

# NEWSLETTER

## of the FORUM on PHYSICS and SOCIETY

Volume 2    Number 1

March 1973

### Washington Meeting Forum Activities

The Forum has a very interesting and busy schedule of sessions on:

**ENERGY** Joint symposium with the Division of Nuclear Physics; Monday, 2:00 pm

**SCIENCE AND SECRECY** Speakers are E. Teller, S. Goudsmit; Tuesday, 9:00 am

**RALPH NADER AND PHILIP BOFFEY** Tuesday evening, 8:00 pm

**SPECULATIONS ON THE HISTORICAL DEVELOPMENT OF SCIENCE** Speakers are Cohen, Blanpied and Weisskopf; Wednesday, 9:00 am

**CONGRESSIONAL FELLOWSHIP PROGRAM** Speakers are Casper, Cahn, Primack; Thursday 9:00 am.

**DON'T FORGET THE BUSINESS MEETING OF THE FORUM ON WEDNESDAY, APRIL 25, 11:30, REGENCY ROOM**

Two items now on the agenda:

1. Physicists in industry, industrial-university relationships in education and research, industrial internships and visiting physicist programs.
2. Suggested change in Forum Bylaws.

The meeting is always open to new items for the agenda. The items listed above are simply those already proposed for discussion.

### Congressional Science Fellowships

A Forum proposal for Congressional Science Fellowships sponsored by the American Physical Society is becoming a reality. It will be discussed at a Forum Session at the APS Washington meeting on Thursday, April 26, at 9:00 AM. The speakers will be Barry M. Casper (who conceived the proposal), Anne H. Cahn and Joel Primack.

The proposal, described below, was presented to the APS Council at their January meeting in New York. The Council voted that

- (1) the American Physical Society approves in principle an APS Congressional Science Fellowship program whereby a number of physicists will be selected each year to serve as Congressional Science Fellows in the offices of Members of Congress or Congressional Committees; and
- (2) the Committee on Congressional Fellowships of the APS Forum on Physics and Society is instructed to cooperate with the AAAS in (a) approaching other scientific and engineering professional societies to encourage them to initiate Congressional Science Fellowship programs; (b) formulating a comprehensive proposal in order to seek funding from private sources; and (c) developing administrative procedures to oversee the program.

For details on the proposal, beyond those given below, one should talk with the members of the Forum Committee on Con-

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Forum Bylaw Change Proposed

The Forum Executive Committee has suggested a change in the Forum Bylaws. The suggestion will be discussed at the next regular Forum business meeting, which takes place on Wednesday, April 25 during the Washington APS meeting.

The change was suggested to meet the following problem. Many Forum projects extend over periods of several years, yet the effect of Forum Bylaws VII 3. and VII 4. (given below) is to limit most people to no more than two years on the Executive Committee. The proposal is to relax this restriction while still encouraging, and even demanding, a steady influx of fresh people and ideas into the Committee.

The relevant Bylaws now read:

VII 3. The Secretary-Treasurer, and five members of the Executive Committee shall be elected for a tenure of two years, two to be elected in one year along with the Secretary-Treasurer and three to be elected in the alternate year. The Forum Councillor shall be elected for a tenure of four years, or as otherwise specified for Councillors by subsequent revision of the Society Constitution.

VII 4. No member of the Executive Committee shall be eligible for the same office in the year following his term of office with the exception of the Secretary-Treasurer. No member of the Executive Committee shall serve for more than four consecutive years.

The proposed changes:

Amend VII 4 to read

The Chairman shall not be eligible for the Vice-Chairman office for three years following his term of office. The Secretary-Treasurer shall not serve in that office for more than four consecutive years. No member of the Executive Committee, with the following exception, shall serve on the Committee for more than four consecutive years. Past Chairmen may serve a maximum of six consecutive years.

Add VII 13

The Chairman shall continue to be a member of the Executive Committee for the two years following his term of office.

Amend VI 1 to read

There shall be an Executive Committee, consisting of thirteen members with vote, which shall have general charge of the affairs of the Forum. The Executive Committee shall be comprised of the three officers of the Forum, two members appointed by the

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Forum Bylaws (Continued from Page 2)

Council, a Forum Councillor, five members elected by the membership of the Forum, and the two past Chairmen as specified in VII 13. (This section now reads...consisting of eleven members...and now ends with...five members elected by the membership of the Forum.)

