lowing professional associations: American Mathematical Society, London Mathematical Society, Société Mathématique de France, Mathematischer Verein, and Circulo Matematica di Palermo. By his professional peers, Dr. Stecker was ranked as among the leading mathematical scholars of his time. His principal researches were in pure mathematics, geodetic lines, non-Euclidean geometry, foundations of geometry, line geometry and integral equations.

As we, his colleagues, think of Dr. Stecker, the quality uppermost in his twenty years of service at the Pennsylvania State College was the combination in a rare degree of scholar and teacher. He exacted of himself the highest standard of thoroughness and mastership, and he expected and received in a marked way like response from his students. Rigidly intolerant of sham anywhere, he has contributed his part to our Penn State spirit of honest, consistent work in the tasks of each day. A certain temperamental reserve and dignity of demeanor in his relations rendered all the more significant that deeper spirit of helpfulness and friendly cooperation which so many students and teachers have shared with him. He always stood for high standards of scholarship and moral conduct. Thoroughness, the discipline of mastering difficulties, the value of intellectual work fairly possessed him.

With all this, Dr. Stecker valued the amenities of life as well as its severe science; and his study of art, to choose one example, bore fruit in the community. It is no mere accident that his most intimate contact for many years with college athletics was with those who strove in the closest hand-to-hand encounters in boxing and wrestling. His whole career as student and teacher, even his heroic attitude in fatal illness, reveal a personality which loved the struggle of life, and which valued a man who strove with and conquered all difficulties with a brave heart and an earnest soul.

We, his colleagues of the School of the Liberal Arts, point with just pride to Dr. Stecker's twenty years of faithful service for Penn State, to his professional zeal which made him so widely known as a mathematician, and to his qualities as a man, whose thoroughness, faithfulness and honest toil are now a part of our college heritage.

It is further voted that a copy of this Memorial of the School of the Liberal Arts be transmitted with sincere expressions of deepest sympathy to Mrs. H. F. Stecker.

By the Committee,
JOSEPH H. TUDOR,
LUCRETIA VAN TUYL SIMMONS,
ERWIN W. RUNKLE,
Chairman

November 3rd, 1923

SCIENTIFIC EVENTS

THE SILLIMAN LECTURES AT YALE UNIVERSITY

IN the Silliman lectures delivered at Yale University on November 6, 7, 8, 13, 14 and 15, Niels Bohr, professor of physics at the University of Copenhagen and winner of the Nobel Prize in Physics in 1922, developed the fundamental concepts underlying the application of the quantum theory to problems of atomic structure and showed how it has been possible to account to a considerable extent for the characteristic relationships between the elements, as summarized in the periodic table.

The first lecture was devoted to a discussion of the nature of these relationships and a statement of the program of atomic physics in accounting for them. The pioneer work of Dalton, Mendeleeff and Lothar Meyer has given us the natural system of the elements, and more recent work has shown the fundamental significance of the atomic numbers for the arrangement of the elements in this system. The combination rule and the simplicity of the formulas for series point to the basic importance of spectroscopic data for the interpretation of the properties of matter. The discovery of the electron and the atomic nucleus have led to a definite picture of the constitution of the atom, and we now know that the number of electrons around the nucleus in the neutral atom is equal to the atomic number. Due to the peculiar nature of the atomic system, it is possible to distinguish between two classes of properties—the radioactive properties, which are located in the nucleus and the ordinary physical and chemical properties, which are located in the outer electronic system and depend only on the total nuclear charge or atomic number. The program of atomic physics in the future is, then, to attempt to account for the characteristic relationships between the elements by means of considerations based on pure numbers. To do this, however, it is necessary to depart from the classical concepts of mechanics and electrodynamics which are unable to account for the stability of atoms or the origin of spectra.

The character of these new concepts as pointed out in the second lecture is suggested by Planck's theory of temperature radiation and Einstein's work on specific heats and the photoelectric effect in which it is necessary to introduce the hypothesis of the emission and absorption of energy in quanta. By means of two fundamental postulates proposed by the lecturer in 1913 which are based on the ideas of the quantum theory it has been possible to account immediately for the stability of atoms and to obtain an interpretation of the combination principle which makes possible the use of spectroscopic data for the investigation of the structure of atoms. These postulates assume the existence of stationary states within the atom which are fixed by certain conditions, and the emission of radiation by transition between them. It is possible to account in this way for the spectra of hydrogen and ionized helium in all details and to obtain an understanding of the general character of the relationships between the elements.

