LETTERS

The so-called Schwartz amendment touches on issues that may be felt by members of all scientific societies. Beyond their obvious contributions to the furtherance of traditional scientific goals, the societies have been prompted by recently voiced proposals to engage on a much broader front in social, political and economic affairs.

Insofar as this modern trend represents an awakening of scientists to their vital involvement in all human affairs, and the consequent recognition of their challenging responsibilities for human welfare, it is good. By rational habits of thought, the thinking scientist can lead the world through a wilderness of confused emotionalism; by understanding and control of environmental threats, he can alleviate suffering and want; by revealing the nature of scientific thought and action, he can point the way to a better society; but I feel that none of these goals can be achieved by declarations or resolutions. Accordingly, I oppose adoption of the proposed amendment. Through considered action of groups such as the Committee on Chemistry and Public Affairs of the American Chemical Society it is immediately possible for any scientific society to participate in public affairs.

ROBERT W. CAIRNS
Hercules Incorporated

It is with some sadness that I read the editorial on "Physicists and Public Policy" in the December issue of PHYSICS TODAY. It seems to me that while your editorial was not completely partisan, you were already beginning to propound and defend a position in favor of the present restriction on the contents of letters to PHYSICS TODAY. This in itself is unfair because you have already put the arguments on your side partially into print while not allowing any publication of the arguments of the other side. But I think there is a much more significant and serious aspect to your editorial.

The great problem of those who are opposed to the war in Vietnam is to obtain adequate expression of this view through the *regular* and *established* methods of communications. This includes the platforms of political parties, the public speeches or remarks of people in politics and government, the publications and meetings of labor unions, professional societies and learned societies, and radio and television. Thus while almost half the people in this country are opposed to the war, the expression of this opposition is comparatively small.

The reasons for this problem are multiple. Certainly one of the reasons is that the almost automatic reaction of most *regular* and *established* methods of communication to issues like the war is to try to ignore these issues if possible. Your editorial puts PHYSICS TODAY for the present in with that great silent group, and also you indicate the desire to keep PHYSICS TODAY in that group.

The crucial thing about that silence is that it is *not* nonpartisan. No matter how one justifies or defends silence and no matter what sound reasons there are for silence, the result of silence is clear. Silence supports the war, and that is a sad silence.

MARTIN LEWIS PERL
Stanford University

I am opposed to the proposed amendment. In my experience, scientists can be unbelievably unscientific when they tackle fields outside their area of competence. For example, a physicist will be very careful to note all the limitations and pitfalls of some of his current results yet will blandly condemn an educational technique after observing a single child! There are endless examples. Furthermore once you reach outside scientific areas, you will find a wide spectrum of opinions about war, politics, slum problems, etc., among scientists just as among the general populace. These opinions are largely governed by emotions and biases derived from narrow experiences, and very few opinions are based upon careful analysis or even extensive experience with the problem. For these reasons, I fear that this amendment would spawn a spate of resolutions by aggressive members who want to use the American Physical Society as a platform to promote their pet peeves.

If I received a ballotfull of proposed resolutions, how will I react? Cer-

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tainly not scientifically. I will cast votes based upon my own biases and emotions, and so will most members. The yes-or-no results will be a meaningless average over the spectrum of uninformed opinions but will appear in the press as the uniform opinion of the scientific community: a travesty of the truth. The proper place for "matters of public policy" to be resolved is the political ballot box. Let the physical society stick to science.

HERMAN E. SAFFRAN
Naval Ordnance Laboratory

. . . It seems to me that there are two separate points: (1) that PHYSICS TODAY be used as a forum for physicists to discuss any issue they wish, and so communicate with other APS members. This proposal seems quite reasonable to me. I feel that free expression on any topic should be allowed, even if doing this requires an expansion of the stated purpose of the AIP; (2) that a balloting mechanism be set up whereby members of APS could be polled on any issue (with rather slight limitations). This I am very much opposed to. I joined the society to interact with other physicists and to discuss physics. I do not feel that it is by any means appropriate for the opinion of the majority of members to be promulgated since this surely becomes the opinion of the society . . .

We should try to imagine what could happen if Schwartz's amendment were passed. Physicists have never had a formal vote on quantum mechanics or relativity. Before we consider Vietnam, I think we should take a ballot on the naming of element 97, Berkelium. I never really liked that name and propose we change it to Cantabrigium, which has a much nicer cant. I can think of other ridiculous possibilities. In fact, unlimited possibilities await an eager 1% vote.

