was nearly all sold as high-grade concentrates, but a large part of the Colorado ore sold was of low percentage and had to be milled and concentrated, with consequent expense and loss.

From Nevada 461 tons, valued at $1,432,000, and from Arizona 175 tons, worth $565,000, are estimated to have been shipped. Smaller quantities were mined in Alaska, Connecticut, Idaho, Missouri, New Mexico, South Dakota, Utah and Washington.

Not only were the output and prices unique, but the ratio of the several tungsten minerals produced was different from that of other countries of large production. The quantities and values were approximately as follows: Ferberite, 1,495 tons, $3,590,000; scheelite, 1,404 tons, $4,322,000; wolframite, 201 tons, $613,000; and hübnerite, 185 tons, $587,000.

In most countries the prevailing mineral is wolframite, and no other country approaches the United States in the quantity of ferberite or scheelite produced. The scheelite comes mostly from Atolia, Calif., but significant quantities are mined in Nevada, Arizona, Idaho and Connecticut.

The tremendous increase of prices caused by the need for "high speed" tools to cut war steel ordered by the governments of Europe of course caused the great increase in production. Prices at the beginning of the year were irregular and depended on the buyer's need of the ore and probably on his fear of the possibility of not being able to get it when he might need it even more. Ores carrying 60 per cent. tungsten trioxide brought at that time as much as $66 a unit, but by the last of March some ferberite sold for $93.50 a unit at the mills, and even higher prices were quoted in the newspapers, though they could not be confirmed. The prices of the same ore in the New York market would naturally be somewhat higher. Under the stimulus of these high prices production, not only in this country but in the world at large, has been at the highest point ever known. At first the sudden demand created by the orders for war steel were far ahead of the instant productive power of the country. The rapid increase in prices, starting last fall at a time when tungsten mining was at a low ebb and culminating in the undreamed maximum mentioned, caused prospecting and consequent discoveries of new deposits, increase of development of known deposits, the operating at high tension of old mills, and the hasty building of new mills. As a result, the production increased faster than the consumption and soon overran the demand that would absorb the output at the extremely high prices prevailing, so that a drop in prices was inevitable. June closed with the price around $25 a unit, which was still much higher than any price known before this year. The highest price previously reported to the Geological Survey was $15 a unit, paid in 1907. The normal price has been $6 to $7.

During the six months under consideration 40 mills of various types and sizes were in operation part or all of the time on tungsten ores, and, at the end of June, 14 were under construction.

In the tungsten mining camps the excitement that followed the increase of prices was similar to that caused by important gold discoveries. Nederland, Colo., a little village of two or three dozen homes, suddenly became a town of 3,000 or more inhabitants. East of Nederland two settlements, each containing several hundred people, sprang into existence. Atolia, Calif., a camp of 60 or 80 people, grew to more than a thousand.

SCIENTIFIC NOTES AND NEWS

The Paris Academy of Sciences on June 26 elected as corresponding members Dr. Ramon y Cajal of Madrid to fill the place of M. Perez in the section of anatomy and zoology, and Dr. Morat, professor of physiology at Lyons, to succeed Dr. Zambaco Pasha in the section of medicine and surgery.

Dr. E. Perroncito, professor of bacteriology at the University of Turin, and Professor Kitasato, director of the bacteriologic institute at Tokyo, have been elected foreign members of the Paris Academy of Medicine.

Professor Hugo de Vries, professor of the University of Amsterdam and director of the Botanical Garden, has removed his residence to Lunteren, where he is building a small

private laboratory in connection with an experimental garden. Professor de Vries must by law retire from his professorship at Amsterdam within two years and plans to continue his experimental researches at Lunteren.

A. A. STEVENSON, Philadelphia, has been elected president, and S. S. Voorhees, Washington, D. C., vice-president, of the American Society for Testing Materials.

DR. ALFRED E. CAMERON, formerly of the department of agricultural entomology, University of Manchester, has taken up duties in the entomological branch, Department of Agriculture, Ottawa, Canada.

PROFESSOR R. P. STRONG, of the Harvard Medical School, has been visiting the American camps in Mexico to study their sanitary condition.

