photographs, except that the geologists are much more likely to be able to recognize camouflage as not being in harmony with the natural landscape.

(2) As to relief *per se,* the man with geological training probably will have a decided advantage in recognizing relief features on non-stereoscopic pictures because he will have a comprehension of relief as a systematic topographic expression associated with drainage lines or rock structures, and therefore may be able to infer from drainage lines and vegetation patterns relief features which would not be evident to the untrained observer. Even with stereoscopic pictures the fact that the features automatically fall into logical and therefore easily remembered patterns gives the geologist a distinct advantage.

(3) As to the methods of construction of maps from aerial photographs, geologists in general are not in position to contribute anything not already known and practiced by the Army Engineers. As actual workmen, however, engaged in map-making from the photographs, geologically trained men should have a distinct advantage over others because they are in the habit of using maps and even of making maps of both topographic and geologic features, and consequently should be in position to do effective work much more quickly than men without such training.

As to (4), the interpretation of terrain, that, as I have tried to make clear above, is a field for the few highly trained specialists. It is a field so new that its possibilities are not likely to have been fully realized by army commanders or even by geologists themselves.

In view of the world-wide nature of the present conflict and of the comparatively unknown character of much of the territory over which operations must be conducted, a technique such as the geological interpretation of aerial photographs of areas that can not be examined on the ground promises to yield information of the greatest importance that can not be obtained in any other way.

OBITUARY

C. HART MERRIAM

DR. C. HART MERRIAM, one of the stalwarts of the scientific world, died on March 19 at the age of 86, in Berkeley, Calif. Physician, naturalist, ethnologist, explorer, scholar, lecturer, author, personal friend of Presidents—he was a prominent figure of two generations.

From early boyhood in the Adirondack region of New York, his dominant interests were in the field of natural history. Beginning about 1867 with insects and birds, his activities soon expanded to cover mammals and reptiles, then marine invertebrates and plants. When only 16 (in 1872) he was appointed by Professor Spencer F. Baird, assistant secretary of the Smithsonian Institution, as naturalist of the Government Survey of the Territories (known as the Hayden Survey) and he made extensive collections in Utah, Idaho and Wyoming. In 1875, while a student at Yale, he was summer assistant on the U. S. Fish Commission at Woods Hole, Mass. Following graduation from the College of Physicians and Surgeons, Columbia University, in 1879, he practiced medicine and surgery in northern New York. In 1883, as surgeon of the *SS Proteus* he visited the Newfoundland seal fisheries on the ice floes between Labrador and Greenland.

In 1891 President Harrison appointed Dr. Merriam as Fur Seal Commissioner to represent the United States on a joint American and British commission to study the problems of pelagic sealing on the Pribilof Islands. In 1899 he again visited Alaska and the Bering Sea, on the Harriman Alaska Expedition, whose scientific personnel he selected.

While studying in the museums of England, Holland and Germany, in 1885, he was recalled to organize a division of ornithology in the Department of Agriculture, and soon converted it into the U. S. Biological Survey, of which he was chief for twenty-five years. During this epochal period of investigation, in which he played so important a part, he made field studies or led biological explorations (mainly by pack-horse outfits and most frequently accompanied by Vernon Bailey, long chief naturalist of the Biological Survey) in every state and also in Bermuda, Canada and Alaska. Among the more important of these surveys in the Far West were those of San Francisco Mountain, Arizona, including the Painted Desert and a section of the Grand Canyon; the Death Valley region and neighboring deserts in California, Nevada and Utah; the Snake Plains and adjacent mountains in Idaho, and Mount Shasta in northern California.

In addition to their many other scientific values, these and other explorations were proving grounds for Dr. Merriam's development of the laws of temperature control of the geographic distribution of animals and plants in North America. His life-zone concepts have been widely accepted by the scientific world.

He was a member of the U. S. Board on Geographical Names for twenty years and chairman for eight years. Two natural landmarks bear his name: Mount Merriam in California, amongst the group of High Sierra peaks that have been named for eminent scien-

tists, and Merriam Crater in northern Arizona. He was the last of the original founders of the National Geographic Society, on whose board of directors he served continuously for 54 years.