Soviet Scientists

Earl Callen, American University

The exit tax, to which the American Physical Society has recently pledged its opposition, is only one strategem of many by which the Soviet government blocks the emigration of scientists. Word comes to us from Vilna of two persons, persecuted by the KGB, in imminent danger of imprisonment, because they have dared to apply to leave the Soviet Union.

Eitan Finkelshtein, age 30, current address Vilnius, Liepos 21 St., 10-10, was dismissed from the graduate program of the Moscow Physico-Technical Institute when he applied for an exit visa. Although he is now a physicist, he has been allowed to work only as a metal worker or an unskilled laborer. Yet, he is denied permission to emigrate because he is "of great value" to the Soviet State. His house is frequently searched by the KGB, and he is periodically summoned before the Soviet police for "discussions".

Zelik Gafonovich, a student, age 24, of Nilnius Zirmung St. 100-24, has been denied permission to leave the Soviet Union until he serves in the Soviet army, although he has already completed his military service. His home is regularly searched by the KGB, his possessions confiscated, and he fears arrest and imprisonment on trumped up charges.

From Novosibirsk we hear of Alexander Pavlovist, an engineer, address Novosibirsk 630105, Kropotkin St. 94-1, Apt. 31, who, with his family, has been denied permission to leave the Soviet Union, because

they live in a "sensitive" region, although no one in the family has been engaged in classified or military work.

Finkelshtein, Gafonovich and Pavlovist all plead that we write to the Soviet authorities on their behalf. They argue that the only way they will be released, and that the only thing that keeps them out of prison, is world awareness of their condition.

The Forum has gone to the APS Council on behalf of Soviet scientists and the Council has acted. Now it is your turn to act. Do so before it is too late. Write to Finkelsthein, Gafonovich and Pavlovist, with copies to Prof. M. Keldysh, Chairman, Soviet Academy of Sciences. Please.

The Forum and Newsletter

The Forum on Physics and Society is an official organization within the American Physical Society. All members of the Forum are members of the American Physical Society. For membership and other information, write the Secretary-Treasurer, Ralph Llewellyn, Physics Dept., Indiana State University, Terre Haute, Indiana, 47809.

This Newsletter is distributed, through the APS, to the Forum membership. Others who would like a copy should write M. Perl, SIAC, Stanford, California, 94305.

Letters, comments, editorials, and articles for this Newsletter should be sent to the Senior Editor, Jay Orear, Cornell Univ.. The Newsletter is arranged by M. Perl; and Forum news items which do not require Newsletter Committee approval should be sent directly to him.

Congressional Science Fellowships (Continued from Page 1)

gressional Fellowships. They are: Barry M. Casper, Chairman (Carleton College), John Andelin (U.S. House of Representatives), Anne H. Cahn (MIT), Joel Primack (Harvard University), Richard Scribner (AAAS).

Extracts from the Proposal for a Congressional Science Fellowship Program for Physicists

I. Introduction

It is proposed that the APS sponsor and support a program in which a number of young physicists, perhaps five initially, are selected each year to serve on the staffs of Congressmen or Congressional Committees. Such a program will benefit both the Congress and the scientific community. The Congress, which is increasingly concerned with measures having important technical components, is strikingly short of scientifically trained personnel. This program will bring physicists who have an interest in public policy matters to the Congress where they will provide a much needed resource in initiating, analyzing, and evaluating technical legislation.

Hopefully some will be persuaded to stay on in permanent positions. Others will return to academe or industry with an enhanced awareness of Congressional affairs. This will help to bridge the gap between the scientific community and the Congress. Scientists around the country will be more effectively plugged into the deliberations of the Congress. Congressmen and Congressional staffs will become more sympathetic to the nature of science and the concerns of scientists.

It is hoped that other science and engineering professional societies will also sponsor Congressional Fellows. (The AAAS has committed itself to sponsor 3 Fellows)

II. Congress and Technical Information

The Congress has extensive dealings with measures having a significant technical component. Such diverse matters as weapons systems, alternative sources of energy, pollution abatement, urban transportation proposals, and conversion of scientific personnel from military to civilian pursuits were all considered in the last Congress. Yet the number of Congressional offices with staff trained in science or engineering can literally be counted on the fingers of one hand. In the House of Representatives during the 92nd Congress there were only two staff members, both physicists, with a Ph.D. in the natural sciences. Of the 535 members of the Senate and the House, only one, Representative Mike McCormack of Washington, was a scientist.

