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I can't help but question the question raised about our old, outdated curriculum for training physicists.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 Fenyman'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.

To tie the support of science to the tail of education and culture, a complete reversal of the roles a decade