that new wonder-workings will not soon cease to flow from the *cornucopia* of speculative and experimental science. When we reflect how few are cultivating philosophical researches in our midst, and compare this petty band with the mighty results to be achieved through their labors, and the limitless harvest waiting for reapers, our spontaneous aspiration is, without stint, and by all legitimate means, to increase the numbers and strengthen the arms of this too feeble fraternity.

America has not yet attained that scientific maturity which must, we hope, ere long entitle her to claim a foremost rank in the world-federation of philosophy. Preeminent in all the mechanical and practical functions of living and of labor, we lack that deeper element of digested learning and reflective culture which will give continuous vigor and systematic power to our scientific progression. Our low tone of mathematical culture precludes us from all access to some of the richest placers of physics, and throws many of our ablest minds on a subtle and tricksy sleight of mind, in researches where the well-furnished investigator would cleave a sure, straight road to the end. With leisure and wealth will come an accession of solid strength and deliberate direction to our too spasmodic vaultings into the realms of discovery. When the man of science is relieved from the excessive labor, and stupefying routine of the professorial function, when research becomes a self-sustaining vocation, and when approved genius is permitted to address all its fire and energy to elaborating and verifying its originations; then American science, erect and self-reliant, will tower upward into a column of true national majesty, more honoring to us, and more diffusive of blessing to man, than even our glorious constitutional fabric. Speed that day, whoever can!

SCIENTIFIC NOTES AND NEWS

THE medal of the Society of Chemical Industry was presented to Sir William Crookes at a dinner in London, at which about 150 members and guests were present. The retiring president of the society, Dr. Rudolph Messel, F.R.S., made the speech of presentation, to which Sir William Crookes replied.

AT the last meeting of the board of trustees of Cornell University, Mr. Henry R. Ickelheimer, '88, of New York, a member of the board, expressed a wish to give the university a statue of Dr. Andrew D. White, and his suggestion met with the cordial approval of the board. He proposed to give the commission to Mr. Karl Bitter.

THE Buchanan medal awarded by the Royal Society to Col. William C. Gorgas, the chief sanitary officer of the Panama Canal Zone, was formally presented at the anniversary meeting of the society on November 30.

DR. W. J. HOLLAND, the director of the Carnegie Museum, has returned to Pittsburgh after three months' absence in South America. He installed in the National Museum at La Plata a replica of the Diplodocus presented by Mr. Carnegie to the Argentine Republic. He was tendered a banquet by the Academy of Sciences at La Plata, upon which occasion he was made an honorary member of the academy in the section of the natural sciences. On the eve of his departure for the north, he was tendered a banquet at Buenos Aires by the united faculties of the universities of La Plata and Buenos Aires.

PRESIDENT HENRY FAIRFIELD OSBORN and Dr. J. A. Allen will represent the American Museum of Natural History at the Ninth International Congress of Zoology to be held at Monaco in March, 1913.

SIR THOMAS CROSBY, the retiring Lord Mayor of London, although eighty-two years of age, is preparing to return to the practise of surgery after laying down his official duties.

MR. C. S. ORWIN has been appointed director of the institute for research in agricultural economics at Oxford University.

DR. G. ABETTI has been appointed assistant astronomer in the Vatican Observatory at Rome.

NORTHWESTERN UNIVERSITY will have as seventh Harris lecturer next spring Dr. J. S.

Ames, professor of physics in the Johns Hopkins University.

Dr. F. A. Pax has been appointed curator of the Zoological Museum of the University of Breslau.

Dr. Charles B. Davenport, director of the Station for Experimental Evolution of the Carnegie Institution, lectured upon "Heredity and Eugenics" before the Syracuse University Chapter of Sigma Xi and invited guests, on the evening of November 20. The chapter is planning for a series of public scientific addresses, of which this was the first, to be given during this college year.

Professor H. J. Webber, of Cornell University, will give in April a lecture on "Eugenics," for which Mrs. Huntington Wilson, of Washington, has given the university the sum of $100.

Dr. E. L. Thorndike, professor of genetic psychology, Teachers College, Columbia University, has given lectures on "Man's Original Nature," "Social Instincts" and other subjects at the University of Michigan, Northwestern University and the University of Illinois.

