garden; $1,075.81 for research; $2,874.78 for publication; $1,121.96 for the training of garden pupils (in addition to the allotment which those holding scholarships receive and which is offset by their services in the garden); $2,480.93 in carrying out bequests made by the founder of the garden; and the remainder for expenses connected with the administration and maintenance of revenue property.

In connection with a popular account of the garden, written by the director at the request of the editor of the *Popular Science Monthly* and published in the January number of that magazine, it is interesting to note that a net gain of 1584 species or varieties cultivated at the garden was made in 1902, bringing the total up to 11,551; 21,052 more persons visited the garden in 1902 than ever before recorded, bringing the total up to 112,314 for the year; the herbarium, which now includes 427,797 specimens valued at $64,169.55, was increased by the incorporation of 62,844 specimens; the library, which now includes 41,224 books and pamphlets valued at $67,506.30, was increased by the addition of 2,516 books and 2,696 pamphlets; and the current list of serial publications received at the library has been brought up to 1,160.

The effort which the administration of the garden is making to serve the three principal purposes of Henry Shaw in founding the garden, is evident from the expenditures above recorded for the maintenance of a beautiful and instructive garden; by the expenditure for the instruction of garden pupils and the support—within the provisions of Mr. Shaw's will—of the Henry Shaw School of Botany, of Washington University, in which, in addition to undergraduates, one candidate for the Master's degree and four for the Doctor's degree in botany are said to be registered; and by the expenditures for research and the publication of the results of research noted above, and the mention in the report of extensive field study undertaken by the director in connection with a revision of the Yuccas and related plants, published in the volume issued last summer.

SCIENTIFIC NOTES AND NEWS.

Dispatches from Edinburgh report that in furtherance of his educational scheme for Scotland Mr. Andrew Carnegie has decided to endow a trust for scientific research with a fund of $5,000,000.

A meeting of the executive committee of the Carnegie Institution was held at Washington on January 24. Appropriations were made exhausting the $200,000 allotted by the trustees for grants. All the research assistants have not, however, yet been appointed, and those who wish to be considered in this connection should apply in accordance with the notice published in the issue of Science for January 9.

Dr. W. A. Cannon, A.B. (Stanford University, 1899): A.M., 1900, Ph.D. (Columbia University, 1902), has been appointed resident investigator of the Desert Botanical Laboratory of the Carnegie Institution. Mr. Frederick V. Coville and Dr. D. T. MacDougal, of the advisory board of the laboratory, started on January 24 on a tour of inspection of the region west of the Pecos River in Texas, along the Mexican boundary, for the purpose of fixing upon a location for the laboratory.

King Oscar of Sweden and Norway has conferred the Norwegian medal 'for merit' on M. Berthelot, the eminent French chemist.

The Norman medal of the American Society of Civil Engineers has been awarded to Professor Gardner S. Williams, of Cornell University, for a paper entitled 'Experiments upon the Effect of Curvature on the Flow of Water in Pipes.'

The board of control of the Naval Institute has awarded the gold medal and prize to Professor P. R. Alger, U.S.N., for his essay on 'Gunnery in the Navy; Causes of its Inferiority and its Remedy.'

The Rumford Committee of the American Academy of Arts and Sciences has made the following grants in aid of investigations in light and heat: To Dr. Ralph S. Minor, of Little Falls, N. Y., $250 for a research on the dispersion and absorption of substances for ultra-violet radiation; to Dr. Sidney D.

Townley, of Berkeley, Cal., $100 for the construction of a stellar photometer of a type devised by Professor E. C. Pickering and already in use in the study of the light of variable stars; to Professor Edwin B. Frost, $200 for the construction of a special lens for use in connection with the stellar spectrograph of the Yerkes Observatory to aid in the study of the radial velocities of faint stars; to Professors E. F. Nichols and G. F. Hull, of Dartmouth College, $250 for their research on the relative motion of the earth and the ether; to Professor George E. Hale, of the Yerkes Observatory, $300 for the purchase of a Rowland concave grating to be used in the photographic study of the spectra of the brightest stars.

DR. NICHOLAS SENN, of Rush Medical College, University of Chicago, is making an extended trip through the West Indies and South America.

DR. WHERRY, of the department of bacteriology of the University of Chicago, has been appointed pathologist in the Government Municipal Health Laboratory in the Philippine Islands.