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Extracts... (Continued from Page 4)

There is evidence that APS Fellows would be favorably received by the Congress. Rep. Mike McCormack estimates that Congress as a whole could usefully employ 50-100 Congressional Science Fellows. Among the 30 members of the House Science and Astronautics Committee on which he serves, McCormack feels that about three-fourths would welcome a scientist on their personal staffs. Since there are a half-dozen other House Committees also concerned with technical matters and a comparable number in the Senate, there is a large pool of Congressional offices which might be interested. Rep. McCormack has offered his personal assistance in the placement of Congressional Science Fellows.

## III. Proposed APS Program

It is proposed that the APS institute a Congressional Science Fellowship Program. Five physicists would be chosen each year for a term of one year. If adequate private foundation support could be found, this number could be increased — perhaps to ten. The fellowship term would begin in September with an orientation session in Washington. During this orientation period, the Fellow would choose a Congressional or Committee office. By the following January, when the next session of the Congress began, the APS Fellow could be well integrated into the activities of his office.

The program would open in Fall 1973 with a call for applications for Fellows whose terms would begin September 1974. The selection process would be conducted by an APS Congressional Fellowship Selection Committee appointed by the Forum on Physics and Society or by the APS Council. Selections would be announced early in 1974.

Each Fellow would receive a previously designated stipend of perhaps \$12,000 plus up to \$2,000 to cover relocation expenses. There would be additional expenditures incurred in administering the selection process and in orientation and placement of the Fellows. If the APS were the only professional society to sponsor such a program and assuming five Fellows, the annual budget would be on the order of \$80,000. This might be assumed by the APS operating budget and accumulated funds, or it might come partly from a private foundation grant.

## IV. A Congressional Science Fellowship Office

One attractive possibility would be to get APS approval in principle for this program and then collaborate with the AAAS in encouraging other societies to sponsor fellows. Together with these other societies we would then draw up a comprehensive proposal for foundation support. When money was forthcoming, a Congressional Science

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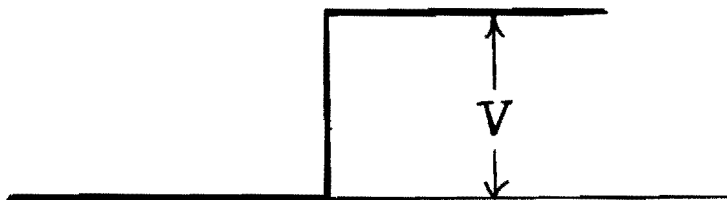
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Extracts... (Continued from Page 5)

Fellowship Office would be initiated in Washington under the auspices of the AAAS.

Consisting of an AAAS staff member plus secretarial support, the Congressional Science Fellowship Office would administer the grant money, prepare a joint orientation session for Science Fellows from all the professional societies, assist the Fellows in their placement on Congressional and Committee staffs, sponsor periodic seminars for the Fellows, and perform other administrative tasks. This office would consult with an Advisory Committee for each of the participating professional societies. The individual societies would independently select their own Fellows by whatever criteria and whatever process they chose. The activities of the Fellows in Washington would be coordinated by the Congressional Science Fellowship Office.

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Impromptu Forum Session on the JASON Question

At the New York meeting in January, the Forum helped organize an impromptu hour-long session on the JASON question. The session consisted of an informal discussion between Marvin Goldberger (Princeton University), some members of SESPA, and the audience. This was the first time that JASON had been discussed at an American Physical Society meeting. And almost everyone who attended, there were several hundred in the audience, felt that the discussion was both fascinating and productive. The Forum will be happy to help arrange impromptu sessions at future meetings.

(A summary of recent controversy over JASON was given by Deborah Shapley in Science, 179, 459 (1973). The SESPA position is given in their pamphlet entitled Science Against the People, SESPA, P. O. Box 4161, Berkeley, Cal. 94704, \$1.00 per copy. There appear to be no other recent published discussions of JASON.)