DR. CHAS. H. HERTY, professor of chemistry and dean of the School of Applied Science of the University of North Carolina; Dr. W. R. Whitney, director of the research laboratory of the General Electric Company, Schenectady, N. Y.; Dr. Leo H. Baekeland, of Yonkers, N. Y., and Warren K. Lewis, of Newton, Mass., have been appointed by the American Chemical Society to cooperate with the committee of the National Academy of Sciences on the nitrate supply for the United States government.

THE president of Cuba issued a decree on July 3, creating a plant quarantine and inspection service under the name Comisión de Sanidad Vegetal. The commission is composed of John R. Johnston, pathologist of the Estacion Experimental Agronomica as president; Mario Sanchez Roig, professor of natural history in the Agricultural School of Havana, as secretary, and Patricio Cardin, entomologist of the Estacion Experimental Agronomica. Three field inspectors have been appointed, one to attempt control of the spiny white fly of citrus, one to begin the "sanitation" of the coconut groves on account of the budrot, and the third to clean up the banana plantations affected by the Panama disease. In addition to the attempt at control of these most serious plagues, the commission will also have in charge the arrangements for quarantine regulations affecting the importations and exportations of plants.

AT the conference on infantile paralysis held last week in New York, Dr. Simon Flexner, director of the laboratories of the Rockefeller Institute, was elected to preside, and two committees were appointed. One, which is to study laboratory methods, is made up of Dr. Ludwig Hektoen of the University of Chicago, Dr. Hans Zinsser, professor of bacteriology in the College of Physicians and Surgeons; Dr. Richard M. Pearce, Jr., professor of research medicine in the University of Pennsylvania; Dr. J. W. Jobling of Vanderbilt University, Dr. G. W. McCoy of the Government Hygienic Laboratories in Washington, and Dr. Theobald Smith of the Rockefeller Institute. The members of the second committee, which is to study methods of prevention, are Dr. Victor C. Vaughan of the University of Michigan, Dr. M. J. Rosenau of Harvard, Dr. William H. Park of the New York Health Department Laboratories, Dr. Francis W. Peabody of the Peter Brent Brigham Hospital in Boston, Dr. John Howland of Johns Hopkins University, Dr. Augustus Wadsworth of the State Health Department, and Dr. Charles C. Bass of Tulane University, New Orleans.

THE British prime minister has appointed, as we learn from *Nature*, a committee to consider the commercial and industrial policy to be adopted after the war, with special reference to the conclusions reached at the economic conference of the allies, and to the following questions: (*a*) What industries are essential to the future safety of the nation; and what steps should be taken to maintain or establish them. (*b*) What steps should be taken to recover home and foreign trade lost during the war, and to secure new markets. (*c*) To what extent and by what means the resources of the Empire should and can be developed. (*d*) To what extent and by what means the sources of supply within the Empire can be prevented from falling under foreign control. The committee is composed as follows: Lord Balfour of Burleigh (chairman), Mr. Arthur Balfour, Mr. H. Gosling, Mr. W. A. S. Hewins, M.P., Mr. A. H. Illingworth, M.P., Sir J. P. Maclay,

Sir A. Mond, M.P., Mr. Arthur Pease, Mr. R. E. Prothero, M.P., Sir Frederick H. Smith, Mr. G. J. Wardle, M.P., together with the following gentlemen, who are presiding over the Board of Trade committees on the position of important industries after the war: Sir H. Birchenough, Lord Faringdon, Sir C. G. Hyde, Sir C. A. Parsons, F.R.S., Lord Rhondda and Mr. G. Scoby-Smith. Mr. Percy Ashley, of the Board of Trade, and Mr. G. C. Upcott, of the Treasury, have been appointed secretaries to the committee.

The trustees of the Beit fellowships for scientific research, which were founded and endowed three years ago by Mr. Otto Beit, in order to promote the advancement of science by means of research, have elected to fellowships for 1916–17: Mr. H. N. Walsh, Cork (extension for a second year); Mr. W. A. Haward, Tufnell Park, and Mr. C. C. Smith, Bristol. The three fellows will carry on their researches in the Imperial College of Science and Technology, London.

