Brown, geologist of the St. Joseph Lead Company, Edwards, N. Y., was chosen as secretary. In addition to the members from New York State, there were delegates from Pennsylvania, New Jersey, Massachusetts, New Mexico and Ontario.

THE Massachusetts Institute of Technology has received a gift of $647,700 from Dr. Godfrey L. Cabot, of Boston. The income from the gift, which will be known as the Solar Energy Fund, will be devoted specifically to a search for direct methods of converting the sun's radiant energy into useful power or storing such energy for future use. These investigations will be continued for at least fifty years, after which the fund may be used for such other purposes as the corporation of the institute may select. To assist in the direction of these investigations, the following committee has been appointed: Professors Hoyt C. Hottel, department of chemical engineering; Arthur C. Hardy, department of physics; Ernest H. Huntress, department of chemistry; Arthur R. von Hippel, department of electrical engineering, and George W. Swett, department of mechanical engineering.

ON March 25 and 26 the new Building for Biological Sciences at the University of Oklahoma was dedicated. This building was made possible through a gift of $204,000 from the PWA authorities, and was equipped by a special appropriation of approximately $47,000 made by the Legislature of Oklahoma. Dr. Lorande Loss Woodruff, protozoologist of Yale University, was a special guest for the occasion, delivering two lectures, "Paramecium, Past and Present" and "Philosophers in Little Things." The building was officially dedicated by President William Bennett Bizzell, of the university, who spoke on "The University, Biology and the State." At the luncheon which was given for guests of the university, representing twenty-four institutions of higher learning, the following short addresses were given: "A Biologist Views Teachers and Teaching," by Dr. Roy W. Jones, of the Central State Teachers College at Edmond; "A Biologist's Land of Opportunity," by Dr. J. Clifford Shirley, of Phillips University, Enid, and "An Economic Entomologist Afield in Oklahoma," by Dr. F. A. Fenton, Oklahoma A. and M. College, Stillwater.

A SEPARATE department for the study of chemical engineering has been established by the trustees of Lafayette College and will probably open next September. The department will be centered in the mechanical engineering building. Alterations made there will provide for laboratory and classroom facilities. It is expected that apparatus will be constructed during the summer months, $4,000 having been granted by the trustees for this purpose.

DISCUSSION

SCIENCE AND GENERAL EDUCATION

IN establishing a Committee on the Improvement of Science in General Education, the American Association for the Advancement of Science has given substantial evidence of its interest in a problem of the most serious importance to the general public. A brief account of the organization of this committee has already appeared (SCIENCE, May 20), and a statement from the officers of the committee may be expected shortly; meanwhile some additional discussion seems justified by the hope that it may lead to more widespread interest. As one of the members of the committee, I am venturing some remarks.

The task which confronts this committee is that of doing what it can to improve the science instruction of the great mass of people who do not go into science as a profession. To accomplish anything towards this end will require cooperation on the part of the whole scientific fraternity and in particular the teachers of science.

It should be made clear at the outset that the committee has no warrant for thinking that it will discover any panacea. The problem is too complex and involved for that. There is, nevertheless, good reason to believe that much can be accomplished through arousing interest in the problem, providing a center for the collection and comparison of information and making known to teachers the results of such work. The experimental study on which this assumption rests will be referred to below.

There is increasing evidence that the problem of adequate science instruction for the bulk of our population is not confined to the upper levels of the educational system. Nevertheless, it seems most practical at this time for the committee to proceed with the problem as it exists in colleges and universities offering "Liberal Arts" courses in the sciences. The difficulty has been that, even in this type of course, the interests of future specialists usually dictate the selection of subject-matter and the mode of its presentation, even though there may be few if any such students present. This is in part simply a natural but regrettable consequence of the type of training which college and university teachers uniformly receive.

A number of attempts have been made to remedy this situation by providing an entirely different sort of course for the general student. These courses have frequently been launched under the lukewarm approval of the scientists themselves. We need very much to know whether the first scientific training of future specialists and non-specialists in the same

course is really impossible or at least undesirable. There is some evidence that it is neither, provided that the problem presented by the mixture of students is recognized and honestly faced.

