

LETTERS

Plodders are the backbone

In reading the letters in the October issue, I was happy to see the one by Albert A. Bartlett at the University of Colorado. His letter reflects the concern of many college physics teachers today toward the modern trend of upgrading the level of course work in the undergraduate curriculum.

No one who has studied physics would deny that it is among the most difficult of subjects. And no doubt anyone who holds a PhD in physics is above average in intelligence. Yet, every physics teacher who reads this letter will have to admit that there are very few Feynmans or Einsteins around. The truth of the matter is that most PhD's are men who plodded along and worked very hard to acquire some expertise in a narrow part of physics.

It is not uncommon to hear a professor on the graduate faculty admit that he would be hard pressed to pass the doctoral exams given to the students under him. The bulk of the professors in experimental research could not adequately teach one of the courses in theoretical physics taken by first-year graduate students such as classical mechanics and quantum mechanics. This fact is well known to their students.

Does this mean that they shouldn't have been allowed to receive the PhD? Of course not! All that it really means is that in our desire to produce more men like Feynman we will merely weed out at a very early stage the plodders who are presently the backbone of the scientific community. And in the process we will produce no more Feynmans because a Feynman is a Feynman because he is a Feynman, quite irrespective of the educational system in which he is nurtured.

I can't help but question the question raised about our old, outdated curriculum for training physicists. It looks to me as if it must have succeeded pretty well (though admittedly not perfectly) to have produced the fantastic results achieved in the last 50 years. Why the great concern? Why the great desire to change drastically what has been a smashing success?

The freshman-sophomore course offered at Cal Tech a few years ago by Richard Feynman is a good example of the ultimate results of all this kind of effort. Feynman himself recognized that the effort was a failure with 90% of the class. Think of that! In order to give 10% that which they would have got later anyway, 90% were given a two-year ride in the snow. And to show that I am not misjudging the results of that class just consider one more thing. Who buys Feynman's three volume set of freshman-sophomore lectures? Answer: graduate students and professors.

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Toward regional relevance

Fear of "potential future crises," as Edgar Lipworth points out (*PHYSICS TODAY*, October, page 15) is hardly a sound basis for a national science policy.

Nevertheless the basis has been growing in fact, if not recognition, for a number of years. It is not centered in Philip Handler's wish to return to the grant-in-aid principle, however. It is much more evident in the growing support by the scientific community for formula support, geographic distribution, block grants, Departments of Science and science for the sake of education.

By supporting block-grant schemes, scientists appear to be abrogating their opportunity, if not responsibility, to evaluate the excellence of science much as they have turned away from the responsibility of judging the relevance of science.

We seem to have forgotten Gresham's Law, which will work double in this instance. First, once convinced that science money distributed for equity is effective, Congress will lose interest in money based on quality. Second, because administrators who now compete to develop quality because quality brings money will change tactics to build quantity because quantity brings money. The result: the double dilution of good science.

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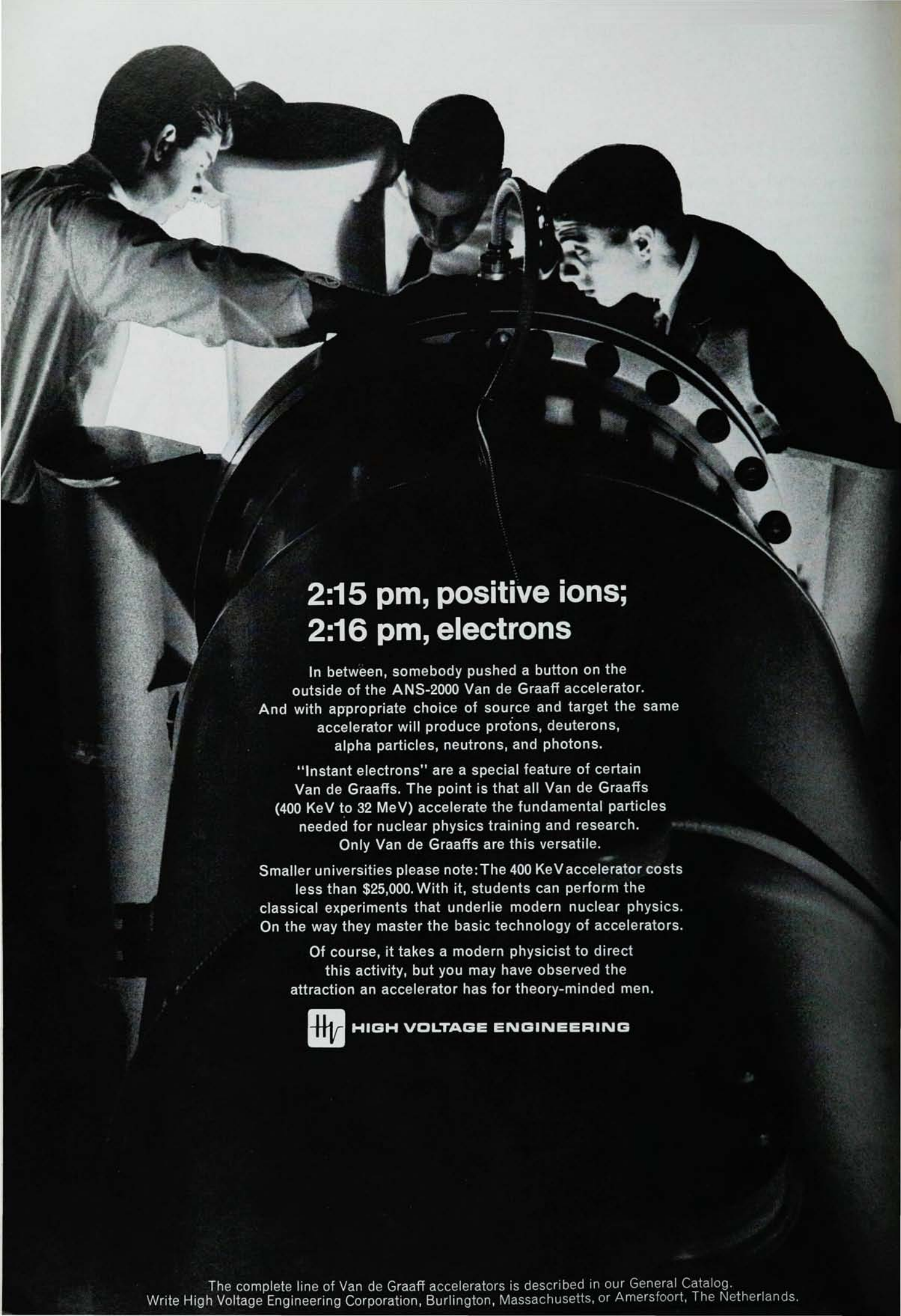
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A black and white photograph showing three men in a laboratory setting. They are gathered around a large, dark, cylindrical piece of equipment, which is part of a Van de Graaff accelerator. One man on the left is leaning over, looking at something. The man in the center is looking down at the equipment. The man on the right is looking towards the camera. The equipment has several circular ports or bolts along its side.

