experiments, strongly suggest this. Some of our results also point to a definite probability that chlorophyll as a functioning molecule in the chloroplast may be bound to a certain class of proteins. Acetylene has recently been proposed as a possible intermediate compound in the formation of carbohydrates. Artificial photosynthesis or the duplication of the work of the green plant in the laboratory seems rather remote at the present time.

Chlorophyll and the protochlorophyll problem: PAUL ROTHEMUND (introduced by Charles F. Kettering). With the increasing knowledge about the reactions and the structure of chlorophyll the problem of chlorophyll formation becomes important. Some investigators believe that chlorophyll is formed from a colorless precursor, protochlorophyll, chlorophyllogen or leucophyll by oxidation, in general in sunlight. Noack states that Monteverde's protochlorophyll, which occurs in small quantities in plants grown in the dark, is a reduced magnesium containing substance of porphyrin character. On the other hand, the suggestion has been made that protochlorophyll is not the precursor of chlorophyll but rather a decomposition product formed due to special environmental conditions of the plant. In our experimental studies we are considering both of these theoretical interpretations. White and yellow corn was grown in absolute darkness for about two weeks and worked up by a special technique to prevent the material from changing its protochlorophyll into chlorophyll, a change which would occur under the influence of light. Extraction with acetone and transfer into ether yielded a yellow solution exhibiting red fluorescence and a typical absorption spectrum. By using chromatographic adsorption analysis a solution free from yellow plant pigments was obtained. Crystallized material is not available yet. Chlorophyll and pheophytin were reduced according to Noack with iron in 80 per cent. formic acid. The 18 per cent. hydrochloric fraction of the reaction mixture in ether yielded crystals of m.p. 246° containing methoxyl, but no magnesium. The hydrolized product was also prepared. Noack reported mixtures of substances resulting from this experiment. The reduction of chlorophyll or chlorophyll derivatives in pyridine solution with zinc dust and acetic acid was performed in nitrogen and in carbon dioxide atmosphere. The resulting colorless solutions were reoxidized by the oxygen of the air whereby the green color came back. The absorption and fluorescence spectra of the original, the reduced and the reoxidized solutions were studied. Reoxidation causes the formation of several substances; the separation of this mixture is under way. The reduction products obtained by the two methods are different from each other and are also different from protochlorophyll prepared from etiolated plants. Absorption and fluorescence spectra also reveal that the products from the reduction with zinc dust in carbon dioxide are not identical with those formed in nitrogen atmosphere. Details of these investigations will be published elsewhere.

Elements and general Jupiter perturbations of ten Watson planets: A. O. LEUSCHNER. To be published later.

SCIENTIFIC EVENTS

THE RANGE OF THE JAPANESE BEETLE

THE U. S. Department of Agriculture, in its annual survey of the spread of the Japanese beetle, found a well-established infestation at St. Louis, Mo.; a less extensive one at Indianapolis, Ind., and another at Charlottesville, Va. According to Lee A. Strong, chief of the Bureau of Entomology and Plant Quarantine, with these three exceptions, no real infestation came to light outside the beetle's established range in Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, New Jersey, Pennsylvania, Rhode Island, Vermont, West Virginia, Virginia and the District of Columbia.

Through the instrumentality of plants or other materials, Japanese beetles are likely to establish themselves at points remote from the area along the Atlantic seaboard where they are firmly entrenched. To delay long-distance advances, the Department of Agriculture, through the federal plant quarantine, seeks to keep all products that might harbor the beetle from being shipped from infested to non-infested territory.

The largest control program so far undertaken against the Japanese beetle at an isolated infestation is now under way at St. Louis. Lead arsenate provided by the Federal Government is being applied to the soil in the 117 city blocks. The local relief administration is supplying laborers to assist in applying the material and the city fire department is lending hose lines. Similar measures, though on a smaller scale, will go into effect in the limited sections found to be infested in Indianapolis and Charlottesville.

Owing to a curtailment in funds, only 31,000 of the 56,000 traps owned by the Department of Agriculture were used this year. These traps were operated from Virginia to Maine. New catches were recorded in 5 cities in Maine; in 58 Maryland communities, both inside and outside the regulated zone; in Detroit, Mich., where a few beetles have been trapped each year since 1932; in 9 New York cities; in 6 localities in Ohio; at Erie, Pa., where an infestation was discovered in 1931; in 6 cities in Virginia, and at 7 points in West Virginia. In none of these places is the beetle well established. Either the numbers found were too small to constitute real infestations or the beetles present were the survivors of incipient infestations that are not increasing.