Because the rank and file of the scientific profession consists of very busy and preoccupied individuals, it may be well to make clear the occasion for any study of science instruction in relation to general education. In general the colleges and universities of America are performing an excellent task in training professional scientists. On the other hand, there is abundant proof that the general public is not scientifically minded except in a very superficial sense. In particular it does not realize how science might contribute much more to social well-being than at present.

The scientist himself is well aware that society derives much less from the discoveries of science than it might. Though the more salable discoveries of science are usually taken up with remarkable speed, others that might be of even greater benefit to society are neglected because they are of a less commercial character. In private, at least, the scientist often expresses his disappointment that men in positions of authority do not adopt a more scientific and impersonal attitude in approaching social problems. Often, too, he is distressed to know that his budgets are the first to suffer when expenses have to be cut.

While science has produced revolutionary changes in our manner of daily living it has scarcely touched many aspects of our behavior and attitudes of mind which were developed under far different conditions from those which science has made possible. The persistence of these older forms of thought and behavior into the modern world to which they have little relationship is a source of increasing maladjustment. People are not as able as they should be to adapt themselves to the conditions of modern living and to contribute to the intelligent direction of public affairs. As is always the case when a culture is not well harmonized throughout, there are tragic and unnecessary conflicts within society and within the individual.

Increasing numbers of thoughtful people are becoming concerned over this unhappy lack of harmony in our culture, at the same time being aware that this culture is depending increasingly upon science. Some seriously believe that harmony can be achieved only by slowing down the activity of the sciences. Others believe that the remedy will come only through the unremitting prosecution of scientific research and its application in technology.

Either of these view-points represents an extreme. The basis of the problem is neither a matter of less nor more rapid scientific development, but a better integration of scientific attitude with individual and social behavior. The scientist himself represents a very small minority of society. In consequence, the problem is largely one of educating the general public. It is to the study of this problem that the new committee has addressed itself. As has been said, it can hope to make little progress without the activity of its professional colleagues. Whether these view the problem from the narrow angle of enlightened self-interest or the broader basis of citizenship in a troubled modern world, it is hoped that their generous aid will be forthcoming. Without anticipating the specific questions which the committee will propound in its forthcoming statement, it may be pointed out here that recent studies give a basis for hoping that good may be accomplished. Reliable techniques have been developed for estimating the extent to which the aims of any educational program are achieved. In a recent study, for example, it was found that

(a) Many teachers have given so little thought to formulating their conscious aims that they find at first considerable difficulty in doing so.

(b) There is a great diversity of aims as stated by those who teach general courses in the same subject.

(c) Once the aims of any particular course are stated clearly it is quite possible to measure the degree to which they are being achieved.

(d) Such inquiry results in measurable improvement in the general teaching of a science.

There is thus reason to hope that similar inquiry extended over a broader field might make it possible to discover some measure of common aim and to suggest means by which these aims would be better achieved in the interest of general education than at present.

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GRANTS IN SUPPORT OF RESEARCH ON THE BIOLOGICAL EFFECTS OF RADIATION

IN this journal indications have been furnished, from time to time,[1] regarding grants in support of research on the effects of radiation on organisms. During a period of somewhat more than eight years the Committee on Radiation of the Division of Biology and Agriculture, National Research Council, has been able to make these grants as a result of contributions made specifically for this purpose. In continuation of the program of the last three-year period, 1935–38, on the Biological Effects of Radiation, the committee announces a limited program for 1938–39 (July 1, 1938, to June 30, 1939) made possible through a new contribution of $25,000 from the Rockefeller Foundation.

[1] W. C. Curtis, SCIENCE, 69: 9–10, January 4, 1929; SCIENCE, 73: 643–645, June 12, 1931; B. M. Duggar, SCIENCE, 82: 125, August 9, 1935.