matical curriculum. Its report, prepared with the aid of many groups of teachers in widely scattered communities, is one of the most valuable documents in its field. Slaught believed that the cooperative spirit and the associations stimulated by the work of this committee should be kept alive, and he proposed the organization of an association to be called the National Council of Teachers of Mathematics, whose membership should be drawn from the ranks of those interested in the teaching of mathematics in the secondary schools. The council began its existence in 1920. It now has an official journal called *The Mathematics Teacher,* a series of year-books containing valuable articles on the place of mathematics in modern education, and more than 5,000 members.

Slaught was also one of the first members of the Chicago Section of the American Mathematical Society and a most efficient secretary of the section from 1906 to 1916. He early recognized the value of cooperation between the society and the association, and his effective encouragement of such cooperation has constituted a most important service to mathematics in this country. He was at various times a member of the council of the society, trustee and president and honorary life president of the association, honorary life president of the National Council, and honorary life member of the Central Association. He has thus for many years been influential in the affairs of the most important of the mathematical associations of our country.

Slaught's connections with mathematical societies involved him in many editorial responsibilities. He was for many years managing editor of the *American Mathematical Monthly,* was an editor of the *Mathematics Teacher,* and he was one of the founders of the *Educational Screen,* a periodical devoted to the promotion of visual education. In 1923 he conceived the idea of a series of mathematical books, to be sponsored by the association, which would present in expository form the results of modern research in pure and applied mathematics. Five of the books have already appeared and a sixth is in preparation, under the auspices of a committee of which Slaught was chairman. The books are called "Carus Mathematical Monographs" after the late Mrs. Mary Hegler Carus, of LaSalle, Ill., who generously financed the early volumes.

Slaught was unsurpassed as a teacher of collegiate mathematics. He was on many occasions the ablest representative of our department of mathematics at the University of Chicago in our relations with the university and our students. He was widely known and beloved by our alumni. We have lost an influential colleague whose cheerfully cooperative spirit and whose devotion to his university and to mathematics have been an inspiration to all of us.

L. E. DICKSON
G. A. BLISS

RECENT DEATHS

DR. PERCY EDGAR BROWN, head of the department of agronomy of the Iowa State College, died on July 8 at the age of fifty-one years. Dr. Brown had been secretary and this year became chairman of the Section on Agriculture of the American Association for the Advancement of Science. He was also editor-in-chief of the Iowa State College *Journal of Science.*

PROFESSOR ARTHUR E. SEAMAN, of the Michigan College of Mining and Technology, Houghton, died on July 9 at the age of seventy-nine years. He had been connected with the college department of geology since 1891, and retired in 1928 with the title of professor emeritus and curator of the college museum which bears his name.

DR. JOHN W. CHURCHMAN, professor of therapeutics at Cornell University Medical College, died on July 13 at the age of sixty years.

WINTER LINCOLN WILSON, formerly professor of railway engineering at Lehigh University, died on July 15 at the age of seventy years.

DR. HENRY EDWARD ARMSTRONG, emeritus professor of chemistry at the City and Guilds College at South Kensington, the oldest fellow of the Royal Society, died on July 13. He celebrated his eighty-ninth birthday on May 6.

DR. HENRY HOMAN JEFFCOTT, secretary of the British Institution of Civil Engineers for fifteen years, previously professor of engineering in the Royal College of Science, Dublin, died on June 29.

DR. F. H. HESSELINK VAN SUCHTELEN, who had published research in soil chemistry, died as a result of an accident at Apeldoorn, Holland, on June 23 at the age of fifty-three years. Dr. van Suchtelen was for some years connected with the New Jersey Agricultural Experiment Station, the Michigan State College and the Massachusetts Agricultural College.

SCIENTIFIC EVENTS

THE BRITISH TRUST FOR ORNITHOLOGY

THE British Trust for Ornithology, according to the London *Times,* has accepted responsibility for the future conduct of the principal scheme in Great Britain for the study of migration and other aspects of bird life by the ringing method. This scheme was instituted in 1909 by H. F. Witherby, editor of *British Birds,* and has been maintained with the cooperation of

readers of that journal. Over 500,000 birds have been marked to date.

The trustees of the British Museum (Natural History) are providing headquarters in the Bird Room at South Kensington and permit the address of the museum to be used. Rings will in future be inscribed "British Museum (Natural History), London," instead of "Witherby High Holborn London," with an identification number as before.

