luring students into graduate school with increased subsidies seems ludicrous to us in view of the really small purchasing power of these stipends (surely not much above subsistence levels) as compared to the salary the student might earn if he went directly into the job market. Rather, the real issue raised by the support of graduate students is not whether the student will become soft but whether departments will become soft. The burden, as always, is upon the graduate departments to maintain a stimulating, challenging environment and enforce standards of achievement. It may very well be that, when faced with a larger number of students among whom to choose, many departments will be enabled to raise their standards, not tempted to lower them.

Finally, the editorial does not appreciate the broader social necessities implied in the recommendations of the President's Science Advisory Committee. As the technological base of our society becomes more complex and develops more and more rapidly, larger and larger proportions of our population must have higher education, including education beyond college. Of the larger numbers of students acquiring Ph.D.'s, perhaps only a small group, as in the past, will develop a real flair for scientific investigation and prove truly creative. The remainder will provide the good, solid work which is necessary to fill in data in an area which has been mapped out in broad outline by the "genius" in the forefront. If such scientists are not also being trained, a national emergency may arise, for there are many kinds of jobs to be filled in the vast vineyard of science and technology developing in our country today.

NEENA B. SCHWARTZ
RUE BUCHER
Department of Physiology, College of Medicine, University of Illinois, Chicago

The editorial "Manpower or mind power" [*Science* **139**, 79 (1963)] was excellent and said something badly in need of being said. The change in attitude of the graduate students (particularly in physics, which is my field) during the last 25 years is almost unbelievable. Most of them seem to have a conviction that their having elected to do advanced work is all that was needed for them to merit comfortable support for their families and themselves, and this with 40 hours' work (including coffee breaks) a week. This attitude has, I am sorry to say, been frequently given tacit approval by faculty members who build small empires on grants and contracts.

Science continues to advance rapidly, but I am convinced that this is due only to the tremendous increase in the number of persons involved, which compensates for the decrease in output of the individual, who is, in many cases, little more than a black-box manipulator and a collector of data of dubious significance. We seem to lack the truly great minds which in the past were, if not prevalent, at least not infrequent, and I even venture to doubt that the average scientist of today is as able intellectually as his predecessor of a hundred years or more ago.

I hope that your editorial will be read, absorbed, and heeded.

E. SCOTT BARR
University of Alabama, University

"Activated" Sleep in the Rat

Swisher [*Science* **138**, 1110 (1962)] has described for the rat a type of sleep that is analogous, perhaps, to the "activated" or "paradoxical" sleep that has been described by Jouvet, among others, for several species. One very striking feature of this state in the rat is the very regular electroencephalographic (EEG) activity of approximately 7 cy/sec.

Our own observations agree quite well with Swisher's in every respect but one: Swisher has noted that rats, unlike cats in paradoxical sleep, do not assume very relaxed postures, but rather undergo "shifts in muscle tone, occasionally of considerable magnitude." In our experiments, in which electromyograms were obtained for the rats' neck muscles, we have found that when the EEG displays very regular 7-cy/sec activity, the neck muscle potentials are much reduced, usually to about one-quarter the magnitude (root-mean-square values) of those found in sleep characterized by large, slow EEG potentials. Periods marked by the highly rhythmic EEG and very low neck muscle potentials are often terminated by movements which usually appear to be shifts in posture; however, during these periods no changes in electromyographic activity can be detected by electrodes located in the neck musculature.

R. D. HALL
Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge