that branch of science. He returned to Germany in 1884 to study crystallography and related subjects at the University of Heidelberg.

Penfield accomplished a vast amount of scientific work. Being a master of both the chemical and physical sides of mineralogy, he was able to make the most thorough researches, and he described many new minerals and reinvestigated many old ones. His scientific publications appeared chiefly in the *American Journal of Science,* and many of them were brought together in book form in the 'Studies from the Mineralogical and Petrographical Laboratories of the Sheffield Scientific School.' One of his important achievements was his prediction of the possible existence of an unknown mineral of the humite series, which was afterwards found and described by a European mineralogist.

As a teacher, Penfield was eminently successful. He inspired enthusiasm in his coworkers to a remarkable degree, and a number of his former pupils have become prominent in mineralogy. He devised many means for aiding the student and his laboratory became a model for the best methods of instruction; he revised and enlarged the standard work on Determinative Mineralogy of his teacher, predecessor and friend, Professor Brush; he wrote a number of pamphlets for the use of laboratory students, and besides mineralogical publications, he published important papers on analytical chemistry, cartography and crystal-drawing.

Penfield was a member of the National Academy of Sciences, and was foreign member or correspondent of many European Scientific Societies. He received the degree of LL.D. from the University of Wisconsin in 1904.

H. L. W.

## *SCIENTIFIC NOTES AND NEWS.*

THE University of Greifswald, on the occasion of its celebration of its four hundred and fiftieth anniversary, conferred the degree of doctor of laws on Dr. W. W. Keen, professor of surgery in Jefferson Medical College.

DR. JOHN M. CLARKE, state geologist of New York, has been elected corresponding member of the Royal Academy of Sciences of Göttingen.

THE French Academy of Moral and Political Science has elected Lord Reay a foreign associate member in succession to the late M. Olivecrona. Lord Reay has been a corresponding member of the moral science section of the academy since 1902.

DR. STANISLAO CANNIZZARO, professor of chemistry at Rome and senator of Italy, has celebrated his eightieth birthday.

THE second annual course of lectures given by the Harvey Society of New York will be opened on October 20, 1906, by Professor A. E. Wright, of London. Nine other lectures are to be given during the year, the lectures and dates being as follows: November 3, C. A. Herter; November 17, W. T. Porter; December 1, J. G. Adami; December 15, George Huntington; January 12, F. G. Benedict; January 26, E. B. Wilson; February 9, S. J. Meltzer; February 23, W. T. Councilman; March 9, Friedrich Müller. The officers of the society for the coming year are Graham Lusk, president; Simon Flexner, vice-president; F. S. Lee, treasurer; George B. Wallace, secretary, and C. A. Herter, S. J. Meltzer and James Ewing, council.

THE prize of the Heidelberg Jubilee Foundation for the Encouragement of Scientific Research has been awarded to Dr. Friedrich Pockels, professor of theoretical physics, and to Dr. August Klages, professor of chemistry.

THE University of Strasburg has awarded the income of the Engelmann foundation for history or geography to Dr. Kalkoff, professor in the Gymnasium at Breslau.

DR. D. T. MACDOUGAL, of the department of botanical research of the Carnegie Institution of Washington, left New York on August 18 to carry on some observations in the deserts about Tehuacan south of the city of Mexico, in which he will be joined by Dr. J. N. Rose, of the U. S. National Museum. Dr. MacDougal expects to arrive at the Desert Laboratory, Tucson, Arizona, with the experimental

material secured, in the latter part of September.

Mr. M. L. Fuller, in addition to the supervision of the underground water work of the United States Geological Survey in the eastern United States, will spend a portion of the field season in an investigation of the underground waters of the Cincinnati region and adjacent portions of Ohio and Indiana. Associated with him will be Mr. F. G. Clapp and S. R. Capps. The work will include studies of the rock waters and the waters of the drift, and will be both geological and chemical.

Professor H. E. Gregory, of Yale University, will devote a part of the present field season to the completion of an investigation of the underground waters of Connecticut for the United States Geological Survey. The study of the waters of crystalline rocks has already been completed, leaving only the limestones and Triassic rocks to be examined. A large number of analyses will be made of typical waters with a view to determining their suitability for public supplies, for use in steam boilers or in industrial processes.

Mr. Whitman Cross, geologist, of the U. S. Geological Survey, is making areal surveys in the San Juan district, Colorado. He is assisted by Messrs. Albert Johannsen and L. H. Woolsey.

An areal survey of the Riddles quadrangle, Oregon, is being made this summer by Mr. J. S. Diller, geologist of the U. S. Geological Survey, assisted by Messrs. G. F. Kay and James Storrs. Preparation for this season's work was made last year in tracing the definite Jurassic rocks from the southwest into the Riddles quadrangle, where they come closer together and apparently render it possible to determine their relations. This quadrangle affords an opportunity to study the whole series of igneous rocks of the Klamath Mountains, with which the mineral resources are most intimately associated. A general examination of the mines in the quadrangle will be made.

Dr. A. T. Howard, professor of pathology in the Medical School of Western Reserve University, will spend next year abroad engaged in special investigations.

Dr. C. Graebe, professor of chemistry at Geneva, has retired with the title of honorary professor.

A despatch from Christiania, Norway, says that, according to private letters received there from Spitzbergen, Mr. Walter Wellman has abandoned the attempt to reach the North Pole by balloon this year, owing to the lateness of the season.

A National Society for the Preservation of the Public Health will be established at a meeting to be held at the Hudson Theater, New York City, on November 15.

The United States Civil Service Commission announces examinations as follows: On August 29–30, to fill three vacancies in the position of forest assistant in the Philippine Service, at $1,400 per annum, and similar vacancies as they may occur in that service; on September 12, to fill vacancies in the position of miscellaneous computer at the Naval Observatory; on September 12–14, to fill a vacancy in the position of engineer draftsman, at $1,500 to $2,000 per annum, in the Reclamation Service, Geological Survey; on September 12–13, to fill vacancies, as they may occur, in the position of aid in the Coast and Geodetic Survey, at $720 per annum each; on September 19, to fill a vacancy in the position of assistant photographer (male), at $480 per annum, in the Geological Survey, and vacancies, as they may occur, in any branch of the service requiring similar qualifications; on September 19, to fill a vacancy in the position of economic botanist and mycologist in the Bureau of Science at Manila, P. I., at $1,400 per annum, and vacancies, as they may occur, in the Philippine Service requiring similar qualifications; on September 19–20, to fill vacancies in the position of examiner, at $1,800 per annum, and assistant examiner, at salaries ranging from $1,200 to $1,600 per annum, in the Reclamation Service of the Geological Survey, and similar vacancies, as they may occur; on October 1, to fill vacancies in the position of constructing en-

gineer, in the Reclamation Service of the Geological Survey, at $150 to $250 a month. The great majority of these positions are for field service in the western part of the United States and in places remote from cities and ordinary lines of transportation.

LORD KELVIN writes as follows to the London *Times:* "In your yesterday's issue, under heading 'British Association,' I read 'In the Mathematical and Physical Section, a discussion was opened by Professor Soddy on the possible transmutation of the elements. * * * The statement that the production of helium from radium has established the fact of the gradual evolution of one element into others was not seriously questioned.' I wish to remark that an isolated experimental discovery by Sir William Ramsay and Professor Soddy, brilliantly interesting as it is and solidly instructive as it is towards the theory of radium, suggests nothing more towards any modification of the atomic doctrine proposed some 2,500 years ago by Democritus, and universally adopted by chemists and other philosophers in the nineteenth century, than does Ramsay's original discovery of helium as an emanation from the mineral clevite. The obvious conclusion from the two discoveries is that clevite and radium both contain helium. I can not refer, thus publicly, to discussions on radium in the meeting of the British Association which commenced last Wednesday in York without protesting against the hypothesis that the heat of the sun or earth, or other bodies in the universe, is due to radium. I believe it is mainly due to gravitation; and I believe that the experimental results on which the radium hypothesis has been built give no foundation on which it can rest."

AN experimental and teaching station for the study of economic plants and the home production of medicinal and industrial vegetable products was opened last month near Landskrona in Sweden. The establishment, erected by the provisions of Consul Oscar Ekman, of Stockholm, was dedicated to the Swedish nation under the name Esperanza. Consul Ekman, now in his ninety-fourth year and formerly associated with the Carnegie industrial interests, previously donated considerable sums to the universities of Upsala and Göteborg, and has been active for many years also in the promotion of popular enlightenment. In the establishment of the new station he was guided mainly by a desire of resuscitating the home culture of useful plants formerly quite common, as well as by the fact that raw materials of this class are now being imported into Sweden at a great cost. Among the problems first to be considered are the cultivation of mint. The oil of peppermint never was produced on a scale sufficient for the demand, and Sweden's supply thereof is nearly all imported. The home production of chamomilla, a plant formerly cultivated about every country home; the cultivation on a large scale of caraway, pigment plants, textile and fiber herbs is also considered. Two directors have been appointed. The botanical work is in charge of Director Tom von Post, of the Upsala Seed Control Station, who made an investigation, last year, of the principal European centers of peppermint culture. Mr. Hjalmar Lindström, a practical pharmacist of Landskrona, will have charge of the technical and industrial branches of the work.