The plan will be directed by a committee as follows: Dr. A. Landsborough Thomson (chairman), A. W. Boyd, A. B. Duncan, P. A. D. Hollom, Lord Ilchester, Lord Mansfield, H. F. Witherby and Miss E. P. Leach (hon. secretary). *British Birds* will continue to publish the results.

The ringing of wild birds has shown exactly where some of our summer visitors go in winter. More than a dozen swallows ringed in Great Britain as nestlings have been reported from South Africa; conversely starlings have been ringed in Great Britain in winter and recovered in Norway in summer above the Arctic Circle; others have been shown to come from Northern Germany and the Baltic States; but native British starlings are non-migratory. Unexpected movements have come to light. Several kittiwake gulls ringed on the Farne Islands have now been recovered in Newfoundland and Labrador; the species is also native on that side of the Atlantic. The swallow, again, is shown to return to the place of birth or previous breeding; birds ringed as adults often return to the same house or barn, and birds ringed when young return commonly to the same district.

Differences in behavior between individuals of a species have been noted; of lapwings hatched in Scotland or the north of England, some remain there throughout the winter, some cross to Ireland and some travel to Portugal. Light has also been thrown on longevity and on constancy to mates. The aluminium rings are no inconvenience to the birds and the ringing is entrusted only to competent collaborators.

THE ATOMIC-PHYSICS OBSERVATORY OF THE CARNEGIE INSTITUTION OF WASHINGTON

A MAJOR event last year in physical science was the direct observation and measurement by investigators in the Carnegie Institution's Department of Terrestrial Magnetism at Washington of the basic forces which bind together the primary building blocks of matter—protons and neutrons—to form the nuclei of all atoms heavier than hydrogen. The principal experiments were those made on the elastic "scattering" of high-speed protons through various angles after collisions with stationary protons. A proton-beam from the million-volt equipment was passed through hydrogen gas. The angular scattering to be expected because of the like positive charges on two protons was known and was approximately confirmed at 600,000 volts. At 900,000 volts a markedly different and increased scattering was found, demonstrating that a large "new" force (superposed on the familiar electrical repulsion) was being encountered abruptly at these correspondingly closer distances of approach. The experiments were made in Washington by Drs. M. A. Tuve, L. R. Hafstad and N. P. Heydenburg, of the staff of the Department of Terrestrial Magnetism. The most significant results of the experiments were brought out by their colleague, Professor G. Breit, of the University of Wisconsin, a research associate of the institution. A detailed theoretical analysis by Dr. Breit and his associates, Professor E. U. Condon, of Princeton, and Dr. R. D. Present, of Purdue, showed that the "new" force exhibited in these experiments was an attraction and not an additional repulsion (as for elastic spheres); also that the proton-proton, proton-neutron and neutron-neutron interactions—the three forces which underlie the structure of all atomic nuclei—are all attractive and of nearly identical magnitude.

Dr. J. A. Fleming, director of the Department of Terrestrial Magnetism, states that the institution has made provision that the department's investigators will shortly be equipped to carry these studies to still closer "distances of approach" between particles, and subject these universally important forces to a still more detailed examination. This will be done through the use of the exceedingly high voltages—above 5,000,000 volts—which will be available under precision control with a new super-voltage equipment, construction on which was begun on May 20, at the department's laboratory in Washington.

This installation, planned in detail several years ago as an embodiment of many years of experience by this pioneer high-voltage laboratory for nuclear physics, has been given the designation "Atomic-Physics Observatory." It comprises an electrostatic generator of large size and associated high-voltage vacuum-tube, mounted inside an egg-shaped pressure-vessel of steel 55 feet high which will contain dry air compressed to 50 pounds per square inch. Beneath this vessel is a subterranean observing-room and separate control-room joined by a tunnel-maze. Earth is thus utilized for shielding against the dangerously intense gamma rays and neutrons which will be produced. The above-ground steel pressure-vessel with its dome 37½ feet in diameter reduces at the bottom to a segment of a sphere 15½ feet in diameter in an overall height of 55 feet. A circular brick curtain-wall 35½ feet in diameter will be added after completion of the pressure-vessel and thus the completed structure will resemble an astronomical observatory.