Letter -- Helium Conservation

A matter which merits the interest of Forum members is the recent termination of the national helium conservation program, which was established by the 1960 Helium Act. The principal source of helium is natural gas from the Kansas-Oklahoma-Texas fields, and this supply is expected to decline steadily to exhaustion over the next two decades. The conservation program extracted helium which would otherwise have been dissipated when the gas was burned ( excess over helium being extracted for current consumption ) and stored it underground for future use. The validity, under the legislation governing the program, of the Administration's termination of the supply contracts for the conservation helium has been questioned. The courts mandated an Environmental Statement on termination, in compliance with NEPA, which has now been issued by the Department of the Interior. Rather than try to develop the facts and issues here, I list below some informative and available publications. It seems that new legislation may be advisable, perhaps necessary, for reestablishment of helium conservation; some Forum members may wish to offer their own perspective on this to Congress.

An incidental aspect is a defense of termination which, in various paraphrases, occurs many times in the Final Environmental Statement ( apparently as the current principal reason for the action ) and hence may signify a new government policy of broad application: ". . . . . the effect of continued purchases of helium is to delay not avoid the occurrence of future helium scarcity . . . . . ". Readers may think of their own potential implementations, over a range of human concerns, of the implicit philosophy.

1. Science, Vol. 167, pages 1593-1596 ( 20 March, 1970 ).
2. House of Representatives, Interior Committee, Hearings: "Federal Helium Conservation Program" ( 15 and 16 September, 1969). Senate, Interior Committee, Hearings: "Oversight on Helium" ( 23 March, 1971 ). House of Representatives, Subcommittee on Science Research and Development, Hearings: "Energy Research and Development" ( May, 1972 ) -- see pages 565-570, 631-634.
3. "Physics in Perspective", National Academy of Sciences 1972 ( the summary volume of the Bromley Report ) -- see page 27.
4. Final Environmental Statement FES 72-41, Department of the Interior, Bureau of Mines, November 1972.

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A FORUM REPORT: Survey of Academic Physics Positions in Institutions of Higher Education in Massachusetts

Ronald Aaron (Northeastern University), Kenneth Ford (University of Massachusetts-Boston), and Brian Schwartz (Massachusetts Institute of Technology)

In recent years a good deal of attention has focused on the difficulty facing the new physics Ph.D. degree holder in obtaining employment commensurate with his education and expectation. Less well debated, studied and publicized is the critical employment situation faced by more senior physicists in non-tenured academic or non-permanent employment in government and industry. In this paper we report a study on the plight of non-tenured academic physicists. We hope a future study will discuss government and industrial physicists. In the ten-year period ending with 1967 approximately 40% of all new baccalaureate and graduate degree recipients were absorbed by expansion of the teaching profession. In fact, this expansion accounted for nearly one-fifth of the total increase in employment of all kinds. This expansion has ended. With the postwar baby boom nearly past and the declining population growth patterns, we do not expect a new wave of employment expansion in the foreseeable future.

In recent years there has been great fiscal pressures on the science community and additional pressures on the physics academic community. The cutbacks in funding physics programs, the poor job outlook, the dropping of undergraduate science requirements, other high costs of maintaining a physics department, the relatively small number of undergraduate majors have all led to very great pressure on the physics faculty at academic institutions. The rapid growth during the 1960's has produced relatively large physics departments and thus there is very little room for additional growth in the 1970's. The leveling off and perhaps reduction in physics faculty is having severe effects on the untenured members of the physics departments.

To get quantitative data on this problem the Forum of Physics and Society has sponsored a questionnaire survey of all the physics departments in the state of Massachusetts in the 1972 American Institute of Physics directory. The information we present is exact over the past three academic years (1970-1971, 1971-1972 and 1972-1973) and contains projections for the next three years. We have data from 50 institutions with a current total of 560 academic physicists either tenured or in a position which naturally can lead to a tenured position. Our results are basically as follows: (see Table I). The growth rate of the last three years has been slightly less than 1% per year. The growth over the next three years is predicted to be at the rate of 1% per year. Death and retirement have been at a rate of less than 1% per year. A total of about 40 new tenure additions will be given to untenured faculty presently at their own institutions. Almost without exception, no outside appointments to the faculty will be made at the



Survey

tenure level. Slightly less than 1/2 of the questionnaires indicated that the growth rate of the physics department would be slower than the institution as a whole. None indicated it would be faster. If the Massachusetts data are extended to the nation as a whole, results can be interpreted as follows: Approximately 200 academic positions were filled in each of the past three years and will be filled in each of the next three years (100 for growth and 100 for replacements due to death and retirement). These numbers are consistent with the exact results for Grodzins for 1970-1971. Furthermore, our survey indicates that many of these positions will be filled by qualified women and blacks. It is obvious that most assistant professors denied tenure will not find higher academic positions.