FROM the first of January, Mr. James Gurney, for nearly forty years head gardener at the Missouri Botanical Garden, retires from active service with the title of gardener emeritus, in which capacity he will continue the experimental breeding of decorative plants, in which field he has attained considerable success.

DR. MARCELLIN BOULE has been named to succeed M. Albert Gaudry as professor of paleontology in the Paris Museum of Natural History.

THE appointment by the council of Mr. W. L. Sclater as secretary of the Zoological Society of London appears to have caused a good deal of discussion and may not be confirmed by the fellows. In addition to this appointment it is understood that Mr. W. E. de Winton has been appointed to the new and temporary office of acting superintendent of the gardens with a view to considering questions affecting their reorganization.

THE Pathological Society of Philadelphia held a symposium on snake venom at the meeting on January 22. The speakers announced were Drs. Weir Mitchell, Flexner, Naguchi, Kinyoun and MacFarland. Dr. Welch, of Johns Hopkins University, opened the discussion.

DR. H. M. SMITH, of the U. S. Commission of Fish and Fisheries, delivered an illustrated lecture before the Geographical Society of Baltimore on the evening of January 20, the subject being 'How the Government maintains the Fish Supply.'

MR. ROBERT T. HILL, of the U. S. Geological Survey, who visited Martinique as representative of the National Geographic Society, and whose preliminary reports upon the St. Pierre disaster have been published in the *National Geographic Magazine, The Century, Collier's Weekly* and the daily press, is engaged upon a careful study of the scientific aspects of the eruptions and he hopes to present his views on the subject during the coming year. He is also completing a monograph on the Windward Islands for Professor A. Agassiz to be published by the Museum of Comparative Zoology of Harvard College. This work will be the result of several years of careful study of the islands and will thoroughly discuss the details of their geological structure and their bearing upon the alleged Windward Bridge and the myths of Atlantis. Mr. Hill is also busily engaged upon an extensive monograph on the Trans Pecos province of the Rocky Mountain region, which he hopes to have completed during the coming year. He has also in hand a large comprehensive geographical work upon the Republic of Mexico. From this country, where he has been gathering notes for the past fifteen years, he has just returned, after a most interesting mule-back trip across the southern end of the Sierra Madre between Mexico City and Acapulco. During the coming spring, he proposes to make a section of the Eastern Sierra Madre of Mexico, to revisit Martinique, and to spend the late summer in Europe for the purpose of continuing his comparative studies of the European and American Cretaceous faunas.

THE Entomological Society of Washington has passed resolutions as follows:

Resolved, That the Entomological Society of Washington herewith expresses its keen appreciation of the great loss American science, and particularly American preventive medicine, has sustained in the death of Major Walter Reed, Surgeon U. S. Army. Although not a zoologist, he has been preeminent among physicians in making practical application of zoologic knowledge in saving human life, and his discovery and demonstration of the transmission of yellow fever by mosquitoes belonging to the species *Stegomyia fasciata* must take rank scientifically as one of the most brilliant, and practically as one of the most important discoveries ever made in applied zoology.

Resolved, also, That we heartily endorse the idea that Congress be urged to make ample provision for the support of Doctor Reed's widow and daughter. Had Doctor Reed been in private practice or on the faculty of the medical school of an endowed university, his income would have been much larger than that he received in the Army. Had he discovered some mechanical device which could in any way compare in importance, in saving lives and property, with the discovery he made in regard to yellow fever, he would have realized financial benefits which would have made him a multimillionaire, and even if Congress should vote an unusually generous pension, the sum could represent only an infinitesimal interest on the money which Doctor Reed's medico-zoological discovery will save this country and other countries.

Resolved, further, That this Society express to Mrs. Reed its sympathy in her bereavement.

Committee: CH. WARDELL STILES.
L. O. HOWARD.
W. H. ASHMEAD.

PROFESSOR ESTEVAN ANTONIO FUERTES, a distinguished civil engineer, and for many years head of the College of Civil Engineering at Cornell University, died on January 23. He had been a member of the faculty since 1873 until last November, when he retired on account of failing health. Born at San Juan, Porto Rico, on May 10, 1838, he was employed from 1861 to 1863 in the public works department of Porto Rico. He came to this country in 1863 as assistant engineer of the Croton Aqueduct Board, of which he was engineer from 1864 to 1869. He was engineer-in-chief of the ship canal expedition which the United States government sent to Tehuantepec and Nicaragua in 1870. After two years in New York city as a consulting engineer he became dean of the department (now college) of civil engineering at Cornell.