Messrs. A. J. Grove and L. Harrison have been appointed by the British War Office to advise on entomological problems in connection with the military operations in Mesopotamia. The services of Dr. W. A. Lamborn have been lent by the Imperial Bureau of Entomology to the War Office and he is now attached to the expeditionary force in East Africa.

According to a cablegram from England Lieutenant Sir Ernest Shackleton has again failed to rescue the main body of his Antarctic expedition left on Elephant Island and has returned to the Falkland Islands. Sir Ernest returned on board the steamer *Emma* from Port Stanley. The ship was forced back by heavy gales and ice and it was found impossible to get near Elephant Island through the pack ice. The ship was battered, the engines were injured and the *Emma* was obliged to proceed under sail. Sir Ernest, the correspondent adds, recognizes that it is useless to attempt to force a passage with a light ship and he is waiting for the steamer *Discovery* to come from England.

Professor Samuel Wendell Williston, of the department of geology and paleontology of the University of Chicago, has given four lectures on the afternoons of August 1 to 4 inclusive, the subjects of the separate lectures being: "The Earliest Land Animals—Amphibians," "The Earliest Land Animals—Reptiles," "The Evolution of Reptiles" and "The Evolution of Mammals."

The death, at the age of fifty-three years, is announced of Elton Fulmer, professor of chemistry and dean of the faculty in the Washington State College at Pullman.

Frederick William Frankland, associate actuary for the Equitable Life Assurance Society, died on July 26 at his home in New York City. He was a son of the late Sir Edward Frankland, and was born in Manchester, England, sixty-three years ago. Mr. Frankland came to this country nine years ago, and was for some years connected with the New York Life Insurance Company. He had written many papers on mathematical, metaphysical and sociological subjects.

Dr. Rowland Cox, Jr., of Paterson, N. J., who was for seven years instructor in operative surgery in the College of Physicians and Surgeons, Columbia University, has died in his forty-fifth year.

The death is announced of Ludwig Siegmund Albert Neisser, professor of skin and venereal diseases at the University of Breslau, one of the distinguished German pathologists. He was born sixty-one years ago at Breslau, where his father was a physician, who translated several American works into German, including G. M. Beard's "Neurasthenia."

The secretary of war has submitted a supplemental estimate of appropriation of $7,000,000 required for the service of the fiscal year, 1917, by the medical and hospital department for the medical needs of an active military force of 400,000 men, in addition to amounts heretofore estimated for such purpose.

Announcement is made that the Psychopathic Clinic for Mentally Deranged and Feebleminded Persons at the State Prison,

Sing Sing, has received an endowment of $10,000 from John D. Rockefeller. The clinic was opened on August 3, and the advisory board is composed of Drs. Terry M. Townsend, George S. Burns and William Seaman Bainbridge.

THE *Journal* of the American Medical Association notes that an anonymous donor has offered a prize of $10,000 to be handed over to the maker of the mechanical apparatus best supplying the place of the hand. All competitors must belong to allied or neutral nations. They are to demonstrate before the French Surgical Association mutilated men who have been using their apparatus for at least six months. The surgical association will experiment with each apparatus on mutilated men for the length of time it thinks fit. The apparatus rewarded is to remain the property of its inventor. The competition will be closed two years after the end of the war. Any person wishing to compete should write M. le Secrétaire Général de la Société Nationale de Chirurgie, 12, rue de Seine, Paris, France.

THE Mary Murdoch Memorial Loan Fund has been raised to perpetuate the memory of Dr. Mary Murdoch, of Hull, her high professional standard and the inspiration and encouragement she was to her colleagues and friends. The committee which has been formed to administer the fund is prepared to grant loans of £100 or less, free of interest, so as to give women doctors some financial help at a time when they may specially need it. Such special need might be during their early years of establishment in practise, to enable them to study some special subject or purchase some particular apparatus, etc. This fund will be open to all medical women, but preference will be given to those who have been trained at the London School of Medicine for Women, which was Dr. Murdoch's school.