On the basis of the questionnaire results and recent anecdotal evidence we can make the following predictions.

1. THE TOTAL NUMBER OF FULL TIME EQUIVALENT ACADEMIC PHYSICS POSITIONS IS MOST LIKELY TO REMAIN LEVEL OVER THE NEXT THREE YEARS.

The number of full time equivalent positions leveled off in 1969-1970 and has dropped slightly in 70-71 and 71-72. We see no reason why this trend will not continue over the next few years. In fact we expect a slight decrease in full time equivalents as retiring and released untenured faculty are not replaced.

2. IN ALMOST ALL CASES PHYSICISTS OBTAINING EMPLOYMENT IN ACADEMIC POSITIONS WILL BE DISPLACING ANOTHER PHYSICIST LET GO FROM THE PHYSICS DEPARTMENT.

While one often hears of a good number of opportunities for new Ph.D.'s or post-doctoral students, it is sometime not realized that the new positions were created by letting go non-tenured faculty members.

3. IN MOST CASES ASSISTANT PROFESSOR DENIED TENURE AT THEIR OWN INSTITUTIONS WILL BE UNABLE TO FIND ANOTHER ACADEMIC POSITION.

The problem of assistant professors denied tenure is presently more serious than in the 1960's for two reasons. First, a higher percentage of assistant professors are being denied tenure due to the tight fiscal situation and second, when assistant professors were let go they were often able to secure tenure positions at a university slightly below their own institution in the Cartter rating. Presently only physicists associated with the major physics institutions, ~20 in number, have a reasonable chance of obtaining another academic position.

4. THE PERCENTAGE OF TENURED FACULTY MEMBERS IN PHYSICS DEPARTMENTS WILL CONTINUE TO RISE TO PROBABLY WELL OVER 70%.

Over the last three years in Massachusetts the percentage of faculty with tenure rose from 56% to 64% and is predicted to rise to 70%. Because of the young age distribution

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Survey (Continued from Page 9)

of physicists due to rapid growth of physics departments in the 1960's, a good fraction of the tenured faculty has 25 or more years till retirement.

5. MANY NEW HIRINGS IN PHYSICS WILL BE FILLED BY QUALIFIED WOMEN OR BLACKS.

In almost all cases, a serious effort is being made to fill new positions with qualified women or blacks. Thus the total number of positions available to the majority of white male physicists is further reduced.

## Recommendations:

1. A NATIONAL SURVEY OF EMPLOYMENT OPPORTUNITIES IN ACADEMIC PHYSICS DEPARTMENTS SHOULD BE CONDUCTED. THIS INFORMATION SHOULD BE MADE AVAILABLE TO THE PHYSICS COMMUNITY.
2. THE REQUIREMENTS OF TENURE WITHIN SEVEN YEARS SHOULD BE RELAXED, SINCE QUALIFIED ASSISTANT PROFESSORS ARE LET GO AND REPLACED BY A YOUNGER BUT OFTEN NOT A MORE QUALIFIED PHYSICIST. THIS PHENOMENON OF THE "ROTATING ASSISTANT PROFESSOR" SHOULD BE MODERATED.
3. EARLY RETIREMENTS AND THE POSSIBILITY OF CHANGING CAREER PATTERNS FOR TENURED FACULTY MEMBERS SHOULD BE EXPLORED AND ENCOURAGED.

TABLE I

	1970-71	1971-72	1972-73	1973-76
Tenured	(55.9%) 317	(60.8%) 340	(64.3%) 359	(69.9%) 396
Untenured	232	219	199	175
TOTAL	549	559	558	571

## JOIN THE FORUM ON PHYSICS AND SOCIETY

To become a member of the Forum fill in this form and mail to:

Professor Ralph Llewellyn, Forum Secretary/Treasurer  
 Chairman, Department of Physics  
 Indiana State University  
 Terre Haute, Indiana 47809

I wish to join the Forum.

Name (Please Print) \_\_\_\_\_

Address \_\_\_\_\_