THE death is announced of M. Gruey, director of the observatory at Besançon. He has bequeathed his fortune to the observatory.

THE Rev. Henry W. Watson, D.Sc., F.R.S., for nearly forty years rector of Berkswell, died on January 11, aged seventy-five years. He was educated at King's College, London and Trinity College, Cambridge, where he became a fellow. He was subsequently mathematical lecturer at King's College and master at Harrow School. He is known as the author of numerous books and articles on mathematical and physical subjects, the latter being concerned with the kinetic theory of gases, electricity, magnetism, etc.

MR. JAMES WINSHURST, F.R.S., known for his work in electricity died on January 3, aged seventy years.

M. PIERRE LAFITTE died on January 4 in his eightieth year. M. Lafitte had been since 1893 professor of a chair created at that time in the Collège de France for the history of science, on which subject he had long lectured, in the rooms formerly occupied by Comte whose disciple he was.

WE regret also to record the deaths of Dr. Albert Hénocque, assistant director of the laboratory of biological physics at the Collège de France, and of Dr. Max Schrader, professor of surgery at Bonn, and Dr. Panas Photinov, professor of surgery at the Paris Faculty of Medicine and formerly president of the Academy of Medicine.

THE Civil Service Commission will hold on March 3 and 4 an examination for the position of aid in zoology in the National Museum and on March 10 an examination for the position of aid in herpetology. The salaries of these positions are $60 and $50 a month respectively.

THE Information Committee of the Engineers' Club, of Philadelphia, has arranged for an excursion to New York City on Saturday, February 7, leaving Broad Street Station on the 7:33 A.M. train. The trip will be made without expense to the members. After an inspection of the plant of the Barber Asphalt Company at Long Island City, it is proposed to visit the New York Subway, now in course

of construction, returning to Philadelphia in time to attend the regular meeting of the Club.

MR. ANDREW CARNEGIE has offered to the College of Physicians in Philadelphia $50,000 for the maintenance of its library, conditioned upon the college raising $50,000 more. Of this sum Mr. F. W. Vanderbilt has given $10,000 and Mr. Clement A. Griscom $5,000.

THE will of the late Dr. Bushrod W. James bequeaths to the city of Philadelphia a property on Mount Vernon street, all his instruments and office appliances, and $55,000 for the maintenance of 'an institution for the examination, treatment and operation of eye, ear, nose, throat, cardiac and pulmonary diseases.' His books and an endowment of $40,000 are given for the support of a free library.

The Electrical World states that the Municipal Council, of Paris, France, has voted $600 for the creation of a bureau of scientific information for foreigners. Many foreign scientific men annually visit Paris for inquiry and study in holiday times, when heads of museums, collections and libraries are away. A competent linguist has now been appointed to reply to inquiries, verbally or in writing.

THE *Scotia* of the Scottish National Antarctic Expedition arrived at the Falkland Islands on January 6.

THE New York Association of Biology Teachers will meet in the Board of Education building, 59th Street and Park Avenue, on Friday, January 30, at 8:15 P.M. The subject for the evening is 'The Public Scientific Institutions and the School System,' which will be discussed by Dr. H. C. Bumpus, director American Museum Natural History; Dr. N. L. Britton, director-in-chief New York Botanical Gardens; Dr. C. H. Townsend, director New York Aquarium, and Dr. A. G. Mayer, curator Division of Natural Science, Brooklyn Museum. The members of the Association will be glad to welcome to this meeting all teachers and school officers who are interested in the progress of nature study, as well as those whose chief concern is with high school biology.

THE national convention of delegates from the various State Boards of Health, called to consider the danger threatened by the possible introduction of the bubonic plague into the United States, was held in Washington on January 19. Resolutions were adopted stating that the presence of the plague in San Francisco has been established beyond doubt and blaming severely the gross neglect of official duty by the State Board of Health of California, the obstructive influence of the recent governor of California and the failure of the city government of San Francisco to support its city Board of Health.

