

The administration's new civilian technology program is designed to stimulate research in areas where it is underdeveloped. NASA seems to be making an effort to share the research wealth by providing grants to build new "centers of excellence" for space research at a number of universities and by supporting such projects as the new center at Indiana University, which will be devoted to finding industrial applications for developments in space technology.

But it is difficult to see how such programs will enable other areas seeking to excel in, for example, electronics research to overcome the combination of natural and federally bestowed advantages which Boston and one or two other areas enjoy.

Now, nevertheless, since the economic significance of federally sponsored research, including basic research, is better understood in Congress, federal research grants to the universities are likely to get more attention from the have-nots.—JOHN WALSH

### Experimental Animals: Proposals to Regulate Use Bring Clash of Scientists and Humane Societies

A variety of legislation to promote the human use of animals in research laboratories has again been introduced into both houses of Congress, amidst indications that the legislators are showing more interest in the subject this year. Congressional sentiment is far from crystallized, but a well-publicized revelation of mistreatment of research animals at a Washington-area supply farm has shocked some congressmen into greater concern about humane-treatment legislation.

(The case, still under investigation, involves several hundred dogs and cats found dead at a now defunct farm in nearby Virginia which supplied animals to private and governmental research laboratories.)

The impetus for regulatory legislation does not come from the scientific community, which has been intensely and nearly unanimously opposed to it, but from a group of lay humane organizations. The most formidable of these is the Animal Welfare Institute, whose president, Christine Stevens (the wife of Roger Stevens, a former finance director of the Democratic Party) is credited with achieving, almost single-handedly, the passage of the humane slaughter act of 1960, over

the opposition of the meat-packing industry. The Animal Welfare Institute strongly supports a bill by Senators Joseph Clark (D.-Pa.) and Maurine Neuberger (D.-Ore.) which provides for close regulation of recipients of federal grants by the Secretary of Health, Education, and Welfare. Other humane societies are in the act, too, but they are divided on legislative remedies. The Humane Society of the United States, for example, calls the Clark-Neuberger bill "so weak as to be actually objectionable" and supports another offering, H.R. 4856, a rewrite of a similar proposal last year, which actually defines "pain" and "stress" and would place enforcement in the hands of the Justice Department. The American Anti-Vivisection Society takes an even more uncompromising position, opposing all legislation on the grounds that it implicitly sanctions inhumane treatment of animals, and joining forces with the scientific opponents of the proposals to forestall passage.

Organizations aligned in opposition to regulatory legislation include the National Society for Medical Research, the American Medical Association, the American Psychological Association, and several other private and governmental agencies.

The Clark-Neuberger bill—which at this stage seems to be attracting most interest—is based on the central principle that "living vertebrate animals used for scientific experiments shall be spared unnecessary pain and fear; . . . they shall be used only when no other feasible and satisfactory methods can be used to ascertain biological and scientific information." In support of this, the bill's formal provisions require, (i) that all users of experimental animals be licensed by the Secretary of Health, Education, and Welfare; (ii) that the Secretary receive an annual report from the researcher, specifying the number of animals used and the procedures followed; (iii) that brief additional statements be filed with the Secretary for all experiments involving pain to the animal (the Secretary may limit the number of animals used in painful experiments); and (iv) that inspectors be given access to animal laboratories and their records, and the authority to destroy animals under certain conditions.

The more substantive provisions set standards to be met as a condition of licensing and continued operation. These require, (i) that experimental

animals be anesthetized, and that animals suffering from severe or prolonged pain be killed, except when this would interfere with the purpose of the experiment; (ii) that all animals used in practice surgery be anesthetized, and killed before recovering consciousness; and (iii) that certain standards of care and housing be maintained. Finally, a special unit would be created in the Secretary's office to administer the regulations.

A by-product of the lengthy controversy over animal welfare legislation is the appearance, for the first time, of moderate, compromise legislation that emphasizes *care* of laboratory animals. The National Society for Medical Research, the Veterinarians Association, and some other groups have indicated that they will not oppose constructive legislation providing federal assistance in animal care and housing, although most would still prefer voluntary activities in this field.

Compromise, in any event, will be difficult. A bill introduced by Congressman John Fogarty (D.-R. I.) to have the Secretary of Health, Education, and Welfare publish standards for animal care is approached tentatively and with misgivings by both sides. The Animal Welfare Institute regards it as a sign of progress but still a diversionary tactic; the NSMR views as one foot in the door of the regulation is still hopes to avoid.

All the bills are now in committee—Labor and Public Welfare in the Senate, Interstate and Foreign Commerce in the House—where they probably will remain throughout this session of Congress. Neither committee has yet scheduled hearings, though there is some prospect that the House may do so. With or without hearings, the issue will be around for a long while.—ELINOR LANGER

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*Erratum:* In the article "Evolutionary mechanisms in pollination biology" by H. G. Baker [*Science* 139, 877 (8 March 1963)] the fifth line up in the next-to-last paragraph (column 3, page 880) should have read: (. . . visited by large carpenter bees of the *Xylocopidae*). In the published version *Xylocopidae* read *Megachilidae*.

*Erratum:* In the report by E. A. Sueltenfuss and Morris Pollard, "Cytochemical assay of interferon produced by duck hepatitis virus" [*Science* 139, 595 (15 Feb. 1963)] the first sentence of the last paragraph (column 2, page 596) contains a misplaced line. It should have read: "DHV-interferon interrupted psittacosis virus at the 'red ball,' noninfectious stage of replication."

*Erratum:* In the report by C. A. Chidsey, G. A. Kaiser, and E. Braunwald, "Biosynthesis of norepinephrine in isolated canine heart" [*Science* 139, 828 (1 March 1963)], line 16 in the next-to-last paragraph (column 2, page 829) should have read: "It therefore appears likely that the whole rat has biosynthetic pathways for the formation of norepinephrine which are not present in the canine heart." In the published version the word *likely* read *unlikely*.