D. H. ROSS, Canadian commercial agent at Melbourne, reports that two Australian inventors have discovered a new process for the continuous treatment of iron ore, and he says that the results they have achieved are so successful that the process is to be exploited throughout the world. It is called the Heskett-Moore process for directly converting iron ore into malleable iron or steel by a continuous system, and it is claimed effects a saving of 25 per cent. in the manufacture. The ore is simply concentrated by ordinary methods, or if it is magnetic it is separated electrically until the pure oxide of iron is obtained. The oxide of iron is passed through a revolving cylinder heated by waste gases from subsequent operations and brought in that cylinder to a dull red heat. It drops from the cylinder to a second similar cylinder, and in the latter it is brought into contact with the deoxidizing gas, which is forced

through and brought into contact with the heated ore. The heated ore is thus converted into a pure iron. Accompanied by and protected by the deoxidizing gas, it is passed into a third chamber or melting hearth, where it falls into a bath of molten iron and is converted directly into steel or balled up as malleable iron. The savings claimed for the process are those of time, labor—the whole process being automatic—fuel and avoidance of flux. The inventors claim that they have discovered a direct method of producing steel from one operation instead of using the blast furnace and converter.

## *UNIVERSITY AND EDUCATIONAL NEWS.*

THE following additions have been made to the faculty of Stanford University, to begin work with the coming academic year:

George Hempl, of the University of Michigan, as senior professor in German.

Allyn Abbott Young, of the University of Wisconsin, as associate professor of economics.

Thorstein Veblen, of the University of Chicago, as associate professor of economics.

William Dinsmore Briggs, of Western Reserve University, as assistant professor of English.

C. A. Huston, of the University of Chicago, as instructor in law.

Payson J. Treat, of Stanford University, instructor in history.

Frank E. Thompson, of the State Normal School of San Diego, instructor in education.

Hubert H. Hall and L. L. Carter, both of Stanford University, instructors in civil engineering.

Lawrence E. Cutter, of Stanford University, instructor in mechanical engineering.

Frederick A. Manchester, of the University of Wisconsin, instructor in English.

Pierre Comert, of the University of Paris, instructor in French.

Homer P. Earle, of Stanford University, instructor in Spanish.

W. O. Mendenhall, of Haverford College, instructor in applied mathematics.

Rennie W. Doane, of Stanford University, instructor in entomology.

William E. Burke and William H. Sloan, both of Stanford University, instructors in chemistry.

Luther Burbank, of Santa-Rosa, lecturer on plant evolution.

Ephraim Douglass Adams has been promoted to a professorship in history and Edward Curtis Franklin to a professorship in organic chemistry; Hans Frederik Blichfeldt to an associate professorship in mathematics; and Charles Henry Huberich to an associate professorship in law. Henry Suzzallo has been promoted to an assistant professorship in education; Anstruther A. Lawson to an assistant professorship in botany; Kenneth Livermore Curtis to an assistant professorship in electrical engineering; Arthur Martin Cathcart to an assistant professorship in law; and Henry David Gray to an assistant professorship in English. The work of repairs of earthquake damages at Stanford University has been placed in the hands of a commission of the engineering faculty composed of Professors Charles David Marx, William F. Durand and Charles B. Wing. The repairs have progressed so far that all necessary rooms are ready for the work of the coming academic year, which begins on August 23, 1906.

LEMENUEL W. FAMULENER, B.S. (Michigan, '02), Ph.C. (Michigan, 1900), M.D. (Michigan, '06), has been appointed assistant professor of pathology in Indiana University. Dr. Famulener was for three years Nelson Baker and Co. research fellow in pharmacology under Dr. Cushny at the University of Michigan, and for one year a worker with Dr. Mansen in the Statens Seruminstitut at Copenhagen, Denmark.

DR. BRUCE FINK, of Iowa College, has been appointed professor of botany at Miami University, Oxford, Ohio.

JAMES T. ROOD, Ph.D., has been elected professor of mathematics and physics at Ursinus College, Collegeville, Pa.

MR. DIARMID NOËL PATON, superintendent of the laboratory of the Royal College of Physicians, Edinburgh, has been appointed regius professor of physiology in the University of Glasgow, in place of Professor J. G. M'Kendrick, resigned.

DR. EUGENE ALBRECHT, director of the Senckenbergische Institut at Frankfort, has been called to the chair of pathology at Marburg.

DR. GUSTAV STEINMANN, of Freiburg, has been called to a chair of geology at Halle.