has been authorized to take necessary steps for the organization of a National Research Council constituted under the statutory authority of the Government of India, at the symposium on Post-War Organization of Scientific Research held last October in Calcutta. It was also decided to approach the Government of India for an annual grant to enable the council to give effect to its policy of scientific development. The symposium considered that the National Research Council should be directly responsible to the government. Its main functions should be to plan the main lines of scientific work in accordance with national needs, to ensure balanced development of all branches of science and advise and help regarding the training and supply of scientific personnel for pure and applied research. The council should consist of scientific and technical experts not exceeding sixty in number, the majority of whom should be elected by non-official scientific organizations, including universities. Boards of research should be constituted for each sphere of work, and each board should be authorized to constitute research committees on all important subjects.

THE Pyrethrum Board of Kenya has been asked by the British Ministry of Supply to send 10,000 pounds of pyrethrum seed to the United States Board of Economic Warfare. The seed will be flown across the Atlantic and probably planted in Brazil.

A NATIONAL Department of Public Health and Social Assistance was recently established at Buenos Aires, of which Dr. Eugenio A. Galli, major surgeon, R. A., has been appointed president. It includes the National Department of Hygiene, the Advisory Committee of Regional Hospitals, the National Institute of Nutrition, the Society of Beneficence of the Federal Capital, the National Centers of Social Assistance, the Department of Subsidies and all the national branches of the departments of Public Health and Hygiene.

IN the British House of Commons, it was announced recently by Mr. Attlee, Lord President of the Council, that the government had decided to set up a Royal Commission to investigate the birth-rate and trends of population and that the Lord Chancellor had accepted the chairmanship. The terms of reference of the commission are to examine the facts relating to the present population trends in Great Britain; to investigate the causes of these trends and to consider their probable consequences; to consider what measures, if any, should be taken in the national interest to influence the future trend of the population and to make recommendations.

THE British Secretary of State for the Colonies, according to *Nature,* has appointed a Colonial Fisheries Advisory Committee to advise him on problems concerning fisheries (marine and freshwater) in the Colonial Empire, in association with his fisheries adviser. The committee is constituted as follows: The Duke of Devonshire, Parliamentary Under-Secretary of State for the Colonies, *chairman;* G. L. M. Clauson, Colonial Office, *vice-chairman;* Dr. S. Kemp, director of the Marine Biological Association of the United Kingdom; Dr. E. B. Worthington, director of the Freshwater Biological Association of the British Empire; Dr. E. S. Russell, fisheries adviser to the Secretary of State for the Colonies; Dr. G. A. Reay, director of the Torry Research Institute, Department of Scientific and Industrial Research, Aberdeen; Dr. B. S. Platt, in charge of investigations into nutrition in the Colonial Empire under the Medical Research Council; J. R. Norman, deputy keeper, Department of Zoology, British Museum (Natural History); Dr. C. F. A. Pantin, reader in invertebrate zoology, University of Cambridge; R. S. Wimpenny, naturalist, Ministry of Agriculture and Fisheries; J. Thomson, chief inspector of fisheries, Ministry of Agriculture and Fisheries; Morley Neale, member of the firm of Neale and West, steam trawler owners, Cardiff; C. N. Hooper, clerk of the Fishmongers Company, and R. H. Burt, Colonial Office, *secretary.*

DISCUSSION

THE COLLEGE CURRICULUM IN WARTIME AND INTRODUCTORY COURSES IN BIOLOGY

REPORT Number 15, on "Adjustment of the College Curriculum to Wartime Conditions and Needs," recently issued by the U. S. Office of Education, is to me a most disturbing and puzzling document. Although the Office of Education assumes no responsibility for the statements in the report, attributing them to the committee named in it, publication by this agency will, obviously, give the report a stamp of authority to which it is not entitled. Furthermore, it is hard for me to believe that all the statements in the report have the unanimous endorsement of the committee.