NEW information regarding the coal, gas, and oil fields of western Pennsylvania, which was obtained last summer by the U. S. Geological Survey, through Mr. R. W. Stone, in cooperation with the state of Pennsylvania, is soon to be made public by the government in the form of a new geologic map, which will form a part of the Waynesburg geologic folio. The folio will include, also, descriptive text. The map will embrace a section 13 by 17 miles in eastern Greene County, and will be based upon a topographic map previously issued by the same survey, showing in detail the surface features of the region. The geologic map will be of special importance in showing the outcrops of the workable coal beds of the quadrangle. One of its most prominent features will be the representation of the geologic structure of the region by contour lines drawn on the floor of the Pittsburg coal. These contours show that the strata have been thrown into broad folds which cross the territory in a northeast-southwest direction. Since the accumulation of oil and gas is directly influenced by such structures, their accurate representation is of the greatest importance to operators searching for the productive territory. The most important fold in the quadrangle is known as the Waynesburg anticline. Upon the crest and western flank of this arch is located the Waynesburg gas field, which is one of the most important producers in western Pennsylvania. Future demands for bituminous coal will probably cause shafts to be sunk to the Pittsburg seam in many parts of this territory, in which case the structural features as shown on this map will be of great value in determining the location of such

shafts and in indicating the depth below the surface at which the coal will probably be found.

UNIVERSITY AND EDUCATIONAL NEWS.

Mr. Frederick W. Vanderbilt, of New York, has announced his intention of giving to Yale University another dormitory for the Sheffield Scientific School. Ground has just been broken for the first dormitory, which will be completed in June, 1904, and will contain fifty rooms providing for seventy-five students.

Wellesley College is to have, through the generosity of Mr. John D. Rockefeller, a new power plant. Apparatus will be installed for heating all the buildings on the college grounds, which extend over several acres, and the grounds will be lighted by electricity.

Mr. Edgar L. Marston, of New York, has founded a new scholarship at Brown University, to which he has given $5,000. The income is to be available annually for any graduate of the high school in St. Louis who may be recommended by the principal.

Mr. Frederick Jas. Quick, of Eltham and Trinity Hall, Cambridge, and of the firm of Messrs. Quick, Reek & Smith, 148 Fenchurch Street, London, E. C., has left his residuary estate to the University of Cambridge in trust, to apply the income in promoting the study of vegetable and animal biology, for which purpose the Unversity will probably eventually receive between £50,000 and £60,000.

The corner stone was laid for the new Library Building of the University of Colorado at Boulder on January 17. The central portion will be ready for occupancy on July 1, 1903. The total cost of the structure will be about $160,000.

A conference in regard to the Rhodes Scholarships of Oxford University, representing the educational interests of Massachusetts, Connecticut and Rhode Island, was held at Harvard University on January 24. Dr. Parkin presented fully the conditions. The chief subject of discussion appears to have been at what stage in education the scholar should proceed to Oxford. Committees were appointed in each of the three states to take charge of the subject.

The college entrance board is preparing its spring announcement, which will show that its work is to be considerably extended this year. Examinations have already been arranged for in eighty-six different centers in this country and Europe. Among other places, examinations will be held in Hawaii, at Ponce and San Juan in Porto Rico, London, Paris, Strassburg and Dresden. The examiners in the sciences are:

Botany—William F. Ganong, Smith College; Byron D. Halsted, Rutgers College; Edward L. Morris, Central High School, Washington, D. C.

Physics—Edward L. Nichols, Cornell; W. S. Franklin, Lehigh; Frank Rollins, Morris High School.

Chemistry—Henry P. Talbot, Massachusetts Institute of Technology; Leverett Mears, Williams College; Albert C. Hale, Brooklyn.

Geography—Albert P. Brigham, Colgate University; William N. Rice, Wesleyan; Frank Carney, Ithaca, N. Y.

Mathematics—Charlotte A. Scott, Bryn Mawr College; William H. Metzler, Syracuse University; John S. French, Port Deposit, Ind.

Rev. Langdon C. Stewardson, professor of philosophy and chaplain of Lehigh University, has been chosen president of Hobart College, Geneva, N. Y.

Professor G. N. Stewart, M.D., Ph.D., professor of physiology in Western Reserve University Medical School of Cleveland, has been appointed professor and head of the department of physiology at the University of Chicago, to fill the vacancy caused by the removal of Dr. Jacques Loeb to the University of California.

Dr. Edward C. Franklin, professor of physical chemistry in the University of Kansas, has been elected to the associate professorship of organic chemistry, in Stanford University.

Dr. Edward P. Buchner, of Clark University, Worcester, Mass., formerly professor in the School of Pedagogy of New York University, has been appointed to the chair of pedagogy in the University of Alabama, vacated by the death of Professor Jacob Forney.