chemical processes the whole atom gets heated when electrons shift. But the right radiation or an electron stream of the right velocity will loosen the electrons without wasting energy in heating up the mass of the atom. Now the green leaves of plants are marvels of efficiency in using directly the light of the sun to form organic matter. Somehow, nobody knows just how, sunlight causes electronic shifts which tie the atoms to form all sorts of organic substances. The plant grows, develops and so we have more organic matter of all kinds. It is the most fundamental mysterious reaction in nature and one on which our food and our lives depend. Chemists have not yet duplicated such a silent efficient process. The atom is the key to many chemical problems of to-day and chlorophyll has a very good chance of becoming the key to much which concerns all living processes. Who among us is prophet enough to say what the chemistry of to-morrow will be?

We now know what master chemists can do with the atom, for from it they get power-radio, television, the vitaphone and thousands of other wonders. We know what a master chemist can do in the way of analyzing chlorophyll and breaking it up into the components, but what we want to know is how the Great Master Chemist of the Universe very quickly and so quietly produces such large amounts of organic matter, nitrogen-compounds in particular which we as investigators are now considering as the basis of all life as we know it.

Men everywhere are spending huge sums of money to make practical applications of discoveries which have been made in the field of pure research. Our advance, however, will be measured not so much by the practical applications we make, for practical applications are comparatively easy, as by the progress we make seeking knowledge regarding fundamental things, of which we are now in almost complete ignorance. If chlorophyll is in any way related to the vitamins and if the vitamins play as large a rôle in maintaining health as they are assumed to play, then certainly a knowledge of chlorophyll will do something to reduce the $15,000,000,000 annual loss of this nation due to sickness alone. The problem of pure research is not so much a problem of getting or giving of money as it is of getting workers who passionately give of themselves in the pursuit of truth for truth's sake. The most essential quality of an investigator is the spirit within and this quality is not purchasable with money.

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SCIENTIFIC EVENTS

THE AMERICAN STANDARDS ASSOCIATION

RECONSTRUCTION of the American Engineering Standards Committee to keep pace with the growth of the industrial standardization movement in the United States is now under way, according to an announcement by the committee. The principal features of the reconstruction are the definite federation of national organizations, under the name American Standards Association, in such a way that trade associations interested in standardization may more readily join in the direction of the movement; placing the technical work of approving standards in a standards council, and concentrating administrative and financial responsibility in a board of directors composed of twelve industrial executives.

The reorganization has been unanimously approved by the main committee of the A. E. S. C., and is now being voted upon by the membership. The action of the committee results from more than a year's intensive consideration of the subject by the main committee and rules committee. The latter was enlarged for the purpose to include a representative of each of the 19 member-bodies desiring representation.

Among the conditions which led to the reorganization are the growth of the trade association movement together with the predominating position which the trade association is coming to have in the field of industrial standardization, and the increasingly important direct part which the plant executive is playing in the standardization activities within his plant and in the movement as a whole. Recognition of this latter condition is reflected in the make-up of the board of directors, which will control the general administrative and financial affairs of the association. The industrial executives composing this board will be elected on nomination of member-bodies and will serve for three years.

Approval of standards and matters of procedure will be in the hands of a standards council. The council will be composed of not more than three representatives of each of the member-bodies, the councilors also serving for a period of three years.

The objects of the association, as stated in the new constitution, will be: To provide systematic means by which organizations engaged in industrial standardization work may cooperate in establishing American standards in those fields in which engineering methods apply, thus avoiding duplication of work and the promulgation of conflicting standards; to serve as a clearing house for information on standardization work in the United States and foreign countries; to further the industrial standardization movement as a

means of advancing the national economy, and to promote a knowledge of, and the use of, approved American industrial and engineering standards, both in the United States and in foreign countries, and to act as the authoritative channel in international cooperation in standardization work, except in those fields adequately provided for by existing international organizations.

THE STUDY OF RADIATION AT CORNELL UNIVERSITY

THE Heckscher Foundation for the Promotion of Research in Cornell University has awarded grants amounting to $34,550 to members of the Cornell faculty for the year 1928–29 for a concentration of effort on a single field of research—radiation.

