Washburn wrote, "Physical chemistry is coming to be not so much a definite branch or field of chemistry as it is an attitude or point of view and method of approach to problems in all branches of chemistry"; and it is not surprising that he applied the principles of physical chemistry and thermodynamics so effectively to this new field of ceramic chemistry. The work which was carried on in his laboratory during this period included the development of precision apparatus and technique for measuring the viscosity, density and surface tension of glasses at high temperatures, as well as studies on dissolved gases in glass and the theory and methods for measuring the porosity of ceramic substances.

(4) From 1922 to 1926, Washburn literally buried himself in the task of editing the International Critical Tables. Science and technology must forever owe a great debt to his perseverance, tenacity and sacrifice in carrying on this monumental undertaking.

(5) In 1926, he assumed the leadership of the division of chemistry at the Bureau of Standards. The beginning of this last period of his career saw his work on the International Critical Tables come to a successful end. Washburn now devoted himself to the application of the principles and methods of physical chemistry to the problems of chemistry and technology, and had leisure meanwhile to satisfy partially the innate scientific curiosity of his imaginative mind. In this period he initiated a program of thermochemical research having for its object the accurate determination of the thermochemical constants of substances important to science and industry; instituted and directed the extensive project of separating, identifying and determining the constituents of petroleum, which involved the development of many and varied types of new apparatus; directed the research on rubber hydrocarbons which resulted in obtaining the first rubber crystals; and found time to make many personal contributions to science, among which may be mentioned his exhaustive study of the "Standard States for Bomb Calorimetry." The crowning achievement of Washburn's scientific career came with his discovery in December, 1931, of the fractional electrolysis of water. This process has made possible the preparation of relatively large amounts of practically pure deuterium, or "heavy" hydrogen of atomic mass 2, and has resulted in the opening up of a new field of research in physics, chemistry and the biological sciences.

Washburn's appointment as chief of the division of chemistry infused new life and activity into the group. Quiet, friendly, yet withal a little reserved, his ability, fairness and dignity at once commanded admiration and respect, which soon ripened into lasting friendship.

Dr. Washburn was a member of the National Academy of Sciences, the American Chemical Society, the American Physical Society, and the American Ceramic Society, and he carried for years a tremendous burden of committee assignments. He served as chairman of the Division of Chemistry and Chemical Technology of the National Research Council, and was American commissioner of the Annual Tables of Physical and Chemical Constants. He was a member of the International Committee on Thermochemistry and chairman of the International Commission on Physico-Chemical Standards. He was on three occasions a delegate to the International Chemical Union, and active in the work of the International Research Council. When a serious illness in 1929 compelled him to relinquish such activities, Washburn did so with deep reluctance and regret.

In 1910, Dr. Washburn married Miss Sophie de Veer, of Boston, who died two years ago. Their four children survive them.

In Dr. Washburn's death, the Bureau of Standards has lost an outstanding member of its staff—a brilliant investigator, cut off in the zenith of his career.

LYMAN J. BRIGGS

RECENT DEATHS

ARTHUR RANUM, professor of mathematics at Cornell University since 1923, died on February 28, in his sixty-fourth year.

DR. JAMES MUNSIE BELL, dean of the School of Applied Science in the University of North Carolina, a member of the faculty for the last twenty-four years, died on March 3 at the age of fifty-three years.

DR. THOMAS CLACHAR BROWN, teacher of geology at the high school at Fitchburg, Massachusetts, died on February 28. He was fifty-one years old.

THOMAS ERIC PEET, professor of Egyptology at the University of Oxford, died on February 22, in his fifty-second year.

SIR VINCENT RAVEN, a past president of the British Institution of Mechanical Engineers and formerly technical adviser to the London and North-Eastern Railway Company, died on February 14 at the age of seventy-five years.

SCIENTIFIC EVENTS

THE WORK OF THE GODMAN FUND

The London Times calls attention to the fact that January 15 was the centenary of the birth of Frederick Du Cane Godman, to whose memory the Godman Exploration Fund was inaugurated in 1920.

