

the English parliament, delivered an address before the faculty and students of the University of Wisconsin and the members of the state legislature last week on "The State, the University and the Farmer." He also held a conference with the members of the faculty of the college of agriculture on conditions of agriculture in America.

THE Rational Geometry of Professor George Bruce Halsted has been translated into French and will be published by the firm Gauthier-Villars.

WE regret to note the death of Professor Edwyn Carlos Reed at Concepcion, Chile. He was director National Museum at Concepcion and had for many years studied the flora and fauna of Chile. His work in natural history was largely devoted to the popularization of scientific knowledge and to the spread of economic ideas in economic zoology. He leaves one son, Carlos S. Reed, who is now professor in the School of Viticulture.

COLONEL R. M. BEDDOME, known especially for his publications on the ferns of India, died in London, on February 23, at the age of eighty-three years. The deaths are also announced of Dr. C. Alexander MacMunn, of Wolverhampton, known for his research work in physiological chemistry, and of Dr. William Williams, of South Wales, an authority on sanitation.

A BILL has been introduced into the general assembly of Illinois that provides for the establishment of a State Board of Forestry and a state forester. It is provided that the office of the state forester shall be located at the State University and that the forester shall teach at the university.

A SOCIETY for the erection and maintenance of an institute for the treatment of cancer and for research, has been founded at Munich. The president is Prince Ludwig Ferdinand, doctor of medicine.

THE Vallauri prize of the Turin Academy of Sciences will for the coming three-year period be awarded for a work in Latin literature, for the following three-year period, from

January 1, 1915, for the most important work published in the physical sciences. The value of the prize is \$5,000.

THE Field Museum of Natural History announces its thirty-fourth free lecture course as follows:

March 4—"Precious Stones, how they are Found and Manipulated," Dr. George F. Kunz, New York City.

March 11—"The Glacial History of the Great Lakes," Professor Frank Carney, Denison University, Granville, Ohio.

March 18—"The Sugar Maple and Maple Sugar Making," Professor L. R. Jones, University of Wisconsin.

March 25—"Peking," Dr. Berthold Laufer, associate curator of Asiatic Ethnology, Field Museum.

April 1—"Picturesque Sweden," Professor James H. Gore, Washington, D. C.

April 8—"The Real Filipino," Professor Arthur Stanley Riggs, New York City.

April 15—"Photographing the Heavens," Professor G. W. Ritchey, Mount Wilson Solar Observatory, Pasadena, Cal.

April 22—"Recent Discoveries of Petroleum in the United States and Mexico," Dr. David T. Day, U. S. Geological Survey, Washington, D. C.

April 29—"Turkestan; the Heart of Asia," Mr. William E. Curtis, Washington, D. C.

UNIVERSITY AND EDUCATIONAL NEWS

THE sum of \$7,000 has been received by the University of Michigan from the estate of Emma J. Cole, of Grand Rapids, Michigan, to constitute a scholarship fund for graduate students in botany.

THE regents of the University of Wisconsin have accepted as a trust the sum of \$30,000 for the establishment and maintenance of a chair to be known as the Carl Schurz memorial professorship. The chair is to be filled by professors from the universities of Germany. The present size of the fund will make it possible to secure a German professor for one semester every second year. President Van Hise has been authorized to open negotiations with German authorities with a view to establishing a system of exchange professors between German universities and the University of Wisconsin. The es-

tablishment of the Carl Schurz professorship will be celebrated with appropriate exercises on March 31. The speakers on that occasion will include the two German exchange professors now in this country, Dr. Max Friedlaender, of the University of Berlin, now at Harvard, and Professor Ernst Daenell, of the University of Kiel, Kaiser Wilhelm professor at Columbia.

It was recently stated in this journal that among other conditional appropriations the General Education Board had made one for the Wesleyan College for women. It should have read Western College for Women, an institution situated in Oxford, Ohio.

THE Kansas legislature has passed the bill to abolish boards of regents of three state schools and to substitute a commission of three to be appointed by the governor and to receive salaries of \$2,500 a year each, to manage the State University, the State Normal College and the State Agricultural College.

PRESIDENT JAMES has asked the senate of the University of Illinois to appoint a committee to draft a university constitution, marking off the legitimate authority which should be given to such an institution by the legislature, defining the relations between the legislature and the state administration, on the one hand, and the university on the other, and dividing up and marking off the functions of trustees, faculties, students and alumni. Among questions to be considered by such a committee would be the powers of university trustees, the function and power of the president, the duties of deans, the general division of the university itself into faculties, the authority of individual faculties. The authority of the professor in his own department; his tenure of office; his independence of investigation and teaching, freedom of speech, pension system, salary schedule; method of determining the budget, powers of discipline of faculties over their own members and over their students are all subjects which would call for consideration in such a constitutional convention. It is proposed to submit this constitution, after it is drafted, to a full discussion, first in the senate, then in the university faculty, and finally, after working it out in detail,

to submit it to the board of trustees, and after their modifications, to send it to the legislature for enactment into positive law.

THE University of Christiania will celebrate the centenary of its foundation in December next. Dr. W. C. Brögger, professor of mineralogy and geology, will preside as rector of the university.