Mr. N. H. Darton, of the U. S. Geological Survey, presented an illustrated lecture to the New York Section of the American Institute of Mining Engineers at its November meeting. The subject was Structure of the Northern Anthracite Coal Basin relative to forms of folds. A map was shown in which the structure of the basin was represented by 100-foot contours.

Arthur H. Blanchard, professor of highway engineering in Columbia University, on November 25 delivered an address entitled "The Art and Science of Highway Engineering" at the celebration of Founder's Day at the Clarkson School of Technology.

Dr. James Woods McLane, a distinguished obstetrician, formerly dean of the College of Physicians and Surgeons, Columbia University, died on November 25 at the age of seventy-three years.

Dr. Wilhelm Ebstein, professor of internal medicine at the University of Göttingen from 1877 until 1906, died on October 22 at the age of seventy-six years.

The deaths are also announced of Professor Franz Kamienski, director of the botanical garden at Odessa, and of Dr. Arnoldo Minozzi, professor of chemistry in the Technical Institute at Padua.

Through the initiative of the medical department of the University of Pennsylvania the Rush Society has been established for the purpose of the diffusion by lectures of knowledge concerning recent advances in the medical and general biological sciences and in public hygiene. The objects are similar to those of the Harvey Society of New York. It is proposed to present during each academic year a program of not less than six or more than eight lectures. The first lecture will be given in January and arrangements are being made for three others before May 1. The program of lectures will be issued shortly. Lectures by Professor Theodore C. Janeway, of Columbia University, and by Professor M. J. Rosenau, of Harvard University, have already been arranged. At the meeting for organization of the society held on November 21, the following officers were elected: *President,* Richard M. Pearce; *Vice-president,* Alfred Stengel; *Secretary-treasurer,* William Pepper; *Councilors,* A. E. Taylor, A. C. Abbott, H. H. Donaldson.

The American Museum of Natural History has received from Mr. D. C. Stapleton the gift of valuable prehistoric objects in gold and platinum from the province of Esmeraldas, Ecuador, and the headwaters of the San Juan River, Colombia, and has placed the collection on exhibition in the South American gallery on the third floor. The objects show examples of casting and beating, of plating where copper has been covered with thin gold, of the union of two pieces of gold by welding and of the soldering of two minute surfaces in such manner that it is difficult to detect the solder. The objects in platinum are of most interest, as it is not known that

this metal was ever worked, except in this locality, by a prehistoric people. Through the generosity of Mr. J. P. Morgan, Jr., the museum secured recently the collections of minerals and meteorites left by the late Stratford C. H. Bailey, of Oscawana-on-Hudson. Mr. Bailey had assembled representatives of nearly three hundred falls and finds of meteorites. At least twenty-two of these are new to the museum's already great collection. The endowment fund of the museum has recently received an addition of five thousand dollars from Mrs. William H. Bliss. Mrs. Bliss has been elected a patron of the museum in recognition of her gift.

THE surgeon general of the army announces that preliminary examinations for the appointment of first lieutenants in the army medical corps will be held on January 20, 1913, at points to be hereafter designated. Full information concerning these examinations can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training as an interne, after graduation. The examinations will be held simultaneously throughout the country at points where boards can be convened. Due consideration will be given to localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible. The examination in subjects of general education (mathematics, geography, history, general literature and Latin) may be omitted in the case of applicants holding diplomas from reputable literary or scientific colleges, normal schools or high schools or graduates of medical schools which require an entrance examination satisfactory to the faculty of the Army Medical School. In order to perfect all necessary arrangements for the examination, applications must be completed and in possession of the adjutant general at least three weeks before the date of examination. There are at present thirty-five vacancies in the medical corps of the army.

IT is stated in the *Yale Alumni Weekly* that a pictorial story of iron from the time the ore is mined until it has been transformed into the finished product, such as steel rails or sheet piling, was a special feature of an exhibit of Rogers, Brown & Company, at the convention of the American Foundrymen's Association held in Buffalo, N. Y. For many months experts in motion pictures worked under the supervision of Henry B. B. Yergason, of Rogers, Brown & Company; the result is pronounced one of the most complete series of moving picture films ever made of an industrial subject.

