

hearer will remember it in." (ii) Greater precision is not warranted in the statement than is available in the data.

Hart missed the opportunity to be an exemplary pedant; instead of arriving at 10,009 pounds from the handbook table he could have used the precise conversion factor and come up with 10,008.98542814 pounds.

R. R. NEWELL

50 Yerba Buena Avenue,
San Francisco, California

Humane Treatment of Animals

The bill S. 3570 recently introduced into the Senate by Senator Cooper and others, "To provide for the humane treatment of animals . . .," has been strongly attacked both in *Science* [132, 7 (1960)] and in the *Bulletin of the National Society for Medical Research*. These attacks have given what I think to be a false idea of the nature and intent of the bill, and of the motives of its sponsors, and prompt me to make a carefully considered statement of my own opinion.

The issue of humane treatment itself is a moral one: To what extent are we justified in inflicting pain and discomfort on other organisms in our search for knowledge? Bill S. 3570 takes the position "that living vertebrate animals used for scientific experiments shall be spared unnecessary pain and fear; that they shall be used only when no other feasible and satisfactory methods can be used to ascertain biological and scientific information for the cure of disease, alleviation of suffering, prolongation of life, or for military requirements; and that all such animals shall be comfortably housed, well fed, and humanely handled." This is a statement with which, I think, most biologists would agree in principle; personally I should feel more comfortable if the words *potentially valuable* were inserted after the words *scientific information*, but I think that the efforts of the National Society for Medical Research, the Animal Care Panel, and the American Physiological Society over the past several years have been directed toward the general aims stated above.

The second issue posed by the bill is a practical political one: Granted that humane treatment is desirable, is legislation, and in particular this legislation, the best means to assure it? The alternatives would seem to be voluntary action by the investigators or local control by individual communities. The charges recently brought against Stanford University and the College of Medical Evangelists in California show that local action under the influence of extremist pressure groups may still endanger medical research; it seems

probable that the existence of federal legislation of the type proposed in S. 3570 would do much to protect laboratories against this sort of local attack. The question of voluntary action is a more debatable one. In my own experience I have never come across an instance of wanton cruelty to experimental animals, but I have encountered numerous cases of neglect due to callousness, inadequate facilities, inexperience, or carelessness; again, it would seem that S. 3570 would help to eliminate such instances.

The reasonable objections which have been made to the specific provisions of S. 3570 are well summarized in the *Science* editorial: "Advance approval of experimental plans by the

Department of Health, Education, and Welfare, burdensome record keeping, annual or more frequent reports to HEW, additional costs . . . and a new and unnecessary amount of red tape." As I read the bill, it seems to me that the requirements are not greatly beyond those now in force. Every application for federal research funds requires submission of an experimental plan which is approved by a panel of scientists. I hope that all of us who publish results of animal experiments do at least the amount of record keeping specified by the bill. Every federal research grant now requires an annual report. The only additional features are that the experimental plan must specify what animals are to be used and what