In 1910 Dr. Merriam resigned from the Biological Survey to continue natural-history and ethnological investigations under a special fund established in the Smithsonian Institution by Mrs. E. H. Harriman. Since that date he has devoted the major portion of his time to ethnological studies of the native Indian tribes of the Far West and to the betterment of their condition. He was an authority on distribution, languages, mythology and basketry of the tribes of California and Nevada. His original data are preserved in vocabularies, manuscripts, boundary maps and a collection of approximately 1,100 baskets representing 157 separate tribes of 25 linguistic stocks—including a number of California tribes now extinct.

Dr. Merriam is credited with having named and described about 700 different genera, species and subspecies of animals; in addition, numerous other species have been named for him.

Further evidence of his boundless enthusiasm, tireless energy and breadth of interests is furnished by his set of journals spanning a period of about 70 years, and by the extent of his published writings numbering upwards of 500 titles plus numerous book reviews. The wide range in subject matter is illustrated by a few examples: The Birds of Connecticut (1877); Mammals of the Adirondacks (1884); Life Zones and Crop Zones of the United States (1898); Biological Survey of Mount Shasta (1899); Dawn of the World (Mewan Indian myths, 1910); Review of the Grizzly and Big Brown Bears of America (1917); Earliest Crossing of the Deserts of Utah and Nevada to Southern California—Route of Jedediah S. Smith in 1826 (1923), and Classification and Distribution of the Pit River Indian Tribes of California (1926).

When SCIENCE was reorganized in 1894 Dr. Merriam was a member of the editorial committee and continued to hold this position until his death after forty-seven years.

Dr. Merriam was a member of the National Academy of Sciences (since 1902), the Zoological Society of London and many other scientific societies. He was a past president of the American Ornithological Union, the American Society of Naturalists, the American Society of Mammalogists, the Anthropological Society of Washington, the Biological Society of Washington, the Linnaean Society of New York, the Yale Society of Natural History, and the Lewis County (N. Y) Medical Society. He enjoyed honorary membership in numerous foreign as well as American organizations.

He was the recipient of outstanding awards, including the Linnaean Society's Medal "for eminent work in mammalogy, ornithology and zoogeography," and the Roosevelt Medal "for distinguished work in biology."

His contagious enthusiasms were an inspiration to his colleagues, especially the younger naturalists. Along with his intense interest and driving energy in things scientific, he loved people. He was never too busy to help his friends in all walks of life, among whom he numbered hundreds of California Indians. The wide diversity of his friends and interests is further reflected by his intimate friendship with such people as Theodore Roosevelt, John Burroughs, John Muir, William Keith, Governor Pinchot, E. H. Harriman, General Funston, Samuel Pierpont Langley, Alexander Graham Bell, Gilbert Grosvenor, Admiral Peary, General Greeley, Rudyard Kipling, Sir Baden Powell, William Wallace Campbell and David Starr Jordan.

Dr. Merriam lived in Washington, D. C., during the winter for the greater part of his long and eventful life. His summer home was in the redwoods at Lagunitas, Calif., until 1939, when he made his home with his daughter in Berkeley.

Z. M. TALBOT
M. W. TALBOT

BERKELEY, CALIF.

RECENT DEATHS

FRANK COLLINS BAKER, curator emeritus of the Museum of Natural History of the University of Illinois, died on May 7, at the age of seventy-four years.

DR. CHARLES ROLLIN KEYES, consulting mining engineer, founder and editor of the *Pan-American Geologist Magazine,* died on May 18, at the age of seventy-seven years.

DR. WINFIELD CAREY SWEET, field director of the anti-malaria division of the Rockefeller Foundation in Bolivia, died on May 19, at the age of fifty years.

DR. MARCUS WARD LYON, JR., pathologist of the Clinic, South Bend, Ind., died on May 19, at the age of sixty-seven years.

Nature reports the death of Dr. B. M. Griffiths, formerly reader in botany and head of the department of botany in the University of Durham, on March 25, aged fifty-five years; of H. J. Hughes, formerly principal of the Muresk Agricultural College, Western Australia, on September 27, aged sixty-seven years; of F. J. Rae, director of the Melbourne Botanic Gardens and Government botanist for Victoria, on September 18; and of L. Wray, formerly director of the State Museums, Malaya, on March 14, aged eighty-nine years.