if they were very hot. Their atmospheres actually contain great amounts of hydrogen compounds, and their mean densities are low.

Only a very small portion of the known matter in the universe is in the atmospheres of the stars. An overwhelmingly large portion is deep in the interior of the stars, inaccessible to observation. Even here, however, atomic theory can follow it and find the elements divided into two groups—hydrogen and helium on the one side, and all the heavier ones on the other. The amount of heat radiated by a star depends mainly upon its mass, rather little upon its size or internal distribution of density, but a good deal upon the relative proportion in its interior of these two groups of elements. Many investigators, from Eddington to Strömgren, agree in finding that the observed data for stars as different as the Sun, Sirius and Capella, indicate that, if there is no helium, the interior contains 35 per cent. (by weight) of hydrogen, with the rest heavier elements. Counting by number, the hydrogen atoms would be fully ten times more abundant than all the rest (depending on the average weight of the heavy atoms).

If helium is present, the proportions of hydrogen and heavy atoms both diminish, but the numerical preponderance of hydrogen persists. Hydrogen is not only the simplest atom: it is the one whose transformation into other elements liberates by far the most energy and is irreversible. The great and almost invariable preponderance of hydrogen may therefore be taken as strong evidence that our universe is still young.

OBITUARY

HUGH McCORMICK SMITH

EARLY in the morning of September 28, 1941, Dr. Hugh McCormick Smith died suddenly of a heart attack after an illness of a few hours. He was seventy-five years of age.

Dr. Smith was born on November 21, 1865, in Washington, D. C., son of Thomas Croggon and Cornelia Hazard Smith. He began his natural history studies when a small boy, owing largely to his father's interest in birds and other small animals on his farm in Virginia. He attended Central High School, D. C., was first president of its Natural History Society, graduating in 1884. In 1888 he graduated in medicine with a perfect record in all oral and written examinations from Georgetown University Medical School and was a member of its staff from 1888 to 1905.

On March 12, 1889, Dr. Smith married Emma Hanford. Their daughters are Mrs. Edmund Vincent Cowdry of St. Louis and Mrs. Carl Harry Claudy, Jr., of Washington.

Dr. Smith's interest in science was guided while he was in high school by Professor Spencer F. Baird, the latter giving him the opportunity to work in the National Museum in 1884–85. He entered the service of the U. S. Fish Commission under Commissioner Baird in 1886, and during the next six years had six promotions. From 1893–1897 he was assistant in charge, division of statistics and methods of the fisheries of the U. S. Fish Commission and during the next five years Smith was assistant in charge, division of inquiry respecting food fishes and the fishing grounds.

From 1903 to 1913 Dr. Smith was deputy commissioner of the Bureau of Fisheries, a position especially created by Congress and from 1913 to 1922 he was the Commissioner of Fisheries. In 1900 he was named to represent the United States at the First International Fishery Congress, Paris; and again in 1905, the Third International Fishery Congress at Vienna. He was secretary-general at the Fourth International Fishery Congress, Washington, in 1908.

Smith held several positions of honor such as secretary, National Fishery Congress, 1898; chairman, International Jury on Fish Culture, Louisiana Purchase Exposition, 1904; expert adviser of the Food and Drugs Board and of the Bureau of Chemistry in fishery cases arising under the Pure Food and Drugs Act of 1906–1913; expert special assistant of the United States Counsel at the Arbitration of the North Atlantic Fisheries Dispute at The Hague, 1910; United States Government representative of the International Commission for Adjudication of Fishery Disputes with Canada and Newfoundland arising under the award of The Hague arbitration tribunal, 1910; representative of the United States on the Permanent International Council for the Exploration of the Sea, 1912; member of the research committee and associate editor, National Geographic Society, 1909–1919; commissioner on behalf of the United States on International Fishery Commission for regulation of fisheries in boundary waters of the United States and Canada, 1914.

Dr. Smith was director of the Marine Biological Laboratory of the U. S. Bureau of Fisheries, Woods Hole, Mass., 1901–1902, and director of the *Albatross* expedition for investigation of fisheries and aquatic resources of the Philippine Islands, 1907–1910.

