

NOTES AND NEWS

WALDO L. SCHMITT

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BY

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A 70-year career devoted to marine biological (especially crustacean) research and exploration, with emphasis on the promotion of the discipline and assistance to associates less fortunately situated than he was, came to a close when Waldo LaSalle Schmitt passed away in Sandy Spring, Maryland, at the age of 90.

Waldo Schmitt was born in Washington, D.C., of German-American parents and attended public schools there. Because of an early interest in botany, especially forestry, his first job was as an aide in the Office of Foreign Seed and Plant Introduction in the U.S. Department of Agriculture in 1907. In 1910, he served as scientific aide in the Division of Marine Invertebrates at the U.S. National Museum, Smithsonian Institution, but in the same year he transferred to the Bureau of Fisheries as scientific assistant on the research steamer "Albatross". This appointment led to participation in an expedition to Lower California and an Alaskan salmon investigation in 1911; the biological survey of San Francisco Bay, California, in 1912-13; and a halibut survey off Washington and Oregon in 1914. In the meantime, he had been attending classes at the University of California in Berkeley and thereby earning credits toward the B.S. degree, which was granted in 1913 by George Washington University, where he had studied before joining the "Albatross".

In 1914, he married Alvina Stumm of Berkeley. In the same year, he returned to the Smithsonian as assistant curator in the Division of Marine Invertebrates. The salary from this position was supplemented by an appointment as instructor at George Washington University, where he taught late afternoon classes from 1915 to 1920. In 1916, he obtained the M.A. degree from the University of California, based in part on a thesis that was subsequently published (in 1921) as "The Marine Decapod Crustacea of California." In 1920, he was promoted to curator of the Division of Marine Invertebrates at the National Museum. In 1922, he earned the Ph.D. degree from George Washington University; his doctoral dissertation on the Australian shrimps collected by the "Endeavour" was published in 1926. In 1924, he was a delegate to the U.S. Navy Oceanographic Conference, and the summers of that and the following year were spent at the Dry Tortugas Laboratory of the Carnegie Institution. A total of 14 months in 1925, 1926, and 1927

was devoted to two extensive collecting trips to the east and west coasts of South America, as a Walter Rathbone Bacon Scholar. The summers of 1930, 1931, and 1932 were again allocated to investigation of the Dry Tortugas fauna at the Carnegie Marine Laboratory. From 1932 to 1935, he participated in three cruises, sponsored by Captain Allan Hancock, to the tropical American Pacific and the Galapagos Islands. In 1937, he was a member of the Smithsonian-Hartford West Indian Expedition. In 1938, he was naturalist on the Presidential (Franklin D. Roosevelt) Cruise to Clipperton, Cocos, and the Galapagos islands. He joined the Allan Hancock Atlantic Expedition to northern South America in the following year and, in 1940, he took part in the Alaska King Crab Investigation of the U.S. Fish and Wildlife Service. During the two following years (1941-42), he was on special detail to the U.S. Navy investigating the possible establishment of a biological station in the Galapagos Islands.

In 1943, Dr. Schmitt was appointed head curator of the Department of Biology in the U.S. National Museum and he engaged in "good-will" missions to South America under the sponsorship of the U.S. Department of State. In 1947, he succeeded in establishing a separate Department of Botany and, from then until his retirement in 1957, he was head curator of the Department of Zoology. In 1948, he was elected first president of the Society of Systematic Zoology, an association that he had a major part in founding and, in the same year, he received an honorary D.Sc. degree from the University of Southern California. In 1953, he chaired a conference on the importance and needs of systematic biology, under the auspices of the National Research Council. The year 1955 marked the beginning of a series of Smithsonian-Bredin Expeditions, sponsored by Mr. and Mrs. J. Bruce Bredin of Wilmington, Delaware; Bredin and Schmitt first met on the Smithsonian-Hartford Expedition in 1937. The first of these expeditions traversed the Belgian Congo, Sudan, Uganda, and Egypt and it was followed in successive years by the first Caribbean Expedition (1956), a trip to the Society Islands (1957), back to the Caribbean (1958 and 1959), and, finally to the Yucatan Peninsula (1960).

In 1957, the year of his retirement and his appointment as research associate in the Smithsonian's Department of Invertebrate Zoology, he was a delegate to a symposium on marine boring and fouling organisms at Friday Harbor, Washington. In 1961 and 1962, he sponsored — under a grant from the Office of Naval Research — and participated with Harry Pederson of McAllen, Texas, in coral reef studies at Lyford Cay, New Providence, Bahamas. In 1962, he attended a conference on the biochemical, physiological, and serological aspects of taxonomy at the University of Kansas and, later that year and early in 1963, he participated in the Palmer Peninsula Survey of the U.S. Antarctic Program.

Dr. Schmitt was an honorary member of the Atlantic Estuarine Society; a member of the Board of Trustees of the Bears Bluff Laboratories, Wadmalaw Island, South Carolina; on the Board of Advisors of the Marine Laboratory of the University of Miami (Florida) and a member of the Board of Trustees of the International



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Oceanographic Foundation; a Trustee of the Serological Museum at Rutgers University; a member of the Board of Directors of the Cushman Foundation for Foraminiferal Research; a member of the Budget Committee of the American Geophysical Union; a Referee for Fulbright Act awards; past president and former member of the Board of Managers of the Washington Academy of Sciences; corresponding member of the Zoological Society of London; corresponding member of the Chilean Society of Natural History; member of the Academy of Natural Science of Chile; honorary member of the Panama Canal Natural History Society; honorary life member of the San Diego Zoological Society; and first member of the Smithsonian Society of Associates.