SHELDON L. KAHALAS
Mt Auburn Research Associates, Inc.

. . . I think it should be pointed out that the American Physical Society is not a society of American physicists, though such provide by far the largest section of our membership. However, a not inconsiderable amount of members are nonAmerican physicists, apart from American physicists at least temporarily resident abroad. Any active embroilment of our society in American politics as is envisaged by the proponents of the presently discussed amendment of the APS constitution would raise the question whether continued membership in what would then assuredly become an American political organization would be advisable and indeed be permissible for the nonAmerican physicist.

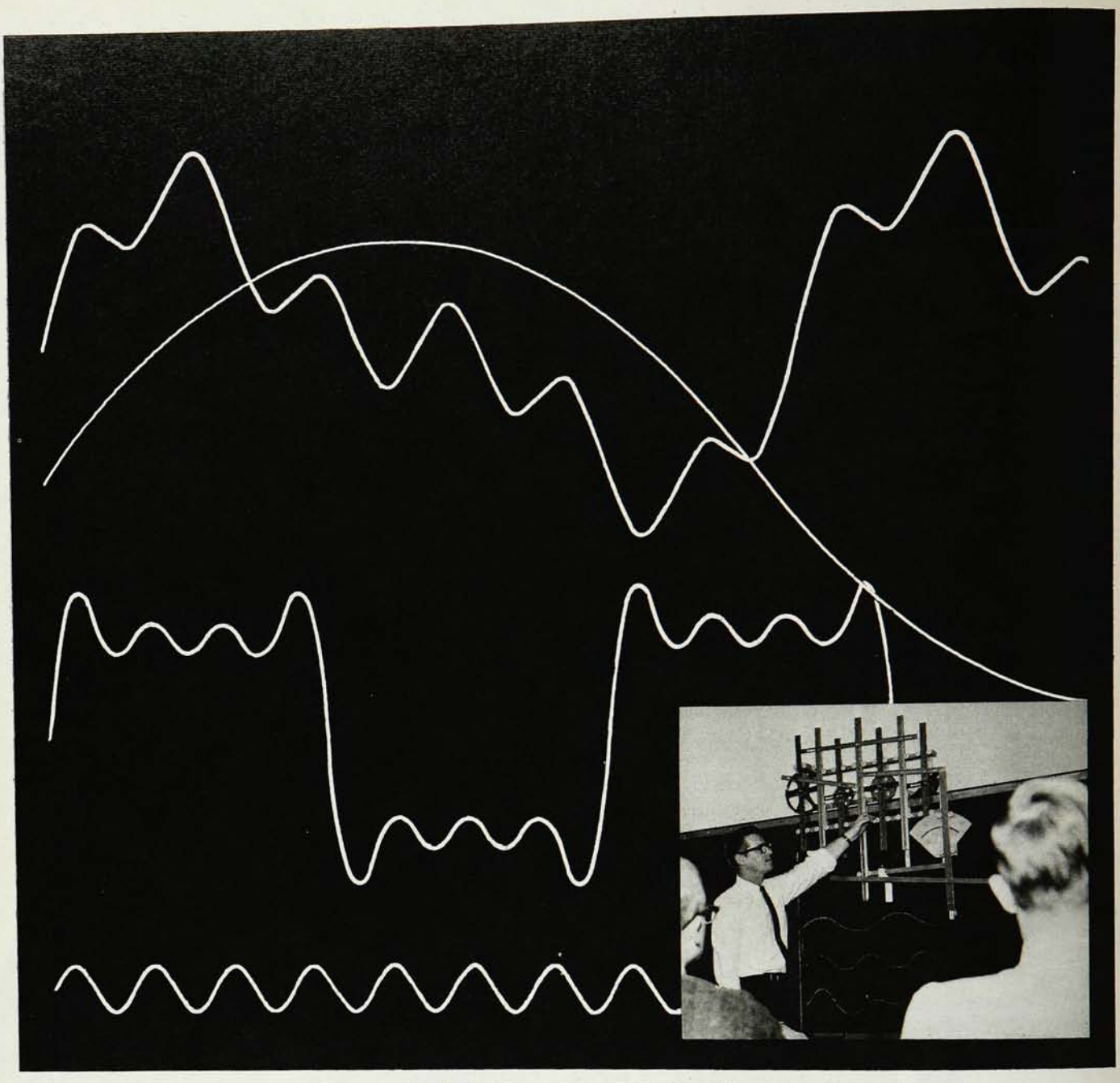
I am sure that many colleagues, like myself, will consider the international character of APS a valuable feature well worth preserving: The injection of political virus into APS would be bound to result in the political tail wagging the physical dog and assuredly reduce the status of APS from a respected body of physicists with a world-wide membership into just another purely American pressure group.