DR. ALEXANDER SMITH, professor of chemistry in the University of Chicago and dean of the junior colleges, has been elected to the Mitchill professorship of chemistry at Columbia University, vacant by the appointment of Dr. Charles F. Chandler as professor emeritus.

DR. ALFRED STENGEL will succeed Dr. David L. Edsall as professor of medicine at the University of Pennsylvania. Dr. John H. Musser was unwilling to accept the position. In the same institution Dr. Milton B. Hartzell has been appointed professor of dermatology in succession to Professor Louis A. Duhring, who has recently been appointed professor emeritus. Professor John B. Deaver has been appointed professor of clinical surgery.

AT Columbia University the following have been advanced from instructors to assistant professors: Hal T. Beans, Ph.D., and Floyd J. Metzger, Ph.D., chemistry; Everett J. Hall, assaying; Samuel Osgood Miller, C.E., drawing; Charles W. Thomas, Mech.E., mechanical engineering; Harry P. Parr, Mech.E., mechanical engineering, and Edward F. Kern, Ph.D., metallurgy.

DR. WILLIAM MCKIM MARRIOTT, assistant to the chair of physiological chemistry in Cornell Medical School, has been appointed instructor in biological chemistry in Washington University, St. Louis.

DR. PEHR OLSSON-SEFFER, director of Tezonapa Botanical Station, has been appointed professor of botany at the National University of Mexico. He will lecture on the history of botany, evolution of plants and ecological plant geography, and give courses in plant physiology. In the absence of botanical laboratories at the university, the work in plant physiology will be conducted at the Tezonapa Botanical Station. Dr. Olsson-Seffer has also

recently accepted the post of Government Botanist in charge of the botanical section of the Biological Commission of the Department of Agriculture and of the Bureau of Forestry in Mexico.

DISCUSSION AND CORRESPONDENCE

SOILS AND CROPS

If we accept Professor Chamberlin's view, "that the total eon of productive soils may be assigned a period of at least tens of millions of years" (as expressed in his article on "Soil Productivity" in *SCIENCE*, February 10, 1911, and if we accept his endorsement of Cameron's estimate for the United States that the capillary waters are carrying potassium toward the surface at the rate of from 40 to 83 pounds per acre per annum, while the total average removal amounts to only 23 pounds (20 pounds in crops and 3 pounds in drainage), then we might expect the potassium to accumulate in the surface soil at the rate of 1,700 to 6,000 pounds per acre per century, or at the rate of 17,000 to 60,000 pounds per thousand years, on normal level lands not subject to surface erosion; we might expect the surface soils to be many times richer in potassium than the corresponding subsoils, and the older soils to be much richer than those of more recent but similar origin.

In contrast with these theoretical deductions the science of chemistry reveals the facts,¹ for example, that the common prairie lands of the oldest Illinoian Glaciation contains an average 12,470 pounds of potassium per million of dry surface soil and 14,050 pounds per million of the subsoil; that the more recent Early Wisconsin Glaciation contains 18,120 pounds in the surface and 19,650 pounds in the subsoil; and that the Late Wisconsin Glaciation contains 22,510 pounds in the surface and 26,690 in the subsoil.

The corresponding timbered soil types contain, in the oldest Illinoian Glaciation, 15,100 pounds of potassium (per million of dry soil) in the surface and 16,050 pounds in the

subsoil; while in the Early Wisconsin Glaciation the respective amounts are 18,080 and 21,100; and in the Late Wisconsin Glaciation there are 23,800 pounds in the surface and 26,100 in the subsoil, per million of dry soil.

If two inches of water soak into a soil and if one inch escapes by evaporation and the other by subdrainage, the net result is not gain but loss of soluble minerals, under normal conditions. In level or slightly undulating upland areas, such as the loess-covered prairies of the Central-West, which neither receive deposits from overflow nor lose partially depleted soil by erosion (especially while protected by prairie grasses), the operation of the natural law tends steadily toward soil depletion, with respect to the mineral elements; and this law has been in operation since the glacial or loessial age, wherever the climatic conditions have been similar to those now prevailing in our humid sections. The accumulation of organic matter (including some phosphorus) in such glacial or loessial soil begins some time after its deposition and continues until a maximum is reached, after which the organic matter, as well as the valuable mineral elements, tends to decrease, the latter because of leaching, as from the beginning, and the former because the rate of decay finally exceeds the rate of growth or accumulation.

That phosphorus is an essential constituent of the living tissues of plants and that it accumulates in plant residues in prairie soils are well-established facts, but a theory that the phosphorus brought to the surface in capillary moisture exceeds that removed by crops and drainage is not supported by the composition of soils of similar origin and different age. Thus ultimate analysis shows per million of dry surface soil 420 pounds of phosphorus in the oldest Illinoian Glaciation, 595 in the more recent Early Wisconsin, and 705 pounds in the Late Wisconsin.

Even the theories of the federal Bureau of Soils and the estimates of the United States Department of Agriculture must be heavily discounted if they stand opposed to established facts; for one fact outweighs a thou-

¹ Illinois Experiment Station Bulletin 123 and unpublished data.