While considerable research has already been done in this field by individual members of the departments of physics and chemistry at Cornell, the new program involves for the first time the full cooperation and interchange of facilities of both departments. Twelve professors and a large number of assistants will engage in nine major projects, each of which will concern itself with radiant energy of a particular wavelength ranging from the visible or short light rays to the invisible radio wave of unusual length.

The Heckscher research council's plan involves the cooperation of the Cornell departments of physics and chemistry. Both departments were already engaged in a number of researches in the field of radiation. These studies have been coordinated, other studies are being planned to strengthen the whole program and the work will proceed as a unit.

Following is an outline of the investigations proposed to be carried on, some of them jointly, by the departments of physics and chemistry:

1. Professor F. K. Richtmyer, of the department of physics: X-rays. In particular, X-ray spectra and the absorption of X-rays by different materials.

2. Professor C. C. Murdock, of the department of physics: The use of X-rays in studying the size and shape of colloidal particles. And, in cooperation with Professor T. R. Briggs, of the department of chemistry, it is planned to use the same method in the study of catalytic agents.

3. Professor W. D. Bancroft, of the department of chemistry, researches in photochemistry as follows: The chemistry of radicals; the action of light on catalytic agents; the theory of photochemical reactions. In addition, Professor Bancroft will collaborate with Professor J. R. Johnson, of the chemistry department, in a study of the synthesis of optically active substances.

4. Professor R. C. Gibbs, of the department of physics: Spectroscopy. The study of line spectra, especially in the extreme ultra-violet. Professor Jacob Papish, of the department of chemistry, will assist in supplying pure materials.

5. Professor John R. Johnson (chemistry) and Professor R. C. Gibbs (physics): The absorption of visible and ultra-violet light by different materials, and the relation between absorption and chemical constitution.

6. Professor M. L. Nichols (chemistry) and Professor Ernest Merritt (physics), in cooperation with Professor E. H. Kennard (physics) and Professors Johnson and Papish (chemistry): Luminescence. In particular, the relation between phosphorescence and fluorescence and the chemical constitution of different materials.

7. Professor J. R. Collins (physics): Emission and absorption in the infra-red. The first experiments planned deal with the effect of extremely high pressures on absorption—an entirely new field.

8. Professor Merritt (physics): The use of short radio waves in studying the conditions in the upper part of the atmosphere. Apparatus loaned to Professor Merritt by the Magnetic Observatory of the Carnegie Institution has been set up and will be used for observations of the reflection of short radio waves by the upper atmosphere, and valuable cooperation is assured from the Bell Telephone Laboratories, the General Electric Company and the Carnegie Magnetic Observatory. Similar cooperation is expected from the United States Navy and from certain stations in foreign countries as soon as it is needed.

9. Professor Frederick Bedell and H. J. Reich (physics): Alternating current investigations. Several of the problems proposed have a direct bearing upon the experimental methods used in the other parts of the general program.

AWARDS FOR SCIENTIFIC EXHIBITS BY THE AMERICAN MEDICAL ASSOCIATION

AWARDS for scientific exhibits made in connection with the recent meeting of the American Medical Association were made as follows:

CLASS I

[Awards in Class I are made for exhibits of individual investigations which were judged on basis of originality and excellence of presentation.]

The gold medal to Edward Francis, U. S. Public Health Service, Washington, D. C., for his thorough and important scientific contributions to the knowledge of tularemia, illustrated by his exhibit.

The silver medal to Eben J. Carey, Marquette University Hospital, Milwaukee, for an exhibit showing the results of excellent experimental work on the dynamics of origin, structure and repair of bone.

The bronze medal to Adelbert Ames, Jr., and Gordon H. Gliddon, Dartmouth Medical School, Hanover, N. H., for exhibit showing significant application of physics to ophthalmology.

Certificates of merit, Class I, to the following (alphabetically arranged):

B. J. Clawson, University of Minnesota, Minneapolis, for an exhibit emphasizing clinical and experimental phases of the study of endocarditis.