The results of the survey are said to show no need for changing the existing quarantine or for bringing

any additional territory under quarantine. The quarantine already in force in the infested areas will be continued.

RELATIONS OF THE UNIVERSITY OF CALIFORNIA WITH PUBLIC AND PRIVATE BUSINESS

A STATEMENT of the general policy to be followed by the University of California in making its facilities available for the use of the public or of private business, and the extent to which faculty members will be permitted to engage in private employment, has been issued by President Robert G. Sproul.

Dr. Sproul said that the statement is issued "in order that there may be a clear understanding, both by members of the university and by the public, concerning service by the university or by members of its faculty to the people and the industries of the state."

In order to aid in directing this service policy, an advisory committee of faculty members and university alumni has been named to cooperate with the administration. It includes: Dean Charles Derleth, of the College of Engineering; Dean C. B. Hutchison, of the College of Agriculture; Professor B. M. Woods, chairman of the department of mechanical engineering; Dr. R. E. Davis, professor of civil engineering; Dean F. H. Probert, of the College of Mining; Alex J. Dickie, '98; Donald L. Kieffer, '19, and E. L. Oliver and Max Thornburg, '21.

The service policy outlined by Dr. Sproul provides:

Members of the university may render professional service for compensation as long as such service does not interfere with their prescribed duties and unless their university employment forbids them to accept additional employment, or their appointment requires them to render a consulting or advisory service without charge.

Within these limits, teachers of professional subjects are encouraged to engage in the practise of their professions so far as may be necessary to maintain professional competency. Such activities are to be engaged in under private arrangement, and fees charged are to be on a scale prevailing within the professions practised. The university will not approve the employment of its members, however, in routine tasks of a commonplace type, undertaken primarily to supplement personal income.

The participation of the university itself in tests and investigations shall be limited to activities leading to the extension of knowledge or increased effectiveness in teaching. No tests or investigations shall be undertaken by the university which might interfere with the teaching responsibilities of a faculty member.

The results of all tests and investigations made by the university shall be available for common use by the public and shall not be for the exclusive use of parties sponsoring or conducting the work.

The laboratories of the university shall not be made available for tests of a purely commercial nature unless satisfactory facilities for such tests do not exist elsewhere.

Commercial tests involving controversial elements are not to be undertaken except at the direct and unanimous request of representatives of all parties to the controversy.

The university is to make a charge ample to cover all direct and indirect costs of all tests or investigations which it undertakes.

The use of the name of the university for purposes of advertising will not be tolerated.

THE YALE SCHOOL OF MEDICINE

A SLIGHT increase in the amount available for research problems in Yale University School of Medicine during the year 1933–34 is reported by Dean M. C. Winternitz in his annual report to President James Rowland Angell. During the period of the depression no decreases in the salary scale nor in research funds have occurred, although fewer appointments and promotions have been made. The appointment of assistants to aid senior men in their individual research work is recommended in the report. The plan is to give certain senior investigators two aids with no responsibilities other than the research work of the staff member to whom they are assigned. Appointments are to be for two years and they are to expire in alternate years so that one of the two men will always have had one year's experience on the project.

The number of students enrolled during the year was 211 of whom 40 graduated. All graduates obtained interneships and are located in 31 hospitals in 16 cities and 9 different states. One out of every six students in the school is entirely self-supporting. Half of the students either work during the school year to help support themselves or receive scholarship aid.

Dean Winternitz expresses a belief that the medical curriculum must remain within certain definite limits, but that the field must be exposed to the advances in the social sciences as well as in the biological sciences. The Institute of Human Relations, he reports, has encouraged a number of social studies in which the rôle of health has been given careful consideration, and it is expected that from these other studies may develop which may help the physician to evaluate more satisfactorily the contributions which medicine can make to the health of the individual.

THE INTERNATIONAL COMMISSION ON ILLUMINATION

THE 1935 session of the International Commission on Illumination will be held in Berlin, from July 2 to 9, according to an announcement made by the United States National Committee. The committee, which held its annual meeting in New York on November 9, includes among its membership representatives