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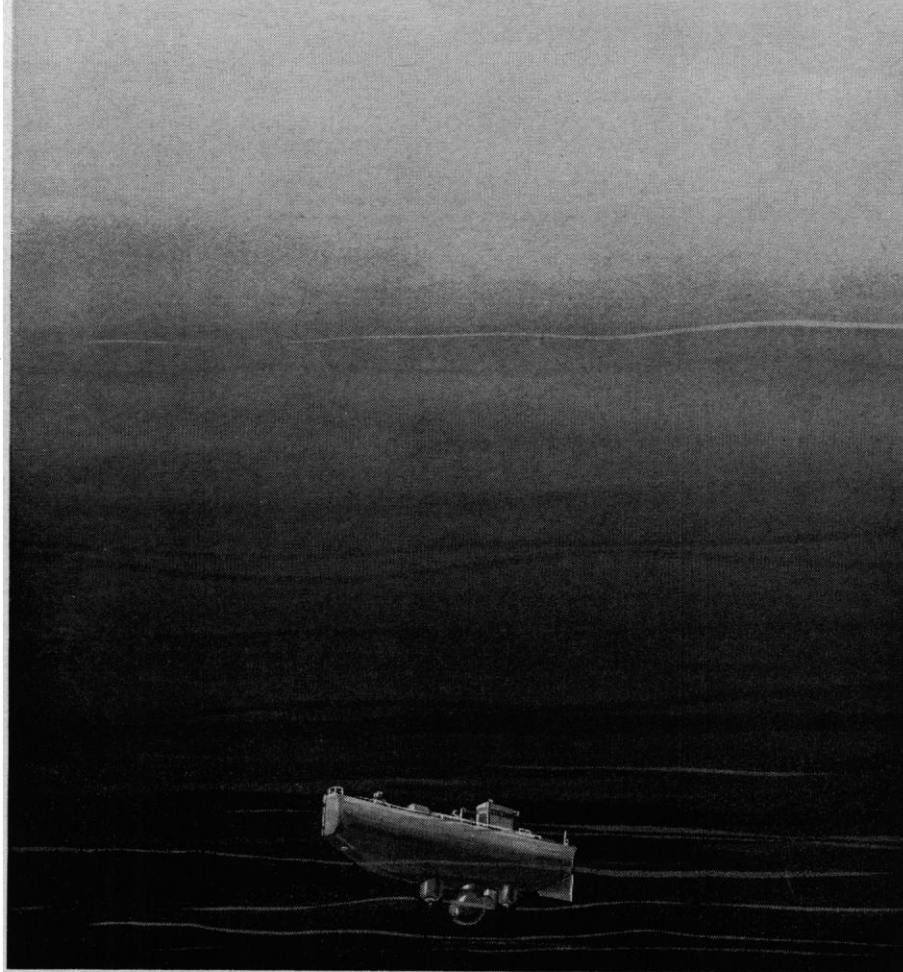


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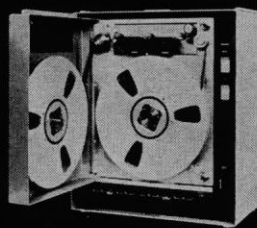
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type of experiments are to be performed; there is nothing in the bill requiring advance approval of every minor change in experimental procedure. The report, also, must specify the animals used and the procedures employed, but there is nothing in the bill to say that this must coincide exactly with the plan proposed. Compliance with the provisions of the bill will cost more, insofar as the existing laboratories do not provide adequate facilities for the animals used, but this should result in better experimental results as well as more humane care.

The National Society for Medical Research has devoted much attention to the provision for inspection of facilities and for certificates of compliance with regulations to be laid down by the Secretary of Health, Education, and Welfare; this is presumably the red tape with which *Science* is concerned. At present, every institution receiving grants from federal agencies is visited—or if you wish, inspected—by officers of those agencies. On the basis of past experience, I think that we have nothing to fear from these officers, who have abundantly demonstrated that their main aim is to further research of the highest quality. Any regulations which HEW might lay down under an act of the sort proposed would, I think, not depart from this aim. In any event, the bill gives no police powers to HEW or anyone else, so that work sponsored by any but federal agencies would not be in any way affected.

In sum, I cannot find in this bill the evils which the National Society for Medical Research or *Science* profess to see, and I would urge my colleagues who are interested in animal experimentation, humane treatment, or both, to read the bill with care, to make their own appraisals on the basis of their own judgments, and to communicate these judgments to their representatives in the Congress.

BRADLEY T. SCHEER

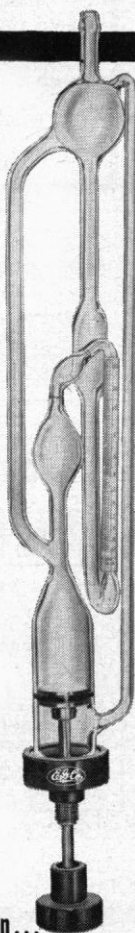
*College of Liberal Arts,
University of Oregon, Eugene*

I read with considerable interest your article on the Cooper bill, S. 3570 [*Science* 131, 1659 (1960)]. It seems a holy and ennobling thought that our animal friends should be generously accorded some measure of protection from our mighty and benevolent government. Your article, however, referred simply to experimental "animals"; I should hope that the sponsors of this bill were more explicit in their definition of the organisms to be protected. Do they include viviparous mammals only? mammals only? warm-blooded vertebrates only? vertebrates only? chordates only? vertebrates and invertebrates, including protista and bacteria? vertebrates and invertebrates,

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including all protista and bacteria which are not primarily or facultatively photosynthetic? Surely our senators will not endorse the statements of a mammalogist acquaintance of mine: "If it isn't warm, it's dead," or, in his more extreme moments, "If it doesn't have red blood, it's a plant."