FELIX GUTMANN
Visiting Professor from Australia
University of Pennsylvania

. . . If the amendment passes: I will write to the Internal Revenue Bureau and suggest that the APS tax-exempt status be removed; I will suggest a new category of membership, "Scientific Associate," to denote those of us who consider APS a *scientific* society and do *not* wish APS to speak for us on political questions; if necessary I will resign from APS and file suit in Federal Court to allow me to purchase APS publications at the member rate.

STUART A. HOENIG
University of Arizona

I strongly oppose the so-called Schwartz amendment to the APS constitution. The passing of such an amendment would be simply suicidal. Schwartz and his friends would, specifically, "like to see the physical society face up" to the Vietnam issue. No doubt because they would like to see APS officially oppose the Administration policy in Vietnam. Did it ever occur to Schwartz that APS might decide officially to *support* that policy? This may well be only a Gedanken experiment but one that should be considered seriously. Now, just what would Mr. Schwartz do in such an eventuality? Obviously, he would resign, and with him a considerable



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number of members. Just as a considerable number of members would resign in the opposite case. In either case, a smaller number of people (to which I belong) will have already resigned as soon as APS started discussing the Vietnam issue publicly. The result will undoubtedly be the destruction of APS. If this is the goal of some people, couldn't they find a simpler, more direct way?

F. JONA
IBM Watson Research Center

To ensure the noninvolvement of APS in taking a stand on public policy and to permit physicists, as physicists, to generate and disseminate a point of view on these questions I suggest the following:

- that APS decline the proposal to become involved through the constitutional change in Article III, Item 6 but that it ask the American Institute of Physics if it would like to perform some of the services requested of APS
- that AIP set up provisions for meetings of a group to be known as the "Social and Political Problem Forum of the AIP"
- that AIP authorize SPPF to distribute only those resolutions and position papers that carry the individual signatures collected for that paper rather than the signatures of officers of SPPF.

I believe that my suggestion is cumbersome but workable. It should be noted that the word "forum" was chosen with care. Words such as "committee" or "panel" in the title should be avoided.

J. HOWARD MCMILLEN
Chevy Chase, Maryland

. . . I am completely opposed. . . When I wish to give my opinion on a public issue, I write to my congressman. (And he cares!)

IGOR ALEXEFF
Oak Ridge, Tenn.

. . . To open APS to the discussion of public issues and to commit the society to a stand on these issues could only bring about deep cross-currents of dissension and could not possibly further "the advancement and diffusion of knowledge concerning physics." . . . There already exist a great many avenues where we as citizens, *and* as physicists, can express ourselves and take a stand on public issues. For those physicists who are unwilling to become involved in these diverse organizations, and who wish to express their opinions under the shelter of a scientific professional society, I must say that their timidity is matched only by their lack of concern for the well-being of their profession.

J. C. GROSSKREUTZ
Principal Advisor for Physics
Midwest Research Institute

I wish to join emphatically the party of those who are opposed to the Schwartz amendment . . .

WALTER M. ELSASSER
University of Maryland

. . . I am very much opposed to any efforts to have APS pronounce itself on matters that are not directly related to physics in the scientific or technical sense. . . In the United States, at this time, the citizen has plenty of opportunity to make his viewpoints known. . .

G. A. J. VOETELINK
Bartlesville, Okla.

I am not a scientist, physicist, chemist or engaged in research. . . I'm amazed that you physicists have so much time to be devoted to political discussions and matters of government. . . Your publication is not the place for this type of forum. . .

W. B. WEISS
Wilmette, Ill.

. . . It would appear appropriate to provide mechanisms for an expression of the *consensus* (two thirds or three quarters of those voting) on any matter relating to "the advancement and diffusion of the knowledge of physics." . . . I fear that a gradual escalation of discussion to social, economic and political problems will have detrimental effects on physics and on the reputation of the American Physical Society.

DWIGHT C. BURNHAM
Pittsford, N. Y.

. . . I believe that this amendment would destroy our organization; a competitive physical society would be created to fulfill the need now met by APS and AIP. . .

W. R. STRATTON
Los Alamos Scientific Laboratory

I will support the amendment if there is a provision that limits the time and space devoted to politics. . .