In the third lecture the remarkable confirmation which these postulates have received from experiments on the bombardment of atoms with electrons and the emission and absorption of spectral lines was discussed in some detail.

The fourth and fifth lectures were devoted to an account of the formal development of the theory. It has been possible to obtain a general method for the fixation of the stationary states of systems with certain periodicity properties, and to establish a connection between the frequencies, intensities and polarization of spectral lines and the motion in the stationary states which in the limit corresponds to that existing in the classical theory. In this way it has been possible to account in all details for the fine-structure of the spectra of hydrogen and ionized helium as well as the effect of electric and magnetic fields on these spectra.

In the last lecture it was shown how it has been possible by means of the interpretation of spectra afforded by the theory to obtain a picture of the way in which the atoms of all the elements are built up. This picture affords an understanding of the characteristic relations between the properties of the elements, and may be said to be at least the first step in the accomplishment of the program of atomic physics.

THE EXPEDITION TO TIBET OF THE NATIONAL GEOGRAPHIC SOCIETY

JOSEPH F. ROCK, leader of the expedition to Tibet of the National Geographic Society, in a recent report to the Society, states that he has collected 914 kinds of Rhododendrons. The collection includes Rhododendrons from the richest indigo blue to orange yellow, crimson and absolutely black flowered species. It includes trees of thirty feet to prostrate plants two or three inches high. The leaves are as different as the flowers.

Mr. Rock is doing his plant collecting despite constant menace of outlaws. When he arrived at Likiang, his Yunnan province headquarters, he found 1,200 bandits encamped just north of the town, ready at any moment to sack it. He estimates there were 30,000 bandits in Yunnan alone, in August, not counting the numerous Tibetan border brigands.

Mr. Rock writes: "I am working with 23 men. Caravans are high and it is difficult to get any, no matter what one offers. The muleteers are afraid the robbers will take their mules and if the robbers don't intervene Chinese military officials may commandeer them for months without pay."

An added romance of plant hunting attaches to the shipments from this expedition because of the long, long trail they must travel to reach this country. One consignment of specimens first had to be dragged up and down lofty mountain ranges and borne through deep gorges and dense jungles for 28 days, from Nguluko to Tengyueh. Thence it went to Bhamo and from there was shipped down the Irrawaddy to begin its trans-ocean voyage.

Mr. Rock covered one unknown region, between Yunlung and Cheechuan, along the Hpi Kiang River, not yet on any map. He made his way along the Yangtze Gorge, 13,000 feet deep, and explored Mount Dyiualoko, 20,000 feet, and Haba Shan and Chiantashan, each about 18,000 feet. It is from the mountain slopes that plants are being shipped which will be suitable for planting in Glacier National Park.

The first pictures obtained of the priests of the mysterious, bejewelled Moso tribesmen were taken by Mr. Rock, showing these dignitaries in their curious dances and devil-exorcising ceremonies.

The range of plant explorations so far has covered the upper Mekong, Salwin, Yangtze and the Salwin-Irrawaddy divide. One objective of the expedition is to find a blight-resisting chestnut tree. Mr. Rock writes that he is shipping a species of the Castanopsis (related to the chestnuts) which develops trees with trunks from 4 to 6 feet in diameter. He adds: "*Pinus armandi* is a stately tree, the cones are huge and the seeds large and delicious. I shall send you a mule load."

THE EDWARD WILLIAMS MORLEY CUP

THROUGH the generosity of Alpha Chi Sigma, professional chemistry fraternity, a cup in honor of Professor E. W. Morley, emeritus professor of chemistry at Western Reserve University, who died last February, has been offered to the freshman student in chemistry who attains the highest standing for the year. The award will be based on classroom work, laboratory work and general interest in the science. The prize will be known as the "Edward Williams Morley Cup."

The letter, addressed to Professor William McPherson of the department of chemistry and dean of the Graduate School, giving the details of the award, follows:

My dear Dr. McPherson:

It is the pleasure of the Lambda Chapter of Alpha Chi Sigma to present to the department of chemistry, the Ohio State University, a scholarship cup to be awarded in accordance with the following conditions:

1. The scholarship cup shall be awarded to that student in freshman chemistry who is regarded as the leader of the class judged from his records, both in the classroom and in the laboratory and from his general interest in the science.

2. This cup shall be awarded annually at the end of the spring quarter and the recipient shall be the permanent possessor of the same.

3. This cup shall be known as the Edward Williams Morley Cup, in honor of that great American teacher and