urge some of these naive, protected physicists to get out into the world and see where their talents are needed, instead of expecting endless support of their narrow little research areas. There are too few smart people working on problems vital to society and too many smart people doing research; the research is still overemphasized in relation to the USA's and the world's problems.

R. C. HANSEN
KMS Industries, Van Nuys, California

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The letters to PHYSICS TODAY concerning the problems of employment for physics graduates has centered on the failings (real or imagined) of the students themselves, the supporting agencies, and even the AIP! There is another set of culprits, the physics-department leaders in the schools, who are perhaps more to blame than any single group.

The physics departments are not producing a very marketable product for two reasons—they have opted out of certain "classical" fields (acoustics, fluid mechanics, electromagnetics, optics) that do have a market, and they have developed attitudes of purity and narrowness in their graduates that make these men and women less attractive to potential employers.

The arguments for opting out of classical physics sound convincing, but they are specious. It is said that engineering departments are housing these fields adequately. If that is so, the engineering departments are not doing their job—but that is another subject. There are problems in these classical fields that will benefit from the peculiar approach of the physicist, and there are problems in modern physics that will be advanced by analogies from "old physics."

Smaller schools argue that they must concentrate on one or a few areas of physics research because of their limited resources. Fine. But the sociology of physics requires that they choose an area of nuclear or high-energy physics so that they will be respectable. Thus, they contribute young graduates into already overcrowded fields of research.

Commitment to scientific achievement and singlemindedness of purpose are useful attributes when one is learning a subject as difficult as physics. There is a certain exclusivity among those that are successful in it that is perhaps inevitable. Nevertheless, the physicist who wants to practice his profession must relate to the problems of others. Experienced professionals may do this, but the environment of the physics department is more likely to result in a narrow-minded attitude on the part of the graduate. It is this attitude, more than the specialized nature of their training, that is not attractive to employers.

I believe that physics departments are going to do themselves out of a job unless they are ready to do a considerable about face on their academic policies of the last decade or so.

RICHARD H. LYON
Belmont, Mass.

Superconducting priority

In the letters section of the September issue of PHYSICS TODAY (pp. 11 and 13), there appeared a discussion regarding the priority of the concept of transposed superconducting filaments embedded in a normal matrix. Priority was attributed to P. F. Smith who first discussed the concept in the summer of 1968. For the record, I point out that Richard L. Garwin and I explicitly proposed twisting or transposing small diameter super-conducting wires in a normal metal matrix as a technique for fabricating low-loss, stable superconducting cable for power transmission in an article dealing with that subject. The article appeared in the *Proceedings of the IEEE* in April 1967 (55, 538, 1967). The same article also forms a chapter of a book, "Superconductivity in Science and Technology" (M. H. Cohen, Editor, University of Chicago Press 1968). To my knowledge this constitutes the first publication of the concept.

JURI MATISOO
Thomas J. Watson Research Center

Beyond the Schwartz amendment

While the defeat of the "Schwartz amendment" has been interpreted by many different people in many different ways, it is probably correct to say that the clear rejection of that proposal by members of the APS was the expression of a desire to "keep things as they had been." This meant above all that the professional society should not expand upon the narrow traditional statement of its purpose,

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"the advancement and diffusion of the knowledge of physics."

A contrary strain in the thinking of many scientists is that which was most clearly brought forward in the symposia of March 4: that science and technology appear to be getting out of hand and that the future of mankind may be in serious jeopardy from the careless exploitation of our knowledge about nature. It appears that most scientists are willing to acknowledge that they, in the practice of their profession, do carry some sense of public responsibility; but if this is really so, if there are only a few callous souls who are content to say, "I only do the research; it is someone else's worry how the product may be used," then there arises the very real question of what means and mechanisms should be employed to study and to exercise the lines of flow between the world of abstract scientific knowledge and the world of living men.

It is probably clear that I am leading up to some proposal that will attempt to get the APS involved with public issues, and I can already hear the rebuff, "I am in sympathy with your goals but please do it someplace else." To be sure there are a few organized groups, and a few inspired individuals who work to advance the cause of humane rationality in the land of science-politics. But these few "someplace else" are too small, too weak, too partisan to command the respect of a whole country, given all the powerful obstacles that must be encountered; and so I, for one, conclude that if the great problems are left to "someone else," they will not be solved. I believe that the scientific profession—concerning itself as a profession—must take up the public responsibility of looking at its own products with an appropriately critical eye.

The American Physical Society was incorporated in 1914. The past half century has witnessed an enormous growth in science; but even more important than size is the new vision of the interrelationship between science and society. It is no insult to the founders to say that what seemed complete and proper in that very distant time is just not adequate today, and it should be not too great a burden to place on all scientists today the request to consider and find a new collective statement of their professional purpose.

Thus I call upon the Council of the APS to declare an "open season" for consideration of changes in the statement of the object and purpose of the Society. (Legally, since members have no voting power, only the Council can amend the Articles of Incorporation.) Let us dedicate a "year of reappraisal," with a tide of letters to PHYSICS TODAY and to the Council, special discussions and debates at our regular meetings, and ultimately some pulse taking of the whole membership so that a broadly developed new formulation may be constructed to guide us in the turbulent future.

CHARLES SCHWARTZ
Berkeley, California

New polarized-electron source

Stimulated by the brief review article on polarized electrons by Prof. B. Bederson (November, page 87), I write this letter to bring this subject more fully up to date. There is another way to produce an intense source of polarized electrons. A description of this new method can be found in a recent CEAL report.[1]

The method employs polarization transfer from state-selected and mechanically confined hydrogen atoms (as in hydrogen maser at Harvard) to low-energy free electrons (trapped magnetically) through the mechanism of elastic spin-exchange collisions. Without going into details (which can be found in the report) the envisioned experimental arrangement should yield 10^{11} electrons per pulse with electron polarization, $P \gtrsim 0.9$. The pulse duration will be variable and in the range 1–100 microsec. This pulsed device would operate with a variable repetition rate of up to 1000 Hz. The net average intensity would therefore be 10^{14} electrons per second. For a source energy of about 100 keV the emittance properties would be comparable to those of present thermoionic electrons sources used with most linear accelerators.

The final device (or a modified version of it) could be useful in atomic, nuclear and high-energy particle physics. It is in fact the first device that would provide enough intensity to make nuclear and high-energy-particle scattering experiments warranted. Initial development of this device started in 1965 and a prototype has been constructed. The experiment is