The new quarters of the department comprise some 30,000 square feet of floor space. In 1872 the systematic study of insects at the university began in the tower room of McGraw Hall, just below the university's great bell and the nine smaller bells of the McGraw chimes. John Henry Comstock, then a junior in the Natural History Course, was also master of the chimes. In the fall term of 1872–73 C. V. Riley, of St. Louis, Missouri, gave a course of twelve lectures on economic entomology, but it was not until the next year, with Dr. Comstock an instructor in economic entomology in the School of Agriculture, that resident courses in the subject were given. In 1881 the department was moved to the second floor of White Hall, and since 1906 had been housed in Roberts Hall.

The work in entomology, limnology and apiculture now occupies the five floors of Comstock Hall, with a staff of nine professors under the headship of Dr. James G. Needham, '98, two assistant professors and twelve instructors. Ornithology, under the direction of Professor Arthur A. Allen, '07, remains in McGraw Hall. In addition to the numbers of undergraduates who take courses in the department, fifty-six graduate students chose majors in entomology in 1933–34.

Outlying links with the department include an insectary, an experimental fish cultural station, a biological field station, and three wild life preserves, all of them aggregating 650 acres.

RECENT DEATHS

DR. THEOBALD SMITH, president of the board of scientific directors of the Rockefeller Institute for Medical Research, from 1915 to 1929 director of the department of animal pathology at Princeton, New Jersey, died on December 10 at the age of 75 years.

DR. PALMER C. RICKETTS, president since 1901 of the Rensselaer Polytechnic Institute and a member of the faculty since 1875, died on December 10 at the age of 78 years.

SIR HORACE LAMB, from 1885 until his retirement in 1920 professor of mathematics at Owens College and the University of Manchester, has died at the age of 85 years.

SCIENTIFIC NOTES AND NEWS

DR. GEORGE H. WHIPPLE, of the School of Medicine and Dentistry of the University of Rochester, and Dr. George R. Minot and Dr. William P. Murphy, of the Harvard Medical School, joint recipients of the Nobel prize in physiology and medicine, were present at ceremonies held in Stockholm, on December 10, on the occasion of the presentation to them by King Gustaf of the diplomas, gold medals and money awards. Professor Harold C. Urey, of Columbia University, who was awarded the prize in chemistry, was unable to be present, but expects to go to Stockholm in February.

AT the annual dinner and meeting of the New York Academy of Sciences, to be held at the American Museum of Natural History on December 17, the speakers will be Dr. Harlow Shapley, director of the Harvard College Observatory, and Dr. Clyde Fisher, of the American Museum. The subjects of their addresses are, respectively, "An Explorer in the Metagalaxy" and "The Sun and Moon in Motion Pictures."

DR. CHARLES NORRIS, who since 1918 has been chief medical examiner of New York City, has been presented with a gold medal by the New York Academy of Medicine for "his outstanding work in forensic medicine." On this occasion Dr. James Ewing made the presentation, and Mayor La Guardia delivered an address.

DR. ERNEST BROWNING FORBES, director of the Institute of Animal Nutrition of the Pennsylvania State College, was the honor guest of the American Society of Animal Production at its twenty-seventh annual meeting in Chicago on November 30 and December 1. At the banquet, a portrait of Dr. Forbes, painted by Robert W. Grafton, was presented to the Saddle and Sirloin Club for inclusion in its portrait gallery of those who have notably served animal industry and agriculture.

A PORTRAIT of Dr. Leo F. Rettger, professor of bacteriology at Yale University, was presented to the department by his friends and former students at a meeting on December 1 of the Connecticut River Valley Branch of the Society of American Bacteriologists. The portrait was painted by W. S. Cummings, of the Yale School of Fine Arts.

DR. GEORGE A. BOLE, for nine years director of ceramic research in the Engineering Experiment Station of the Ohio State University, was recently presented by the Ohio Ceramic Industries Association, in recognition of his contributions to the ceramic industry, with three vases, the work of Dr. Charles F. Binns, whose death has since occurred, accompanied with an illuminated manuscript. Presentation was made at the annual meeting of the association by W. Keith McAfee, past-president, who spoke briefly of the career of Dr. Bole.

A. E. MARSHALL, consulting chemical engineer of New York City, was reelected president of the American Institute of Chemical Engineers at its recent annual meeting in Pittsburgh.

