

or 13, none divided. Length of caudal fin 3.8 in standard length.

Measurements in percentage of standard length: Body depth 15.6; caudal peduncle least depth 12.3; length of caudal peduncle from base of last dorsal ray to midbase of caudal fin 26.5; head length 28.9; snout length 6.4; upper jaw length 8.7; orbit length 5.8; interorbital width 3.5; distance from tip of snout to spinous dorsal origin 41.6; spinous dorsal base length 13.9; longest dorsal spine length 15.3; soft dorsal base length 12.7; distance from tip of snout to anal origin 58.3; anal base length 12.7; longest anal soft ray length 14.4; pectoral fin base width 5.8; pectoral fin length 20.8; distance from tip of snout to pelvic fin origin 30.0; pelvic fin length 16.8; caudal fin length from midbase to tip of longest lateral ray 26.0.

Coloration.—Mr. Pendleton has informed me that all the specimens were "virtually transparent" when alive. In alcohol (first preserved in formaldehyde) they are an opaque flesh color with large scattered chromatophores arranged in a definite characteristic pattern. Body with a few scattered melanophores on upper sides of body, on the base of the pectoral fin and a single series along each side of the bases of the dorsal fins. A darker, more deeply imbedded interrupted pigment streak extends along the mid-ventral line of the body from a vertical immediately behind the eye to the procurent caudal rays. A longitudinal blotch is present on the median section of chin. The most striking color feature is a rectangular blotch of melanophores at the base of the caudal fin. Widely spaced scattered melanophores present behind eye and on top of head, somewhat concentrated on occiput.

This species is named *diaphana* from the Greek *diaphanes* = transparent in reference to the transparency of the living examples.

GOBIIDAE

(31) *Gobiodon erythrospilus* Bleeker

No. 14899, Purvis Bay, Florida Island, December 23, 1944, 1 specimen.

It has not been recorded from the Solomons in the literature.

(32) *Gobiodon quinquestrigatus* Cuvier and Valenciennes

No. 14796, Purvis Bay, Florida Island, December 23, 1944, 14 specimens; no. 14797,

Purvis Bay, Florida Island, January 21, 1945, or March 29, 1945, 1 specimen.

A large number of forms, probably several distinct species are recognized under this species. The genus *Gobiodon* is in great need of revision.

Previously recorded under the name *Gobiodon rivulatus* from Kungava Bay, Rennell Island by Seale (1935, p. 372 and from Howla Island, Solomons, by Herre (1931, p. 9).

(33) *Paragobiodon echinocephalus* (Rüppell)

No. 14798, Purvis Bay, Florida Island, December 23, 1944, 21 specimens.

Previously recorded from Bougainville Island and Shortland Island, Solomons, by Herre (1935, p. 9).

PERIOPHTHALMIDAE

(34) *Periophthalmus koelroeteri* (Pallas)

No. 14897, mouth of small brackish stream near Lengo, north coast of Guadalcanal Island, May 20, 1944, 8 specimens; no. 14898, sea level on mud flats at mouth of Tenaru River, Guadalcanal Island, May 20, 1944, 2 specimens.

Previously recorded from Auki, Malaita Island and Bougainville Island, Solomons, by Herre (1931, p. 9).

BLENNIIDAE

(35) *Salarias guttatus* Cuvier and Valenciennes

No. 14801, Purvis Bay, Florida Island, January 4, 1945, 2 specimens.

Apparently not known from Solomons. Dr. W. M. Chapman made this determination for me.

TRIGLIDAE

(36) *Abalistes stellaris* (Bloch and Schneider)

No. 14789, Purvis Bay, Florida Island, December 28, 1944, 1 specimen.

Previously unrecorded from the Solomons.

(37) *Balistapus capistratus* (Tilesius)

No. 14790, Purvis Bay, Florida Island, December 23, 1944, 1 specimen; no. 14791, same locality, January 15, 1945, 1 specimen; no. 14792, same locality, March 15, 1945, 1 specimen.

Previously unrecorded from the Solomons.

(38) *Odonus niger* (Rüppell)

No. 14793, Gavutu Bay, Gavutu Island, Florida Group, May 8, 1945, 1 specimen.

Apparently the first definite locality record for the Solomons.

(39) *Tetraodon nigropunctatus* Bloch
and Schneider

No. 14794, Tulagi Harbor, Tulagi Island, Florida Group, May 1, 1945, 1 specimen.

Recorded from Shortland Island, Solomons, by Herre (1931, p. 9).

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Obituaries

FRANÇOIS EMILE MATTHES.—In 1947, after 51 years of distinguished service with the U. S. Geological Survey, François Emile Matthes retired to El Cerrito, Calif. There, near the mountains he loved, he planned to continue the studies to which he had devoted much of his long and fruitful life. These plans, however, were abruptly ended by his death on June 21, 1948, less than a year after his retirement.