2:15 pm, positive ions; 2:16 pm, electrons

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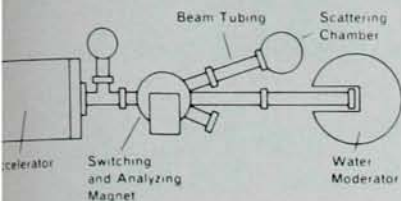
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ago, is to say, in effect, that the role of science in society differs little from the role of mediaeval English. This reversal can lead to a third-order dilution of science support.

Science is, in fact, relevant to national goals and national problems quite apart from its cultural and educational value. It is as relevant to distributed national goals, such as regional economic development, as it is to our centered national goals, such as the conquest of space.

It is probably true that science must gain a broader political base if it is to win, or deserve, continued preferential support. But might this base not be on the ability of science to find answers to regional problems? Need we abandon the concepts of excellence and relevance for the idea of the pork barrel?

Fear within the present crisis seems to have revived a host of ghosts previously laid to rest by the logic of scientists. We should perhaps, even in crises, have less fear of what might be bad for the scientist and give more thought to what science might be good for the nation, such as regionally relevant research.

WILLIAM N. ELLIS

United Nations Educational, Scientific and Cultural Organization

Lubricating communication

You have asked in an editorial how we, the physics community, can help lubricate the channels of communication about what we are doing to the tax-paying public. I surmise you did not expect to be overwhelmed with "gee-whiz" ideas.

In Houston, we are trying. The science committee of the Houston Chamber of Commerce and the Houston Chapter of the Society of Technical Writers and Publishers jointly prepare a publication, *Science and Engineering in Houston*. I have enclosed a copy for you to look at.

Each issue will contain one or more articles on how physics contributes to the community. Fortunately for me, I am the writer of these contributions. The pay is bad, nothing, but it is a change to do something about a problem instead of bellyaching. I have recently written about the number of American Physical Society members in the Houston area—164. I am preparing an article about a hospital with a

physics department—M.D. Anderson Hospital and Tumor Institute.

Please don't construe this as personal horn tooting. I would like to see physicists accepted as contributing members of society instead of longhairs operating maelstroms down which flow tax dollars. Perhaps this is one way we can inform, educate, propagandize—call it what you will.

FRED LEE WILSON

On canceling a meeting

The issue of canceling or transferring the 1970 American Physical Society meeting scheduled for Chicago has arisen because, according to the judgment of many members (including myself), the conduct of the city administration in Chicago on the occasion of the Democratic convention deserves censure. Although practical considerations forbid such an action by the society in the present case, it is pertinent to ask whether it would ever be appropriate to remove a meeting from a city as a gesture of displeasure at the city administration.

Of course transferral of a meeting away from a given city would always be justified by any actions of municipal authorities that interfere with the activities of APS members as physicists or that threaten to imperil the safe and efficient conduct of a meeting. An analogous principle is illustrated by APS's long precedent of avoiding cities in which its members are likely to suffer inconvenience from racial discrimination in accommodations. But where no issues specific to physicists or APS activities are involved, one may well question both the ethics and the efficacy of censuring a city administration by a blow that is felt economically only by hotels and restaurants and intellectually primarily by physicists living close to the city in question. It is sometimes argued that if you hurt the hotels, they will put pressure on the city officials. But such pressure is not likely to be strong unless the hotels are indeed hurt economically. (Often they would be glad enough to substitute a salesmen's convention for a physicists'.) And it seems to me that it is morally wrong to violate a contract or even an informal agreement, thereby inflicting economic injury on the hotels if these are only innocent bystanders to the reprehensible actions of the city government.

There remains the question of trying to influence public opinion by making