PROFESSOR ARTHUR W. HIXON, of Columbia Uni-

versity, was elected on December 7 chairman for 1935 of the New York section of the American Chemical Society. Other officers elected were: Dr. L. W. Bass, director of research of The Borden Company, *vice-chairman;* Dr. D. P. Morgan, chemical economist for the firm of Scudder, Stevens and Clark, *secretary-treasurer.*

DR. DAVID LINN EDSALL, dean of the Harvard Medical School and of the School of Public Health of Harvard University, will retire with the title of dean emeritus at the end of the academic year.

DR. FREDERICK B. MANDEVILLE, formerly chief röntgenologist at the Paralta Hospital, Oakland, California, has been appointed full-time professor of röntgenology and röntgenologist to the hospital division in the Medical College of Virginia, Richmond.

DR. ROSWELL H. JOHNSON, formerly of the University of Pittsburgh, has been appointed social hygienist in the Palama Settlement, Honolulu, and part-time professor in the University of Hawaii. He will give courses in social hygiene and eugenics.

HURLBUT S. JACOBY, now holding an administrative position in engineering with the National Recovery Administration, has been appointed to the new position of director of industrial research which has been established at the Ohio State University. Mr. Jacoby is the son of Henry S. Jacoby, emeritus professor of engineering of Cornell University.

W. C. MILLER, lecturer in the department of animal genetics at the University of Edinburgh, has been appointed professor of animal husbandry at the London Veterinary College.

PRINCIPAL DR. T. S. WHEELER, of the Royal Institute of Science, has been elected dean of the faculty of science and a member of the syndicate of the University of Bombay.

THOMAS ROWATT has been appointed director of the Royal Scottish Museum, Edinburgh, in succession to the late E. Ward.

Nature states that Dr. James Davidson, lecturer in the department of pathology in the University of Edinburgh, has been appointed officer in charge of the scientific laboratory which is to be instituted at the London Police College at Hendon. Dr. Davidson's main function will be to assist in the investigation of criminal cases, to give instruction in scientific methods of crime detection to students at the College and at Peel House and to other members of the force, and to undertake research work.

A GRANT has been made to the University of Chicago by Nathan Dauby, Cleveland, and Morton J. May, St. Louis, trustees of the Beaumont Foundation of Cleveland, for the purpose of supporting the researches on the adrenals and other ductless glands of Dr. J. M. Rogoff, formerly associate professor of experimental medicine at Western Reserve University. Dr. Rogoff is now working in the department of physiology at the University of Chicago.

THE Committee on Scientific Research of the American Medical Association has made a grant to Dr. Paul L. Day and Dr. William C. Langston, of the University of Arkansas School of Medicine, for studies on the effect of vitamin G withdrawal on the monkey.

THE Ramsay Memorial Fellowship Trustees have made the following awards of new fellowships: G. C. Hampson, a British fellowship of £300, tenable for two years, at the University of Oxford; George Bryce, a Glasgow fellowship of £300, tenable for two years at the University of Cambridge; M. Berton, a French fellowship, at the Imperial College of Science and Technology, London; Dr. Charles Haenny, a Swiss fellowship of £300, at Birkbeck College, London; Professor G. Semerano, an Italian fellowship of £300, at the Imperial College of Science and Technology, London; Dr. M. G. van ter Horst, a Netherland fellowship of £300, at the University of Cambridge. The trustees have renewed the following fellowships for the same year: Dr. C. Kawassiades (Greek Fellow), Ramsay Memorial Laboratory of Chemical Engineering, University College, London; Dr. Ikutaro Sawai (Japanese Fellow), University College, London; Dr. A. G. Winn (British Fellow), University College, London.

DR. SIMON FLEXNER, director of laboratories, Rockefeller Institute for Medical Research, New York, will deliver the Pasteur Lecture of the Institute of Medicine of Chicago, on April 26. His subject will be "Virus Diseases of the Central Nervous System: their Extent and Mode of Infection."

DR. FRANCIS G. BENEDICT, director of the Nutrition Laboratory of the Carnegie Institution of Washington, was the guest speaker at the Western Reserve University Chapter of the Society of the Sigma Xi on November 21. Dr. Benedict spoke to an audience of one hundred and fifty chapter members and their guests on "Body Temperature" with special reference to human and animal physiology. Dr. V. C. Myers, past-president of the chapter, presided.