Although born in Amsterdam, Holland, on March 16, 1874, he came with his family to America in 1891 and soon became a naturalized citizen. In 1895 he received a B.S. degree from the Massachusetts Institute of Technology and the following year joined the Topographic Branch of the Geological Survey. For almost 20 years he was engaged in the preparation of topographic maps of such spectacular and difficult areas as the Big Horn Mountains, that part of the Rocky Mountains which is now Glacier National Park, the Grand Canyon of the Colorado, Yosemite Valley, and Mount Rainier National Park. The superb artistry and deep understanding of landforms, displayed in his delineation of terrain by the contour line, were matched by his interest in the processes which produced these landforms. His early work in the Big Horn Mountains led directly to studies of glaciation and the geomorphic processes of high altitudes, reported in the first of his long series of publications, *The glacial sculpture of the Big Horn Mountains* (21st Ann. Rep. U. S. Geol. Surv., pt. 2. 1900), in which he named the process of "niva-

tion." In 1914, Mr. Matthes transferred to the Geologic Branch of the Geological Survey in order to devote himself exclusively to studies of glaciers and the development of landforms. However, during both World Wars I and II he was called by the Army and Air Forces to be a consultant. His long record of professional achievements are typified by his classic study, *The geologic history of the Yosemite Valley* (U. S. Geol. Surv. Prof. Pap. 160. 1930).

In 1931 Mr. Matthes was made chairman of the committee on glaciers of the section of hydrology of the American Geophysical Union, charged with collecting the results of studies and measurements of existing glaciers and their fluctuations throughout the world. At the time of his death he was also secretary of the commission on snow and glaciers of the International Association of Scientific Hydrology of the International Union of Geodesy and Geophysics. His interest in glaciers and the processes of glaciation, and his recognition of the recent reestablishment of glaciers in the mountains of western United States, named by him the *Little Ice Age* (chapter on "Glaciers" in *Hydrology, Physics of the Earth Series 9*: 1942), led directly into the disciplines of climatology and meteorology. At the time of his death he was engaged in the completion of an important critical analysis of the glacial anticyclone theory, of which only part 1 has been published, *The glacial anticyclone theory in the light of recent meteorological data from Greenland* (Trans. Amer. Geophys Union **27**: 324-341. 1946).

In recognition of Mr. Matthes' high professional attainments, he was decorated Chevalier, Order of Leopold II (Belgium) in 1920, elected president of the Geological Society of Washington in 1932, president of the American Association of Geographers in 1933, and vice-president of the Washington Academy of Sciences from the Geological Society of Washington in 1934. Shortly before his death he was presented a gold medal by the Department of the Interior for his long and distinguished service to the Government. When, in 1947, he received an honorary LL.D. degree from the University of California, President Sproule said, "By your artistry in the delineation of landforms and your clear, scientific description, you have interpreted the beauty of the western American landscape to the mind, as well as the eyes, of all who love the mountains." Through active association with such organizations as the National Park Service, the Boy Scouts of America, and the Sierra Club, and through the many popular scientific articles written for the layman, he brought his appreciation and understanding of the beauty and development of the landscape to the layman. The honor which he prized most highly was the "Order of the Silver Beaver," conferred upon him by the Council of the Boy Scouts of America for "distinguished service to boyhood."

The passing of François Emile Matthes is a great loss to his many professional and personal friends throughout the world. He leaves to us as an enduring monument, his published works in which we can find his deep understanding, appreciation, and devotion to the beauty and orderliness of the natural landscape.

LOUIS L. RAY.

OSCAR EDWARD MEINZER was born on a farm near Davis, Ill., on November 28, 1876. He died in his home in Washington, D. C., on June 14, 1948. He is survived by his wife, Alice Crawford Meinzer, and two sons—Robert William, of Berwyn Heights, Md., and Roy Crawford, of New Brunswick, N. J.

Meinzer was one of six children of William and Mary Julia Meinzer. From them he acquired a strong hatred of war, deep religious convictions, an independent inquiring but orderly mind, and a capacity for hard, concentrated work. His interest in geology was aroused during his early boyhood by his observation of fossil-packed lime-

stone beds overlain by glacial till containing erratics that were foreign to the locale of his father's farm. His interest in ground water was aroused at an early age by the difficulties experienced by his father in obtaining water for domestic and stock use. As a means to knowledge about these and many other observations that aroused his curiosity, he eagerly seized the opportunity for a college education and entered Beloit College (Wisconsin) from which he was graduated, magna cum laude, in 1901, having been elected to Phi Beta Kappa. After graduation he was principal of schools at Frankfort, S. Dak., for two years. He then taught science at Lenox College, Iowa, and in 1905 entered the graduate school at the University of Chicago, which later awarded him the degree doctor of philosophy, magna cum laude.

Having completed his residence requirements at Chicago, in 1907 he was appointed junior geologist in the U. S. Geological Survey and began his lifelong study of ground water. In 1913 he was made chief of the Ground Water Division, and he continued in that capacity until his retirement on November 30, 1946.

Meinzer made many investigations of the geology and ground-water resources of various areas in the West, in Cuba, and in the Hawaiian Islands. In later years he wrote extensively on the occurrence of ground water, its recharge, movement, and discharge. His bibliography contains about 110 items, most of which are substantial contributions to science. The most important of these probably are his *Occurrence of ground water in the United States, with a discussion of principles*, *Outline of ground-water hydrology, with definitions*, and the volume on *Hydrology* of which he served as editor and also wrote a section on the occurrence of ground water, and was co-author of a section on the movements of ground water.

Early in his career, Meinzer recognized that ground water was destined to become increasingly important as a natural resource and that adequate methods would have to be worked out for determining the location, distribution, volume, and physical characteristics of ground-water reservoirs; their storage capacities, rates of recharge, movement, and discharge and the safe rates of withdrawals of water from them. Previous work had been along two distinct lines, by the geologists and by the physicists and engi-



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