Godman and Osbert Salvin, a life-long friend,

adopted the idea of evolution, and as they followed out Darwin's theories in their collecting expeditions they conceived the idea of writing a Natural History of Central America. This became their life's work, so that it was thirty-six years before this monumental undertaking, comprising sixty-two volumes, was completed. For years collectors were kept in the field to furnish further material from every branch of natural science. Each group when completed was presented to the British Museum to be incorporated in the national collections—and the welfare of the museum, of which Godman became a trustee, remained to the end one of his greatest interests. Thus, after his death in 1919 the most fitting memorial appeared to be a fund to facilitate exploration for the benefit of the British Museum collections.

The Godman Exploration Fund was founded in 1920. At first the income of the fund was insufficient to enable the trustees to send out special expeditions but it was often used, with private donations, as a contribution towards the expenses of collectors already in the field.

The grants at first consisted of from £200 to £300, but later, as applications increased, it was found that even small sums of £10 to £20 enabled some valuable pieces of work to be undertaken or native collectors trained to carry on.

There have already been thirty expeditions ranging over the five continents, and the areas covered include six in Europe, confined to Great Britain and the Carpathians; seven in Asia, from Arabia and Siberia to Bhutan and Tonkin; seven in Africa, mainly in the neotropical regions, and five in South America, three in Australia and two in the West Indies. As the result of these expeditions more than 3,000 mammals have been added to the national collection, over 50 forms having been described as new to science.

The ornithological expeditions have resulted in the collection of over 6,000 skins, but their chief value lies in the fact that they have filled up many gaps both in our knowledge and collections of the birds of Southeastern Asia. In entomology many new species and even new genera have been collected, and Mr. Tam's expedition to the islands in the Gulf of Guinea has been of peculiar interest from the point of view of distribution. The field of botany has also been covered. Scientific work in geology has been furthered by the investigation of the fossil remains on the South Coast of England. The Eocene beds in Kent yielded interesting fossil remains of mammals, and from the Gower Caves were obtained bones and teeth of bear and cave lion.

The first important addition which more than doubled the capital of the Godman Exploration Fund was made by Mr. Oldfield-Thomas, who bequeathed the residue of his estate to the Godman trustees.

THE ARBORETUM OF THE UNIVERSITY OF WISCONSIN

WITH the addition of two 20-acre tracts and 3,100 feet of shore line along the south side of Lake Wingra to the present area, the University of Wisconsin arboretum and wild life refuge now consists of nearly 500 acres of land.

Approval of the acquisition of the additional 40 acres of land and the shore line, which extends along the entire southern and southeastern side of the lake, has been given by the board of regents. Funds made available by the Tripp estate have made the establishment of the arboretum possible without the use of state funds.

Established more than a year ago, the arboretum gives to the university and to the state an excellent opportunity for experimentation in reforestation and propagation of wild life. Professors Aldo Leopold and William Longenecker are in charge of the project.

Reforestation and the propagation of wild life are both extremely important to Wisconsin, which must constantly look after its reputation as vacation ground and recreational center for the central states, it was pointed out. In line with this idea, plans for the development of the tract have been pushed forward rapidly during the past year.

More than 15,000 pine and spruce trees have been planted. The tract at present is the home of 12 species of game birds and 22 species of mammals. These are expected to be increased rapidly in the future, since the particular kinds of foods and cover needed by each species has been greatly improved.

A roadway has been built through the tract during the past year, and the construction of barracks and experimental laboratories are now under way.

The arboretum will not only provide the state with an experimental ground for investigations in forestry and wild life propagation, but will also be useful as a demonstration ground in teaching land owners of the state, especially farmers, the technique of conserving wild game and making marginal lands useful as hunting preserves.

Carrying out this idea, Professor Leopold will give this winter a course in game management. It is the first of its kind to be offered in any university in the country. Establishment of hunting grounds on marginal farm lands throughout the state is expected to be aided by this course. With well-stocked hunting grounds on their lands, farmers will be able to charge for the hunting privilege, and thus obtain a steady income from the marginal and otherwise unproductive lands on which they must pay taxes.