COLONEL FIELDING H. GARRISON, librarian of the William H. Welch Memorial Library of the Johns Hopkins University, addressed the faculty and students of the School of Medicine of Vanderbilt University on October 18, on "Life as an Occupational Disease."

C. C. PATERSON, director of the research labora-

tories of the General Electric Company, Wembley, England, gave a lecture at the Royal Institution on November 21 on "The Liberation of the Electron." It was the first of a new series of four research and development lectures arranged by the British Science Guild and the Royal Institution. Lord Eustace Percy, M.P., presided.

THE list of DeLamar lecturers at the Johns Hopkins University for the present academic year, with dates and topics, are as follows: November 20, Dr. James Angus Doull, professor of hygiene and public health, Western Reserve University, "The Epidemiology of Leprosy with Particular Reference to a Recent Study in the Philippines"; December 4, Dr. Alfred J. Lotka, general supervisor, Statistical Bureau, Metropolitan Life Insurance Company, "The Adventure of Life"; January 15, Dr. Leslie T. Webster, associate member, Rockefeller Institute for Medical Research, "Host Response to Infectious Agents"; February 19, Dr. Harrison P. Eddy, civil engineer, Boston, "Municipal Sanitation and the Public Health"; March 19, Dr. F. Maurice McPhedran, assistant professor, The Henry Phipps Institute, University of Pennsylvania, "The Pathogenesis of Tuberculosis in Relation to its Public Health Economics"; early in April, Dr. Richard E. Scammon, dean of medical sciences, the University of Minnesota, "The Effect of Plague on Western Europe."

THE Committee on Scientific Research of the American Medical Association invites applications for grants in aid of research on problems bearing on the clinical aspects of medicine and surgery. Inquiries may be addressed to the committee at 535 North Dearborn Street, Chicago, Illinois.

THE School of Mathematics of the Institute for Advanced Study, Princeton, N. J., each year allocates a small number of grants-in-aid to young mathematicians and mathematical physicists "for the purpose of enabling them to broaden their scientific outlook and to work on their research programs at Princeton in contact with the members of the institute and university faculties." Only such candidates will be considered as have already given evidence of ability in independent research comparable at least with that expected for the degree of doctor of philosophy. Applications for the academic year 1935–36 should be filed before February 1, 1935. Blanks for this purpose may be obtained from the School of Mathematics, The Institute for Advanced Study, Fine Hall, Princeton, N. J.

AT the annual meeting of the Board of Trustees of the Laboratory of Anthropology at Santa Fé, it was voted to amend the constitution to provide for an advisory board of not to exceed thirty-two members. The advisory board elects from among its members the chairman and vice-chairman of the laboratory to serve for one year. These officers, together with six other members of the advisory board serving for three years each, will constitute the active Board of Trustees. The Board of Trustees will meet twice a year, once in Santa Fé and once in the East, the eastern meeting being timed to correspond with the annual meeting of the advisory board. Members of the board are: A. V. Kidder, *chairman;* C. E. Guthe, *vice-chairman;* Elsie Clews Parsons, A. L. Kroeber, J. F. Zimmerman, Fay-Cooper Cole, H. S. Colton and Duncan Strong.

THE Division of Applied Mechanics, of the American Society of Mechanical Engineers, beginning in March, 1935, will publish a *Journal of Applied Mechanics,* with the cooperation of: Dr. R. Eksergian, Dr. J. Goff, Professor J. C. Hunsaker, Dr. J. P. Den Hartog, Professor T. von Kármán, Professor G. B. Karelitz, Dr. A. Nadai, Mr. A. I. Lipetz, Mr. J. Ormondroyd, Mr. R. E. Peterson, Professor S. Timoshenko. The technical editor will be J. M. Lessells, Swarthmore, Pa. The *Journal* will appear four times each year in issues containing about eighty pages each. It will consist of original papers in general mechanics, elasticity, hydrodynamics, aerodynamics, strength of materials and thermodynamics, similar to those published during the last few years in the *Transactions* of the Division of Applied Mechanics. Emphasis will be made as heretofore on the industrial applications of such research. It will also contain book reviews and reports of research work in engineering mechanics.