The committee concluded, quite wisely it will seem to most biologists, that it should "not recommend wartime modifications as such in the beginning college courses" (in the biological sciences). Wartime modifications actually have been made by some of us in con-

formity with a fixed course of study, *e.g.*, the Navy V-12, but this has been done temporarily, and in spite of a conviction that the new curriculum may be less satisfactory for the student than the one replaced. The bulk of the report does not deal with this matter, however, which was within its province, but rather with a presentation of positive views on a controversial matter which the committee does not succeed in relating to wartime as contrasted with peacetime conditions.

The principal conclusion of the committee is that courses in general biology are not satisfactory for beginning students. Separate courses in botany and zoology are recommended, the committee concluding that either one alone is better than general biology. The report fails to recognize the fact that general biology is actually successfully taught in a number of institutions among the best academically in this country. The report does not mention any of the inherent advantages that a general biology course has over separate courses in botany and zoology. It appears to me, in fact, that the committee prejudged the issue; the point of view of general biology is as completely ignored in the report as if it were non-existent. Furthermore, the report is worded in such a way that the committee's disapproval of general biology courses appears by insinuation even in those statements not directly expressing an evaluation. This is illustrated in the quotations from the report which follow.

The gist of the committee's finding is to the effect that: "There is no objective evidence available to the Committee to show that general biology (beginning courses) is as good or has any advantage over well-organized courses of general botany or of general zoology. There is subjective evidence and some objective evidence that general botany and general zoology have greater value to the students than the general biology covering the two great fields." The report defines various kinds of general biology courses in such a way that botany and zoology courses are certain to gain by comparison. The implication of the report is that botany and zoology are independent sciences ("great fields"), and that biology is not a great field of science but merely the result of an addition of piecemeal segments of these. It would be interesting to compare the categories distinguished in this report with lists prepared by other committees with quite different points of view; we would probably find little evidence for objective validity in the classification, and probably none for some of the details of the definitions. In any case, if all the categories here given are to be called general biology in a formal report the name might better be enclosed in quotation marks. It is true that many types of courses go by this name and that many of them are not general biology; it is not equally true, however, that they are all unsatisfactory.

According to the report:

> . . . the courses in general biology are constructed as follows:
>
> 1. Introductory zoology (often quite limited in scope and without field work).
>
> 2. Seventy to ninety per cent. zoology with a small amount of botany, and usually taught by men and women trained in zoology. Entomology and fundamental physiology are often omitted.
>
> 3. Courses with about half animal and half plant illustrations but without sequential arrangement that leads to good understanding of either plants or animals or to the applications of the studies. Usually taught by zoologists.
>
> 4. A half year of botany followed by a half year of zoology with the zoology using the previous training in botany as the starting point for the second semester's work; this organized as a sequential whole and the botany and zoology taught by men well trained in botany and zoology.

A much more objective and more complete estimate of the weaknesses of general biology courses was made by Professor George E. Nichols.[1] His paper is very valuable as a guide to the difficulties of conducting courses in general biology.

Note under the third category above the statement "usually taught by zoologists"; that was the favorite criticism of certain botanists of a generation ago, biology having been referred to as "botany taught by a zoologist." The statement does not suggest that there is such an individual as a person with a broad biological point of view, but rather that biologists are all, of necessity, either botanists or zoologists. Elsewhere the report implies that an individual well trained in both botany and zoology is indeed rare. That individuals sufficiently well trained to direct advanced work in both botany and zoology are rare may be true, but that those trained for the purpose here implied are rare, I doubt. Certainly, considering the number of individuals who are quite competent in both a physical and a biological science, there is no inherent reason for such narrowness.