JOHN FOSS
Watertown, Mass.

I think that a clear distinction should be made between involving the professional physics societies in public issues and discussing the scientific component of such issues in PHYSICS TODAY. . . PHYSICS TODAY is the only nonspecialist magazine addressed explicitly to physicists, and as such it is the natural locus for discussion of the ethical, social and political involvements of physics and physicists. . .

JOEL ALAN SNOW
University of Illinois

Here is a thought and a vote against . . . The American Physical Society is a physics group and, as such, should remain so.

WILLIAM T. DYALL
Lancaster, Pa.

. . . Although I would probably agree with Schwartz more than I would disagree on most social issues, I would not agree that he, or I, or any other member of the society has attained through physics any great insight into complex social problems . . .

C. V. STEPHENSON
Vanderbilt University

. . . AIP *should* discuss and pass resolutions in the fields in which it can supply a unique function in the body social. But in doing so, let's stick to those subjects we can discuss with some confidence that our actions will be treated with respect . . .

ROLF M. SINCLAIR
Princeton University

Physicists have vested interests in national policy. Physicists are solicited to advise and consent to policies of the government. Physicists' support is sought by opponents of the government. The "production" of physicists,

the orientation of the physicists produced, the geographical concentration of physicists, and the wages of physicists are strongly (I say overwhelmingly) influenced by government policy. If there ever was an academic isolation of physicists, it is not so now. To take position on public issues is not a matter of choice, it is essential to our being physicists.

HERBERT L. FOX
Bolt Beranek and Newman Inc.

The world "out there"

R. Bruce Lindsay's article on "Arbitrariness in Physics" argues that the physicist has only two alternatives: Either he views science as the progressive discovery of "absolute truth" about a world "out there," or he must give up the realist position of a structured external world and view science not as discovery but as the free creation of ways of ordering our subjective experience. Surely this dichotomy is an enormous oversimplification and a crude caricature of the realist position.

The view of all modern realists—I cite Bertrand Russell and Albert Einstein as typical—is that there is indeed a world "out there," a world that is mathematically structured, but we know its structure vaguely and only in part. That science provides only probable truth, subject to endless revision, is taken for granted by all contemporary realists, scientists or philosophers, but that in no way entails abandoning the conviction that there is a world outside human experience and that science is providing us with constantly improving knowledge of that world's structure.

I am sure that Lindsay would not wish to maintain that the moon did not revolve around the earth until a creature evolved on the planet capable of observing it; yet that is the kind of nonsense that is implied by his subjective, naïvely pragmatic way of talking about the scientific process.

MARTIN GARDNER
Staff writer, Scientific American

Indubitable determinism

When reading R. Bruce Lindsay's interesting paper on "Arbitrariness in Physics" (PHYSICS TODAY, December, page 23), I was struck by the following paradox: Lindsay, as a physicist, would never say that things in a physical system "just happen"—freely, arbitrarily. He would apply the concept of causality and show how a given event is caused by another event that preceded it in time, and so on down the line. Yet when it comes to psychology, he uses the terms "free choice" and "free use of preference," as though these choices had come into full bloom within the mind with no causal predecessors.

On the other hand, Sigmund Freud, who in the public eye is usually associated with the psychology of the irrational, was actually the most dyed-in-the-wool determinist when it came to thought processes. His basic premise was: There are no accidents in the mind. And so if scientist A comes up with a bold and original idea, it may be arbitrary as far as physics is concerned, but the psychoanalyst would put A on a couch and trace back the psychological determinants of this idea to their origin. The logic may be unconscious and unphysical; it may be unrecognizable as formal logic; it may have dream-like distortions and displacements, but one way or another the origin of the idea will be found.

In other words, a new idea or way of looking at things may be free and arbitrary within the framework of physics, but it is not free in the context of the scientist's past experience and overall style of life.

MILTON A. ROTHMAN
Princeton University

Through an ion darkly

It appears to me that Werner Brandt's conference report, "Ion Implantation Creates New Electronic Properties" (PHYSICS TODAY, November, page 115) presents too dark a picture of this burgeoning soon-to-be-technological area.

His unqualified ". . . In practice perplexing difficulties arise . . ." is unduly pessimistic when in fact implantation phenomena are fairly well understood. The associated phenomenon meriting this tag is the accompanying secondary electron emission which, it is granted, has many perplexing aspects, none of which are difficult to minimize in effect. Range-energy effects, annealing effects and electrical behavior of implanted species have been detailed experimentally