DEFINITE proof that the smaller European elm bark beetle is a carrier of Dutch elm disease has been obtained by entomologists of the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture, according to an announcement made at a conference on this disease on December 5 by William Middleton. Mr. Middleton and his coworkers have proved that beetles from infected elms are contaminated with the fungus of the disease and transmit it when feeding in the crotches of healthy trees. Three instances of such transmission have been obtained on three different elm trees. The possibility that many other insects, including other boring species and sucking and leaf-eating insects, are carriers of the fungus of Dutch elm disease remains to be studied. So far, however, the bark beetle, *Scolytus multistriatus,* is the only insect known in this country to carry the infection from one tree and implant it in another. Observations to date indicate that there are two complete and a partial third generation of the beetles annually and that from about the middle of May until after the

middle of September, there is an almost continuous supply of adult beetles. The retarded individuals of one generation overlap the more advanced individuals of the subsequent generation.

AFTER searching the deserts and foothills of Russian Turkestan and most of Turkey for plants to control soil erosion, H. L. Westover and C. R. Enlow, plant explorers of the U. S. Department of Agriculture, have returned with about 1,800 lots of seeds after an expedition lasting seven months. Because of the unusually adverse conditions for plant life where much of this seed was collected, it is hoped that plants of real value for the Great Plains and the Southwest will be found in the collection. Most of the collections represent grasses or legumes which form a thick turf close to the ground. Others represent shrubs whose root systems looked promising as soil-binders. Seeds from a few trees also were brought back. Most of the seed lots came from plants that are edible by live stock, but this quality was not regarded as of principal importance in making selections. Officials of the Soviet governments gave the explorers every possible assistance. Botanical experts were able in almost every instance to give all the necessary information concerning the plants of the regions visited. This information made it possible to avoid plants that are poisonous or otherwise undesirable. The officials of the various republics supplied automobiles, horses and camels to transport the exploration party over Turkestan. Turkish government officials likewise cooperated in every way.

The department of physics of the University of Maine was host on October 27 to the staff members of the departments of physics of all the other colleges in Maine. This group meets twice each year for the purpose of discussing the teaching of physics in the Maine colleges. After an informal inspection of the laboratories, the program was opened with a paper on "Modern Concepts of Physical Units" by Professor N. C. Little, head of the department at Bowdoin College and a member of the committee on units of the American Association of Physics Teachers. The second paper was by Professor William R. Whitehorne, head of the department at Bates College, on a phase of photographic copying now being carried on there. Following a luncheon served in the physics library, the afternoon session was opened with a discussion of a new type of thermal conductivity apparatus by Professor A. L. Fitch, of the University of Maine. Following this came a discussion of grades in beginning physics led by Professor C. B. Crofutt. Two papers were given concerning researches at the university. R. A. Allen, a graduate student of physics, described an experimental study of the magnetic field intensity in the neighborhood of a long solenoid, and Professor C. E. Bennett described his researches on the optical constants of gases.

DISCUSSION

BALANCED DIETS, NET ENERGY VALUES AND SPECIFIC DYNAMIC EFFECTS

A FACT that is not infrequently lost sight of in contemporary nutritional research[1] is that the utilization of any food nutrient for any purpose in the animal body requires the simultaneous presence of all other nutrients required for that purpose. And for the most complete sustained utilization of any food nutrient, the proportions in the diet of it and all other required nutrients must attain or exceed certain minimum values. For example, an adult man may require 40 grams of protein daily, although, consuming only this, he will not be able to establish nitrogen equilibrium. If his energy requirements are simultaneously covered, he may be able to establish nitrogen equilibrium, but there is no reason to expect that he could prevent losses of nitrogen from his body indefinitely unless his daily diet contains also at least certain minimum proportions of each nutrient, inorganic as well as organic, that is required for all the animal functions essential to the maintenance of life. He is then receiving what may be called a "balanced diet" for adult maintenance. It is of course well known that diets may be unbalanced by including in them excessive proportions of some nutrients, such as protein or vitamin D, but this is a phase of the problem about which little definitely can be said.

For the growing animal we have a similar conception of a balanced diet, and in this case there is available much more information concerning nutrient requirements, for in the science of nutrition, as in the medical sciences, the adolescent animal has received much more attention than has the adult.

It is reasonable to assume that the balanced or unbalanced character of a diet for growth will be reflected in the efficiency with which that diet promotes growth. The completely balanced diet will promote growth the most efficiently, in the sense that, when compared with any less completely balanced diet

[1] For example, vitamin units are commonly defined as amounts that will produce certain more or less well-defined physiological effects. In these definitions no reference is made to the simultaneous necessity of other nutritive factors, and in the methods used for vitamin assay no provision is made to assure adequate, or even constant, intakes of other nutrients.