I am unable to understand what is meant by the phrase in the description of category three "without sequential arrangement." A taxonomic arrangement is implied under number four, and this seems desirable to the committee. A taxonomic approach in general biology, however, is quite unsound as well as wasteful of time; but a logical arrangement of another kind is quite essential. In general biology, plant and animal materials are considered in relation to metabolism, behavior, reproduction and development, heredity, evolution and distribution, not primarily in relation to morphological patterns. The fundamental con-

[1] SCIENCE, 50: 509–517, 1919.

cepts of biology are better taught thus. That is why exponents of a well-organized general biology course believe that it has advantages over separate courses in botany and zoology ("well-organized" or not), or over a combination of the two if there is not more integration than is usually attempted. The fourth category is not general biology at all, but a short course corresponding to the committee's recommendation. The committee has not recognized in practise what it does admit in theory, *viz.*, "that the same fundamental laws of life apply generally to all organisms." It is unfortunately true that most text-book writers have failed to produce a text-book built upon this underlying concept. Such writers are still bound by tradition and circumstance, most so-called general biology text-books being poorly integrated accumulations of botanical and zoological facts. One text that stands out as an example of what should be done on a wider scale (Plunkett's "Outlines of Modern Biology") remains one of the most widely praised but least used of the group.

Much of the force of the report lies in its reiteration of its central theme. This occurs again in Part II of the committee's report, worded, however, even more positively than before: "If there is objective evidence or sound subjective evidence that general biology courses have lasting value for the students, it has not been made available to this committee." I do not know what would constitute "sound subjective evidence"; I only know that I would hesitate to question the existence of evidence, objective or subjective, for the lasting value of any course for any students. Surely, some of the thousands of non-science students who listened to Professor Conklin's lectures in general biology at Princeton, but who went no further in biology, derived some lasting benefit. The record has been similar in other American colleges and universities, Stanford, Chicago, Yale, New York University, to name a few. I for one refuse to admit that this concept of a science of biology, introduced to America by an eminent Englishman nearly seventy years ago, should now be abandoned in the organization of introductory courses in biological science. We need more, rather than fewer, introductory courses in which there may emerge in the student's mind a concept of a unified science of life.

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A POISONOUS PEA CONTAMINATE

THE synonym "nightshade" is applied to the various species of the genus *Solanum*. Black nightshade, *S. nigrum* L., is one of the most cosmopolitan of the wild plants, extending over the entire globe. Yellow nightshade, *S. nigrum* var. *villosum* L., *S. villosum* Lam. or *S. luteum* Mill., has been found in Europe but grows mostly in the United States. Cut-leaved or three-flowered nightshade, *S. triflorum* Nutt., is a native of the Great Plains and Rocky Mountain region of the United States. All three of these nightshades are found in the Inland Empire, a section covering eastern Washington, northern Idaho and extreme northeastern Oregon.

Nightshades have become of late a serious problem to the pea industry. Many canneries have had difficulty in separating the nightshade berries from the peas. Both mature at the same time and are approximately the same size. The Food and Drug Administration prohibits the sale of peas which are adulterated with nightshade berries. This act has been questioned, because some do not consider the berries toxic but actually look upon them as a food. Doubt as to the toxicity of the yellow and three-flowered nightshades is justified considering that very little or no scientific data have been published on this point. The black nightshade was shown to contain a poisonous substance, solanine, first by Desfosses in 1821. Ecological factors cause a great variation in solanine content of all plants containing it. No quantitative data have been published on the solanine content of these plants found growing in the Inland Empire.

Work in the laboratories of the School of Pharmacy, State College of Washington, which is in progress, has reached the point where the toxicity of *Solanum triflorum* can be definitely stated. Solanidine has been indicated by qualitative test in *S. nigrum* var. *villosum* and has been isolated from the fruit of *S. triflorum*. This indicates that these species of *Solanum* are toxic, but the data concerning the amount of the toxic substance present will have to wait until work in progress has been completed.

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MERCURY IN DRAIN PIPES

RECENTLY we had occasion to clean out the drain pipe of one of our laboratory sinks and found, among other things, about a quarter of a pound of mercury trapped in the drain elbow. This quantity probably represents several years' accumulation. I recollect having similar experiences in the past and suspect a similar condition exists in the drains of most of the scientific laboratories in the nation. Might I suggest the exploration of this possibility as a means of adding a significant quantity of this vital metal to our nation's stores?

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