IN spite of the decrease in the production of iron, the value of the total mineral production of the United States for 1911 reached the enormous figure of $1,918,184,384. Of this the value of the metals was $672,179,600, the remainder representing the non-metals. Coal led the list, with a value of $626,366,876; pig iron was second, with a value of $327,234,624; clay products third, $162,236,181; copper fourth, $137,154,092, and petroleum fifth, $134,044,752. These and other figures of production are discussed in an advance chapter from "Mineral Resources of the United States" for 1911, by W. T. Thom, of the United States Geological Survey. While the total value for 1911 is about $70,000,000 less than for 1910 it is greater than that of any other year except the banner year of 1907, when the $2,000,000,000 mark was passed. Indeed it is only in the last 13 years that the mineral output of the country has been above the billion dollar mark. Fourteen years ago, in 1898, it was only $724,272,854 and 10 years before this, in 1888, it was but a little over $500,000,000. In spite of the decrease in the total value of the mineral output in 1911, a considerable number of products showed a marked increase, 45 of the minerals for which statistics were collected by the Geological

Survey having increased in production, against 21 which showed a decrease. Thus, anthracite coal increased to the value of nearly $15,000,000; lead and zinc each increased more than $3,500,000; silver increased $1,750,000; petroleum more than $6,000,000; natural gas nearly $3,500,000, and sulphuric acid nearly $3,000,000. The products showing the greatest decreases were pig iron, more than $84,000,000; bituminous coal, about $18,000,000; clay products, nearly $8,000,000, and cement, $2,000,000, although the amount of cement produced was 1,750,000 barrels in excess of that produced in 1910.

An interesting fact in connection with the production of coal in the United States, according to the U. S. Geological Survey, is that in each successive decade the output is practically doubled. If the production of bituminous coal alone were considered, the record for the last fifty years would show an increase somewhat in excess of this ratio. The increase in the production of anthracite has been much less rapid on account of the limited area of the fields, the conditions under which the industry is carried on, and the restriction of the prepared sizes to domestic consumption. It has been estimated that the output of anthracite will reach 100,000,000 long tons annually before it begins to decline. The maximum production up to the present time has been 80,771,488 long tons. An increase in the annual production of bituminous coal may be anticipated for some time to come. The statistics of coal production in the past show that up to the close of 1865 the total output had amounted to 284,890,055 short tons. In the decade from 1866 to 1875, inclusive, the production amounted to 419,425,104 tons, making the total production up to the close of 1875, 704,315,159 tons. In the following decade, from 1876 to 1885, inclusive, the output amounted to 847,760,319 tons, somewhat more than double the total production during the preceding decade. At the close of 1885 the total production amounted to 1,552,075,478 tons, and the production during the ten years ended in 1895 was 1,586,098,641 tons, the total production at the close of 1895 amounting to 3,138,174,119 short tons. In the decade ended December 31, 1905, the total production amounted to 2,832,402,746 short tons, and the grand total from the beginning of recorded coal mining in the United States amounted to 5,970,576,865 short tons. The average annual production from 1896 to 1905 was 283,240,275 short tons; the average production from 1906 to 1911, inclusive, was 461,499,260 short tons, showing an increase of 178,258,985 short tons, or 63 per cent.

UNIVERSITY AND EDUCATIONAL NEWS

Mr. Peter Makoushin has founded at Tomsk, Siberia, an institution on a large scale, to be called the House of Science, intended to provide instruction of all kinds, including university courses.

By the will of Mr. Thomas Bartlett, Liverpool University receives £20,000 for scholarships for engineering students.

The South African Union has awarded five government scholarships in agriculture for study abroad. The holders of these scholarships will receive $750 per year during the three or four years for which provision is made. The successful applicants were obliged to pledge themselves to enter the service of the South African Union after completing their studies, and to remain in the service for at least three years at a salary not less than $1,500 per annum. Only sons of parents permanently domiciled in South Africa were eligible for the scholarships.

Plans for the new Gilman Hall of the Johns Hopkins University have been accepted by the trustees. The actual work of building will begin in the spring. Gilman Hall will be the largest building to be erected in the group at Homewood, the new site of the university. It will contain the library, seminary rooms for history, economics, philosophy and the languages.

Northwestern University has signed contracts for the erection of nine of the new dormitories which are to form a part of the