

letters

dropped by Hurricane Agnes.

The basement of Stark Hall (housing our accelerator lab, ESR lab, atomic and nuclear labs, machine shop, equipment storage rooms, and the physics clubroom for undergraduate students) was completely submerged. The water reached a height of seven feet on the first floor (housing our E & M labs, electronic labs, optics lab, introductory physics labs, equipment room, a dark room, and ten professors' offices). The devastation was tremendous and to a large degree, complete.

In addition, all the physics texts and our holdings in some 83 different physics journals, which were located in the college's brand-new Eugene Sheddon Farley Library, were completely lost.

This means we must start anew in building up our department, which was called by a well known physicist of international repute to be "the best equipped small-college physics department east of the Mississippi River." We have already begun the rebuilding task with undaunted spirit (even to the extent of offering a pair of physics courses this summer). We would be most glad to hear from any readers who might be able to help us replace any of our losses.

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Self-pacing: a caution

Judging from current literature, contacts with fellow physicists, and from the summer AAPT meeting in Albany, "self-paced" methods in one form or another are finding increased popularity as a mode of instruction in introductory physics courses. These forms differ, often greatly, from one another, and we would like to inject a cautionary note to those conducting or planning forms of self-paced courses.

Many educational institutions that have not previously done so are now admitting students from disadvantaged backgrounds. All introductory courses, and especially self-paced courses (due partly to their present novelty), must take into account the needs of these disadvantaged students. Our observations and those of others led us to believe that most of these students will experience difficulty in a course that does not impose some structure of activity upon them. For example, the extreme version of the self-paced course in which the student is given some sort of study guide and then left mostly on his own to achieve the guide's objectives will produce disastrous results for most disadvantaged students.

On the other hand, the performance

of the disadvantaged student will often be improved, sometimes dramatically, over that of a conventional course if certain forms of self-paced instruction are used. These include clearly understandable and interesting step-by-step procedures that lead the student from one successful experience to another, suggested timetables of development along with active monitoring of student progress, and then competent, understanding, individual tutoring for those students who fall behind (as many disadvantaged students will). There will, of course, be variations in the details depending on local circumstances.

We believe the main reasons disadvantaged students experience failure are poor instruction, an unusually disordered background, and a lack of motivation. An introductory course that requires them to exhibit a high degree of self-reliance and independent study in most instances is too great a transformation for them to handle. The students already find themselves in a society whose educational system is biased against them resulting in a built-in expectation for low achievement or failure. Increasing this bias by a technique of instruction which induces further frustration is educationally unsound.

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Equipment first?

Referring to Alfred Romer's comment, in March (page 9) on my letter in December (page 11), I had thought it would be obvious that I deliberately sacrificed historical accuracy to make my point in a humorous and succinct manner.

Suffice it to say that even in 1576, the cost of a clever individual was small compared to that of large and sophisticated equipment, while the contributions of both could be of equal importance. Except for the subsequent work of Kepler and Newton (and the previous work of Copernicus) the meticulous observations of Tycho would have added little to our understanding of the Universe. Hence, had the powers-that-be seen fit to fire Kepler to use his salary to make some minor improvement in the apparatus, the result would have been most unpleasant for the future of science as well as for Kepler. Luckily he lived in an age that seems to have been more enlightened than our own.

While my letter was meant to be fun-

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