Letters

Damaging Criticism

As *Science* so often and appropriately notes, the role of the scientist in public policy is growing rapidly. However, scientists as a class are not uniquely qualified to assess the sociological and political aspects of their contributions, and I am not aware of anyone who has mastered this assessment procedure so well that it can serve to provide relative values on scientific or technological advances in widely different fields. Our limitations are particularly conspicuous with respect to scientific endeavors of very large magnitude, where the marshalling of nationwide public support is necessary for success.

The late John F. Kennedy was acutely aware of the importance of inspirational national goals to stimulate a coherent response from a free society. The circumstances of science, technology, and world affairs led him to choose manned exploration of the moon as a symbol of our goals, and a massive commitment in resources and time was made toward that goal, with enthusiastic public support. After the initial thrill of national participation in this bold venture had waned, the critics began to be heard from, loudly when our space ventures were in trouble, softly when success was fresh. Surprisingly enough, the most damaging criticism came from within the scientific community. Ignoring the well-known difficulty of placing values in advance on the outcome of exploration or technological progress, the scientist-critics question the value of the country's investment. In so doing, they raise doubts in the minds of the public concerning the scienific importance of the space program and the judgment of its architects.

While no public program should be free from scrutiny and criticism and none the size of the U.S. space program is free of deficiencies, it is unfortunate that criticism should be voiced in such a way as to compromise the "magic" of enthusiastic public identification with science and discovery. In its capture of public support, in national political urgency, and in the stimulus it has given to science and technology, the moon project would be hard to match. It may be that half the funds of the space program could better be used in development of natural resources, biochemistry, social sciences, or poverty programs. It may be that instrumented exploration of space is preferable to manned exploration, or that study of the ocean is more important than study of space. But it is nonsense to believe that the optimum distribution of our national energies and talents can be defined without consideration of public identification with the goals and the progress toward them. Perhaps nothing could be so damaging to the progress of all U.S. science, and to U.S. world prestige as well, as a half-hearted public support of a shrinking, failing moon mission. But the real loss would be the disappearance of a force that has made every American a participant and sponsor of progress. Let's be clear about whether we are criticizing technical issues on which we are qualified to judge, program issues on which we are qualified to debate, or public issues which are not scientific questions.

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Animal Care: Licensing of Experimenters

Arthur Freeman (Letters, 18 Feb., p. 776) contends that a voluntary accreditation scheme administered by the American Association for Accreditation of Laboratory Animal Care is a "better plan than legislation." Although any effort to improve animal housing is welcome, this scheme is no substitute for legislation, since it does not cope with significant aspects of humane care that are dealt with in proposed legislation. The AAALAC scheme provides for the announced inspection of animal quarters once in 5 years. From such a rare and prearranged visit, basic physical equipment can be assessed but not day-to-day standards of care. Surely, an announced inspection will be prepared for; overcrowded and unsanitary cages and lack of food or water would probably not be observable. Cleveland Amory advised the House Interstate and Foreign Commerce Committee on 30 September 1965 that one-third of 100 laboratories he had visited unannounced were grossly inadequate in these respects. (One-third he found in moderate and one-third in good condition.) Independent testimony confirmed this view, which has remained unchallenged. Photographs taken recently during an unannounced but invited visit to a leading research institution showed dogs in cages so small they could not stand up.

Unannounced inspection appears essential to the maintenance of effective standards of animal care. Under the British system, upon which the bills of Senator Clark (S. 1071) and Representative Cleveland (H.R. 5647) are based, inspectors (all of whom are M.D.'s or veterinarians) visit marginal institutions several times a year; those with known high standards are visited infrequently; but never are visits announced. The Roybal bill does not provide for any kind of inspection.

Humane standards in the laboratory, as distinct from animal quarters, are dealt with in neither the AAALAC scheme nor the Roybal bill. Ignorance and carelessness are probably responsible for most of the inhumane acts and practices of scientists and research institutions. Animals are sometimes incinerated alive because the uninstructed investigator fails to ensure death before discarding them; anesthetized animals may be left untended and their level of consciousness may change while the experimenter goes to lunch; animals in extreme pain that serves no legitimate scientific purpose are not invariably drugged or killed. Such unnecessary and unjustified suffering could be virtually eliminated if scientists were adequately instructed, and required to maintain humane standards by individual licensing as proposed in the Clark-Cleveland bills. A licensing system of this sort has operated simply and constructively for 90 years in England, promoting both