take the place of Lunge in Zurich as professor of chemical technology and in 1909 he was asked to undertake the control of one of the largest chemical works in Germany, but he declined both of these appointments.

Professor Haber introduced into Germany the rational method of instruction in elementary chemistry as embodied in the laboratory outline written by Alexander Smith. This book was translated into German by Professor Haber and Fritz Hiller. The two books: 1898, "Lehrbuch der technischen Elektrochemie auf wissenschaftlicher Grundlage" (now out of print); 1905, "Thermodynamik technischer Gasreaktionen" (English edition, 1908), together with numerous contributions to the *Zeitschrift für Elektrochemie, Wiedemann's Annalen* and the *Zeitschrift für physikalische Chemie,* constitute his literary activities.

One of Professor Haber's most important researches was that upon the ammonia gas equilibrium at high temperatures. This work resulted in the development of a commercial method for the manufacture of pure ammonia directly from the elements by the use of osmium or uranium as a catalyzer. Another important series of researches was that upon the properties of flames, including the gas equilibria involved, the ionization and conductivity of the gases and the action of the ions as catalyzers. He has spent much time during the last few years upon the study of the escape of electrons from the reacting surfaces of metals and the effects of electrons upon gas equilibria and upon the velocity of chemical reactions. His other recent researches have been mostly upon the following subjects: the electromotive force of the oxyhydrogen cell at high temperatures; the oxidation of nitrogen in the high potential arc; a gas refractometer for the optical analysis of gases, according to Rayleigh's principle; electrical forces at phase boundaries; the corrosion of iron by stray currents from street railways; the reduction of hydroxylamine; the use of solid materials such as glass and porcelain as electrolytes; the equilibrium between magnesium chloride and oxygen; electrode potentials and electrolytic reduction; the laboratory preparation of aluminium; the preparation of hydrogen peroxide by electrolysis; experiments on the decompositions and combustion of the hydrocarbons, and autoxidation.

The writer wishes to thank Dr. Fritz Hiller, of Berlin, for the greater part of the information contained in this article. The statements in regard to the purposes and government of the institute are official.

WILLIAM D. HARKINS
UNIVERSITY OF MONTANA,
September 30, 1911

THE GENERAL EDUCATION BOARD

CONDITIONAL appropriations aggregating $635,000 have been granted to six colleges and universities by the board of trustees of the General Education Board. Applications from twenty-four institutions were presented. From this list the board selected six among which is distributed conditionally the available funds as follows:

To Bucknell University, Lewisburg, Pa., $35,000 towards $160,000; to Earlham College, Richmond, Ind., $75,000 towards $400,000; to Furman University, Greenville, S. C., $25,000 towards $100,000; to Grinnell College, Grinnell, Ia., $100,000 towards $500,000; to Smith College, $200,000 towards $1,000,000; to Southern Methodist University, Dallas, Tex., $200,000 towards $1,000,000.

During the meeting attention was called to the fact that since Mr. Rockefeller made his first contribution to the board for the promotion of higher education, contributions have been made to ninety-one institutions in an aggregate amount of $7,625,000 towards a total of $35,909,512. Fifty-one institutions to which the board has made conditional contributions have completed the subscriptions for the supplemental sums required and to these institutions the board has already paid $3,500,000 in cash. It was pointed out that as a result of the campaigns made by these fifty-one institutions their assets have been increased by over $19,000,000. Their student bodies have increased by 2,047, 183 new professors have

been employed and the annual payment to professors in these fifty-one institutions has been increased $421,712.

A further statement by the board showed that it is now paying the salary and traveling expenses at twelve of the state universities of the southern states of professors of secondary education engaged in promoting the establishment of public high schools. Since the beginning of this work, five years ago, 912 new public high schools have been established in the southern states; 824 teachers have been added to the schools which were already in existence, 656 new public high school buildings have been constructed at a cost of $9,000,000, and the funds for the annual support of high schools have been increased by $1,688,894.

The board has contributed between $600,000 and $700,000 to forty-one schools for negroes.

The board's statement calls attention to its work in helping to fight the boll weevil by farm demonstration in southern states. It has contributed $400,000 for this purpose. The Department of Agriculture took over the work in some of the states so that the work of the general education board is now limited to Maryland, Virginia, North Carolina, South Carolina and Georgia. The salaries and expenses of 219 agents are paid by the board. These men are conducting demonstrations on 20,000 farms. They have also organized boys' corn clubs with a present membership of 50,000 and girls' canning and poultry clubs with a rapidly growing membership.

SCIENTIFIC NOTES AND NEWS

Dr. W. H. Emmons, of the University of Chicago, has been elected director of the Minnesota State Geological Survey, as well as professor in the university.

Professor J. G. Lipman has been made director of the experiment station and of the college farm at Rutgers College.

Rev. Joel H. Metcalf has moved his observatory to Winchester, Mass., eight miles from Boston, where he expects to renew his work of photographing asteroids.

Dr. Richard Dedekind, professor of mathematics in the Technical School at Brunswick, has celebrated his eightieth birthday.

At the Lister Institute Drs. E. E. Atkin and W. Ray have been appointed to be assistant bacteriologists, Mr. A. W. Bacot to be entomologist and Dr. Casimir Funk to be a research scholar.

Professor R. H. Tucker, astronomer at the Lick Observatory, has returned to Mt. Hamilton after three years leave of absence. He has been in charge of the astronomical expedition to Argentina, under the auspices of the Carnegie Institution.

Dr. and Mrs. Charles W. Eliot intend to sail from this country on November 7 on a trip around the world to last about eight months.

Dr. R. R. Gates expects to sail for Europe on November 3, to carry on investigations during the winter in the botanical laboratories at the Royal College of Science, London.

A complimentary dinner was given on October 26 by the instructing staff of the Massachusetts Institute of Technology to meet the three professors who have retired this year from active work at the institute. These are Gaetano Lanza, professor of theoretical and applied mechanics; Peter Schwamb, professor of machine design, and Francis W. Chandler, professor of architecture.

Dr. N. C. Ricker, professor of architecture, and Professor I. O. Baker, in charge of the department of civil engineering of the University of Illinois, have been appointed by Governor Deneen as members of the commission to revise and codify the building laws of the state of Illinois, which commission was authorized by the last general assembly of the state. The other members of the commission are Mr. R. E. Schmidt, Mr. W. C. Armstrong and Mr. W. S. Stahl, of Chicago; Mr. W. H. Merrill, of Lake Forest, and Mr. G. J. Jobst, of Peoria. Dr. Ricker is chairman of the commission.

Dean C. B. Connelley, of the School of Applied Industries of the Carnegie Technical Schools, has been appointed a member of the