PRESENTING a report on the year's work at Commemoration Day at King's College, the principal, Dr. Burrows, said that regular men students of English birth had fallen from over 800 in the year previous to the war to a little over 100. The college had contributed 512 officers to the army and navy. Fifty-seven students had lost their lives. Twenty-one members of the staff were on war or munition service, three of whom held the rank of lieutenant-colonel. On the science side every laboratory in the college was being worked in the service of the government. Professor Jackson, in the chemistry department, had solved the formulæ for making all the delicate kinds of glass, including miners' safety lamps, which had hitherto been made in Germany and Austria. Professor Bottomley was still engaged on his researches on bacterized peat, which, it was hoped, would effect a revolution in the treatment of poor soil. The department of engineering had devoted itself to the training of unskilled labor for munition factories.

THE Hawaii National Park, just created by Congress, is the first national park lying outside the continental boundaries of the United States. It sets the three Hawaiian volcanoes, Kilauea, Mauna Loa and Haleakala, and entrusts their protection and development to the Department of the Interior. "The Hawaiian volcanoes," writes T. A. Jaggar, director of the Hawaiian Volcano Observatory, "are truly a national asset, wholly unique of their kind, the most famous in the world of science and the most continuously, variously and harmlessly active volcanoes on earth. Kilauea crater has been nearly continuously active with a lake or lakes of molten lava for a century; Mauna Loa is the largest active volcano and mountain mass in the world, with eruptions about once a decade, and has poured out more lava during the last century than any other volcano on the globe. Haleakala is a mountain mass 10,000 feet high, with a tremendous crater rift in its summit eight miles in diameter and 3,000 feet deep, with many high lava cones built up inside the crater. It is probably the largest of all known craters among volcanoes that are technically known as active. Haleakala erupted less than 200 years ago. The crater at sunrise is the grandest volcanic spectacle on earth."

VAN H. MANNING, director of the Bureau of Mines of the Department of the Interior, will

visit the University of Washington in the near future to determine whether it shall have the mining experiment station to be established in the northwest. Congress recently authorized the establishment of ten of these stations. One has already been established at Fairbanks, Alaska, and another is to be located in one of the North Pacific states. The University of Washington has asked that this station be located here. It is pointed out that Seattle is ideally located for the North Pacific station, and that the university with its school of mines, is well equipped to do the scientific research and experimental work that will be required. While the University of Washington's request for the station has the endorsement of the senators and representatives it is meeting with some opposition. The University of Idaho, at Moscow, is also anxious to obtain the station, and the Montana delegation in congress favors Idaho. The chief work of the stations will be to find ways and means for the profitable handling of low grade ore. Each station will be given $25,000 annually by the federal government for the establishment and maintenance of the station.

Some time ago the British government appointed a committee of the privy council for scientific and industrial research, so as to coordinate science with industrial work. When the White paper elaborating the proposed researches of the committee reached Mr. Hagelthorn, then minister for public works of the Australian Commonwealth, he suggested that the operations of the committee should be imperial in scope, and not limited to Great Britain. With this view the prime minister (Mr. Hughes) agreed, and at once constituted a Science Congress, which has had several meetings, and has submitted a report to the Commonwealth government. The suggestion of Mr. Hagelthorn was brought under the notice of the Secretary of State for the colonies, and a reply has been received agreeing that the committee of the privy council should be given a wider scope, and it will therefore include the empire on all questions that extend beyond the boundaries of Great Britain or the special dominions. Mr. Hughes has been in consultation with the committee of the privy council since he has been in London, and on his return the work of the Science Congress in Australia will be coordinated with that of the committee of the privy council.

In the forty-seventh annual report of the American Museum of Natural History, President Henry Fairfield Osborn lays stress upon the urgent need of the institution for more space. No building has been added since the erection of the southwest wing under the law of 1905, while the collections have doubled in extent, important educational departments have been opened, available space in the present building is crowded to capacity, and the scientific and educational value of some of the finest collections in the world is lost for lack of a building in which to house them. The estimated cost of the proposed new southeast wing and court building is $750,000. It will provide space for the collections of mammals of the sea and fauna of Europe and Asia; for the splendid collections of existing fishes and reptiles, now crowded away in the dark and out of sight; for the superb collection of whales hitherto not exhibited; for other collections, and for offices, laboratories and storage room which are seriously needed. Since it seems possible that the finances of New York City will not permit of the building of this extension in the near future, the question is being considered by the trustees of the museum as to the advisability of raising funds for the new wing by private subscription and solving in this way a problem that is rapidly reaching a crisis.