In a democratic society, it does not seem an unreasonable analogy to suggest that all organisms (or at least non-photosynthetic and/or nonparasitic organisms, though such exceptions might hint of an occupational elite) are created equal. If the criterion for inclusion under the bill is to be a phylogenetic one, it would seem somewhat arbitrary to propose protection up to and including tenth cousins, three times removed, and imply that tenth cousins, four times removed, are beyond the pale, and that eleventh cousins are of course unworthy.

I am confident that herpetologists and ichthyologists, entomologists and protozoologists would strongly protest any regulation which would not afford the full measure of governmental safeguards to the organisms of their interest. Such a slight would imply that these animals are, because of their immediate ancestry, unworthy of the full concern and protection of the government. I myself would emphatically oppose any such derogatory implication about the crustacea, which are my current interest. Such prejudgment, based on uncontrollable accidents of birth and ancestry, seems contrary to the American spirit of recognition of individual abilities and character.

As a further extension of this bill, it seems wholly logical that if a housewife (whose husband is at least partially dependent on federal money) plans to trap an intruding mouse (*Mus musculus*), her premises and the proposed trapping device should be inspected and certified for compliance, and that she be then licensed as an authorized animal experimenter. Then, of course, the Secretary of Animal Health, Education, and Welfare would have to review the proposal in detail. Likewise, any insecticide should receive the seal of approval from the SPCA—or its governmental equivalent—as the certified, least painful means of attaining the desired goal. Undoubtedly, properly motivated congressmen will see the myriad other logical, and thus necessary, extensions of the Cooper bill: animal husbandry, commercial fisheries, hunting and fishing as sports, to mention only a few of the more obvious.

J. T. ENRIGHT

3256 Luna Avenue,
San Diego, California

The Cooper bill (S. 3570) is concerned with "live vertebrate animals used for scientific experiments."—Ed.

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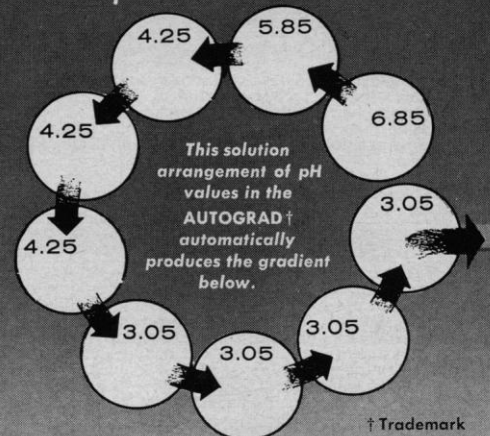
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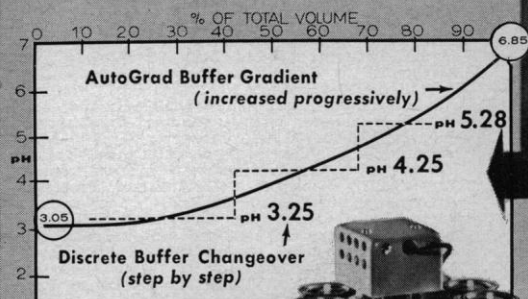
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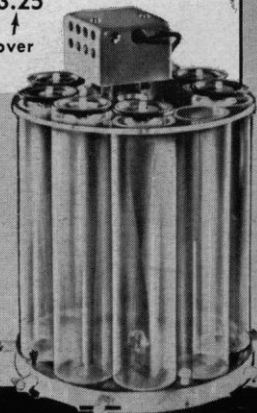
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*Reference: "Variable Gradient Device for Chromatography", E. A. Peterson and H. A. Sober, Anal. Chem., Vol. 31, No. 34, May 1959.



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