic Defense Initiative and provides a guide to understanding the debate. 80 slides, 26 min. audiocassette. \$30 from Nuclear War Graphics Project, 100 Nevada St., Northfield, MN 55057; 507-645-7736.

"Your Career and Nuclear Weapons," is a guide for young scientists and engineers on the arms race, the role their fields play in it, and how it may affect their work. It analyzes military programs in industry and universities. Prepared by post-doctoral research scientists at the Institute for Theoretical Physics, U.C. Santa Barbara. Order at \$2/copy from Peace Resource Center of Santa Barbara, 331 N. Milpas St. #F, Santa Barbara, CA 93103.

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of the
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Membership free
to APS members

Please write

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