The medical committee of the British Science Guild, under the chairmanship of Sir Ronald Ross, passed, as we learn from *Nature*, the following resolutions at a recent meeting: (1) The medical committee of the British Science Guild views with disfavor the suggestion that has been made by certain district councils to cease watering the streets as a war economy, and is convinced that such a step would be prejudicial to the public health. (2) The medical committee also views with great disfavor the pollution of the streets of London, and of most cities and big towns, by dogs, and

considers that the attention of the government and of municipalities should be called to the possibility of reducing the evil by increasing the tax on dogs and by enforcing by-laws. The committee considers that in towns the tax on one dog should be doubled and a large progressive increase imposed on each additional dog.

THE Henry S. Upson Foundation has been organized in Philadelphia for the purpose of encouraging the systematic study of problems wherein dental pathologic conditions are correlated with those of internal medicine, surgery, neurology and psychiatry. The late Henry S. Upson, professor of neurology in the Western Reserve University, had been for years deeply interested in the subject, and the foundation has been endowed by Mrs. Upson as a memorial to her husband. The organization is composed of a commission, the members consisting of Drs. Edward C. Kirk, chairman, J. Madison Taylor, Charles E. deM. Sajous, Nathaniel Gildersleeve, Hermann Prinz and Arthur Hopewell-Smith. This commission elected an executive committee consisting of three members of the commission—namely, Dr. Edward C. Kirk, chairman, Dr. J. Madison Taylor, secretary, and Dr. Nathaniel Gildersleeve. This committee selected a board of associate experts in lines which include the more cognate subjects, consisting of Dr. De Forrest P. Willard, orthopedist; Dr. Wendell Reber, ophthalmologist; Dr. Morris Piersol, internist; Dr. Charles R. Turner, prosthetist; Dr. M. H. Cryer, oral surgeon; Dr. John V. Mershon, orthodontist; Dr. S. D. W. Ludlum, neurologist; Dr. Ralph Butler, rhinologist and laryngologist, and Dr. Edward Schuman, pediatrist.

UNIVERSITY AND EDUCATIONAL NEWS

THE vocational-educational bill, providing for federal cooperation with the states in promoting agricultural and industrial education, makes an annual appropriation beginning at $500,000 and increasing each year by $250,000 until $3,000,000 is reached, to be apportioned to the states in proportion to their rural population.

THE trustees of the University of Indiana have recommended that a new medical school building, power house, laundry and nurses' home be erected on the grounds of the Robert W. Long Hospital, Indianapolis. A committee was appointed, including the president of the university, Drs. Samuel Smith, Richmond; Charles P. Emerson, John H. Oliver and Frank F. Hutchins, Indianapolis, to formulate plans for the proposed building and report to the board.

LORD CREWE at a meeting of the governing body of the Imperial College of Science and Technology, speaking, on June 30, of the professor's memorial on the neglected teaching of science, said that the government intended to appoint a committee of scientific men to inquire into the position of natural science in the English educational system, especially in the universities and secondary schools.

DISCUSSION AND CORRESPONDENCE

MOSQUITOES AND MAN

IN SCIENCE for June 2, 1916, p. 784, Dr. C. S. Ludlow calls attention to the association with man of those species of mosquitoes concerned in disease transmission, laying particular stress upon *Anopheles* and malaria. This is an important factor in epidemiology all too frequently overlooked by the sanitarian, but it is surprising to find that Dr. Ludlow claims for Major P. M. Ashburn, as indeed he does for himself, the discovery of this relation.

The fact is, this relationship has been long recognized by careful students. Its consideration unquestionably led Finlay to his deduction as to the transmission of yellow fever, the truth of which was afterward so thoroughly demonstrated by the American Army Commission.

In the case of malaria, Grassi was led to the discovery of the Anopheline host by similar considerations. He attacked the problem from the ecological viewpoint, eliminating those blood-sucking forms which did not coincide with the disease in distribution. This is really only a different formulation of the same idea.

India has probably produced a larger num-