claimed for a scheme that taxes all the citizens for educational purposes but makes some of those citizens pay a second time for an education although those same citizens thereby save the government money?

If all the private institutions of learning were to close their doors to-morrow, it would cost the government tremendous sums of money to purchase or replace their buildings and laboratories and libraries and to pay their faculties, in order to provide facilities for the students who attend the private institutions. The private institutions, sectarian and nonsectarian, are rendering the same service as the public; they both operate for the common weal; the work and expense of the private institutions would have to be borne by the public institutions if the private did not exist. Yet only the public institutions are supported by the government, whereas the private institutions must support themselves, although the students of private institutions have already paid for education with taxes. Is this equity?

Dr. Cowdry has suggested a federal subsidy to aid private institutions of learning in their financial difficulties. Mr. Rafton has suggested some stipulations for the subsidy. However, since private institutions render educational services the same as public institutions render and which are just as much for the common weal, since public institutions would incur the work and expense of private institutions if the latter were to fail, since the students of private institutions have paid taxes for their education anyway, it is suggested that the government (federal, state or local as the occasion demands) defray the expenses of the private institutions in the same manner that it supports the public institutions. The criterion for government aid shall be the amount and quality of educational service provided. To safeguard against undemocratic discrimination among institutions, only educational service shall be considered and not the creed nor race nor color of the leaders of the institutions. To obviate government control, the government may investigate private institutions to see that the claimed educational services are performed but may not appoint the leaders nor direct operation of the institutions.

To sum up: In a democracy, private educational institutions, inasmuch as they perform the same service that public institutions do, promote the common good, save public institutions the work and expense of education already paid for in taxes, should be supported by the government, federal, state or local, according to circumstances, both as a matter of equity and practical policy, without regard to creed, race or color represented by the institutions.

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THE ORGANIZATION OF BIOLOGISTS

AMERICAN biologists who have been aware of the inefficient way in which the potential contributing power of biologists was utilized in our recent war effort have had forcefully called to their attention one of the serious consequences of lack of general organization. Even more impressive indications of the need of organization, since they concern not the past but the future, are such matters as (1) the immediate need of more intimate international relations of scientific societies to parallel international cooperation along other lines, and (2) the prospects of the availability for distribution shortly of large federal funds for the furtherance of scientific training and research. Biologists now constitute the only major scientific group lacking a strong unifying organization. Their present organization consists of dozens of small societies, each concerned with a highly restricted area of biology and acting independently of most of the others. They lack entirely any body that can speak and act authoritatively for biologists as a whole.

The following are a few of the more obvious needs of American biology which could be furthered by a general organization, listed roughly in their order of relative importance:

(1) A public relations office to give biology legitimate publicity.

(2) Representation of the interests of biology in governmental and intra- and international scientific relations.

(3) Reduction in cost of, and increase in efficiency of, biological publications.

(4) Encouragement of the maintenance of balance in research and training among the various biological fields.

(5) A clearing house for the effective placement of biologists.

(6) Machinery for closer cooperation between biology and industry.

(7) Administration of fellowships and scholarships.

In view of the several abortive attempts by small groups of biologists during the past thirty years to set up an organization which would be capable of performing such valuable functions, one hesitates to propose any specific plan for doing so. It does appear, however, that the following would be a reasonable series of steps to take:

(1) Enlist the interest and support of the current officers of the various existing biological societies.

(2) Call a meeting of society representatives at the earliest feasible date.

(3) Present to the latter group for discussion a tentative plan of organization after consultation with officials of the American Chemical Society and the American Institute of Physics.

(4) Adopt a specific plan.

(5) Determine ways and means of obtaining funds to guarantee the financing of the organization during its first three to five years. (It would be assumed that the organization would be self-supporting at the end of this time).

(6) Select and appoint a permanent executive secretary and establish a permanent office.

It would be assumed that this proposed organization would be one in which biologists would participate for the concrete benefits they would derive from it.

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A POSSIBLE EXPLANATION OF "FREEZING" BEHAVIOR IN RATS

CURRENT adherence to the doctrines of biologism in the study of animal behavior has tended to obscure interest in the beginning of socially determined action and to favor explanations based on hereditary or innate patterns of individual variation. Thus in maze studies with small animals where the organisms are housed in groups in one cage, differences in learning scores in the maze are seen as the product of heredity or of the specific conditions of diet and experimentation. Very rarely is mention made of social interaction in the group-housing situation, although it is well known that patterns of dominance, aggression, food-hoarding and sex play exist. Surely some correlation may be expected between behavior under experimental control and the social environment of the living cage.

The author had an opportunity to apply the implications of the foregoing to random observations made over a period of some years during which the behavior called "freezing" was studied incidentally. "Freezing" is a phenomenon found particularly in learning experiments with rats and guinea pigs. It refers to a state of immobility on the part of the organism when it is inserted into the learning apparatus. The subject simply sits at one point in the maze. Increase in motivation is rarely effective in causing cessation of "freezing," which may continue for many trials and is then apt to disappear suddenly. The difficulties in incorporating data from such animals into learning studies have led some authorities to recommend the elimination of the organisms and the data from consideration. Where any discussion is found of the phenomenon, it is usually ascribed to emotional disturbance or to "pure cussedness."

The data under discussion here were derived from two groups of animals, one living in groups of six rats to a cage, the other consisting of animals in isolated, single cages. Of the 124 rats in the first group, eighteen manifested "freezing." Only two rats in the other group displayed the behavior. Sex, age and stock variations were ruled out as causal, as were differences in handling since all these factors were identical for both groups. The only major difference in the treatment of the two sets lay in the manner of their housing and its consequences. Systematic observation of the behavior of the group-housed rats led to a variety of data of which only part will be presented here as preliminary to a larger report. This note takes into account only that aspect of the inter-organismic relationship in which aggression of one or more animals against another is manifested. Social hierarchies such as those found among chicks and baboons are not well established in rats but fighting is common and there have been some observations of dominance and submissiveness under these circumstances. In our animals, of those which "froze" from the group-housed experiments, fifteen were definitely and rather consistently the submissive or aggressed against organisms. The remaining three were all dominant and winners in fighting. It would seem then that the phenomenon in question is the result of the hitherto uncontrolled factor of social interaction in the living quarters of the experimental animals.

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SCIENTIFIC BOOKS

VIRUS DISEASES

Virus as Organism. Evolutionary and Ecological Aspects of Some Human Virus Diseases. By FRANK MACFARLANE BURNET. 134 pp. Cambridge, Mass.: Harvard University Press. 1945. $2.00.

THIS book, which is an expansion of the Dunham Lectures given at the Harvard Medical School, presents a discussion of some virus diseases of man from a consistently biological viewpoint. The discussion is the best that has ever been presented of the broad evolutionary and ecological aspects of virus disease. The author, who is a distinguished investigator and director of the Walter and Eliza Hall Institute of Research in Pathology and Medicine in Melbourne, Australia, does not pretend to discuss representative virus diseases or to present a balanced picture of the causative agents. He restricts himself to the six virus diseases which have been under investigation in his laboratory and confines his central theme to a por-