From 1900 to 1934 he studied the aquatic resources and the fisheries, as well as inspected methods of fish culture, some of the laboratories, biological investigations and fishery administrations in 22 foreign countries in Europe, South America and Asia. The exten-

sive collections made by Dr. Smith in these various lands and adjoining seas were given to various museums, but mostly to the United States National Museum.

In honor of his contributions to science, four birds, two reptiles, one amphibian, nine fishes, three mollusks, two crustaceans, two insects and three other forms have been named after him. From 1898 to 1931 he was presented with seven medals in recognition of his achievements and services

Dr. Smith's chief contributions to science occur in the fields of ichthyology and fisheries science. In the latter field he spent 36 years with the United States Fish Commission publishing about one hundred papers on fishery science and a somewhat larger number on ichthyology have appeared under his pen, describing numerous new species, new genera and families of fishes. Among a total of about 300 published papers by him there are one or more in nearly all fields of natural history. Since 1925 his published researches have been largely on fishes and other animals from Siam, now Thailand, where from 1923–1935, as advisor in Fisheries to His Siamese Majesty's Government, organizer of the Siamese fishery service, and first director of the fishery bureau, he had ample opportunity to collect and study the fauna of Thailand.

His interest in Siamese fishes was so great that upon his return to the United States he began the most important scientific contribution of his life, "A Monograph of the Freshwater Fishes of Siam." For the last six years this monumental work with about 300 illustrations has occupied all his time in the Division of Fishes, U. S. National Museum, where he was associate curator in zoology.

Although his untimely death has left the Siamese manuscript not quite completed it is hoped that it can be put in shape for publication by one of his numerous ichthyological friends.

LEONARD P. SCHULTZ

U. S. NATIONAL MUSEUM

RECENT DEATHS

DR. JOHN STANLEY PLASKETT, who retired in 1935 as director of the Dominion Astrophysical Observatory at Victoria, B. C., died on October 17 at the age of seventy-six years.

DR. JAMES ALLEN NELSON, for some years research entomologist in the Department of Agriculture at Washington, who had retired from active service, died on August 9 at the age of sixty-five years.

PROFESSOR JAMES TROOP, state entomologist of Indiana from 1899 to 1907, later head of the department of entomology and horticulture at Purdue University, died on October 14 at the age of eighty-eight years.

DR. LOUIS FAUGERES BISHOP, clinical professor of heart and blood vessel disease at Fordham University, died on October 6 at the age of seventy-seven years.

PROFESSOR HARRY SLOAN HOWER, head of the department of physics at Carnegie Institute of Technology, died on October 10 at the age of sixty-four years. He had been a member of the faculty since 1906.

DR. HANS SPEMANN, professor of zoology at the University of Freiburg, Germany, died on September 12.

Nature reports the death of Professor A. G. Green, formerly professor of tinctorial chemistry in the University of Leeds and director of research to the British Dyestuffs Corporation, on September 12, aged seventy-seven years; of Dr. W. Gardiner, honorary fellow and formerly fellow and bursar of Clare College, lately university lecturer in botany in the University of Cambridge, on August 31, aged eighty-one years; of Dr. A. K. M. Noyons, professor of physiology in the University of Utrecht, aged sixty-three years; and of Dr. E. Abelaus, formerly professor of physiology in the University of Toulouse.

SCIENTIFIC EVENTS

RESULTS OF THE ECLIPSE EXPEDITION OF 1940

A REPORT of the results of the National Geographic Society-National Bureau of Standards Eclipse Expedition of 1940 was presented at the meeting of the Washington Philosophical Society on October 11. The expedition was stationed at Patos, in the state of Paraiba do Norte of Brazil, this location being north and west of Recife. The eclipse was on October 1. The program of scientific work planned for this expedition was so varied in nature that results of considerable scientific importance were obtained, although a thin veil of clouds partially obscured the eclipse during the period of totality. Dr. Irvine C. Gardner, the leader of the expedition, described the new corona cameras, polarigraphs and spectrographs which were specially designed and constructed for use at this expedition. Dr. Paul A. McNally, S.J., of the Georgetown College Observatory, reported on measurements of the times of contacts determined from photographs of the partial phases. Dr. E. O. Hulburt, of the Naval Research Laboratory, gave the results of measurements of sky brightness made during twilight and during the period of darkening by the eclipse.