If the typical museum curator and taxonomist is an individual who shuns controversy and even the company of others in order to preserve the tranquility conducive to complex cogitation, Waldo Schmitt did not fit the image. Although he could indulge in prolonged concentration when involved in research activities — a state of mind that may be more easily attained by those who wear hearing aids — he was basically gregarious and indomitable, a quality more admired by his subordinates than his superiors. Although he seldom, if ever, complained about his deafness (the consequence of a childhood disease), except for frequent apologies for speaking too loudly, he must have deplored this hindrance to easy communication as much as he fervently did the imperfections in our society and those responsible for them.

Schmitt's carcinological research was well done, as indicated by the reception accorded it by his professional colleagues. His first major work, on the decapods of California, endured the test of time sufficiently well to justify facsimile reproduction more than 50 years after its original publication. His revisionary study of the species of *Aegla* demonstrated his species sense and his ability to discern relationships in a little-worked group. Finally, the pinnotherid catalogue — a study that he pursued and supervised near the end of his career — shows the same attention to detail as his earlier works, although he characteristically complained that minor errors in the catalogue could have been eliminated if the editorial deadline had been less arbitrary.

One cannot avoid the impression, however, that Schmitt gained greatest satisfaction, not from his own research, but from the success of some of his proteges and from his skirmishes with those responsible for the state of the world we live in, whether the question concerned the salary of an assistant or public transportation in his native Washington, about which he had very strong and probably justifiable, constructive opinions. He was always ready to help a struggling young biologist, whether amateur or professional, and he had no sympathy with any of his associates who begrudged the time devoted to assisting less fortunate acquaintances. His affection for the underdog was most apparent where children were concerned. Even after attaining the age of four-score years, he would have eagerly adopted a new family, if it could have been arranged. This attitude may have stemmed in part from the death of his only son, the elder of the two Schmitt

children, on the German front in 1944, creating a void that could never be reconciled.

A considerable part of Dr. Schmitt's time and energy was devoted to the promotion of carcinology and systematic invertebrate zoology in general. Of importance to the first of these endeavors was the little semipopular book entitled "Crustaceans", first published in the Smithsonian Scientific Series in 1931; a considerably revised version, with the same title, was issued by the University of Michigan Press in 1965. Of major significance to the broader discipline was the organization of the Society of Systematic Zoology in 1948, a society the current objectives of which seem quite different from those envisioned by Schmitt and the little group of invertebrate zoologists who founded it. Of similar importance was the National Research Council conference on systematics in 1953, organized by Schmitt and now best remembered by his paper on "Applied Systematics" that was condensed from an address originally presented at the Zoologist's Dinner of the AAAS annual meeting in St. Louis, 30 December 1952, published in the Annual Report of the Smithsonian Institution for 1953, and republished in Richard E. Blackwelder's "Taxonomy" in 1967.

Waldo Schmitt seemed to develop a wanderlust during his first cruise on the "Albatross". There is little doubt that some of his happiest days were spent in remote parts of the world, but travel was only incidental to his primary purpose — collecting. He was a tireless, almost obsessed collector, as anyone who ever tried to match his pace in the field will attest. Nearly every hour of every day, except the very few that were reluctantly allotted to sleep, was spent either collecting or processing and documenting collections. Perhaps his major contribution to the Museum and the discipline that claimed his affection are the thousands of study specimens that he amassed. His five summers at the Carnegie Marine Laboratory in the Dry Tortugas yielded more than 15,000 invertebrate specimens; the two South American trips on the Walter Rathbone Bacon Scholarship added nearly as many more; the Presidential Cruise of 1938 produced over 11,000 invertebrates; and his last major expedition, the Palmer Peninsula Survey of 1963, topped all others, with more than 27,000. Not included in these counts are the collections obtained by the "Albatross" cruises when Schmitt was aboard; the five Allan Hancock Expeditions; and the six Smithsonian-Bredin Expeditions. There is, therefore, ample evidence that he achieved in large part his ambition to make the Smithsonian (or, as he preferred to call it, the National Museum) the repository for the largest and finest study collections of marine invertebrates in the world, by gleaning from our deteriorating environment enough material to keep his successors busy indefinitely.

Dr. Schmitt's own inability to work up more than a small fraction of the material that he collected (because of recurring opportunities to obtain more) seemed to disturb him little. He was delighted, however, when a colleague, usually of a younger generation, found something of interest in his collections. This frame of mind seems to re-emphasize his dedication to the advancement of invertebrate

systematic zoology, of the museum facilities for conducting research in that field, and of opportunities for those who would follow along the path that he blazed. All of the latter will certainly feel a debt of gratitude to this unusual man.

Publications by Waldo L. Schmitt

Note: Encyclopedia articles and book reviews, many of which are cited in the biographical note and bibliography by Lucile McCain published with the 1972 reprint of "The marine decapod Crustacea of California," are not included in the following list.

1914. (By FRANCIS B. SUMNER, GEORGE D. LOUDERBACK, WALDO L. SCHMITT & EDWARD C. JOHNSTON). A report upon the physical conditions in San Francisco Bay, based upon the operations of the United States Fisheries Steamer "Albatross" during the years 1912 and 1913. Univ. California Publ. Zool., **14** (1): 1-198, figs. A-T, pls. 1-13, 24 tables.
1915. (By WALDO L. SCHMITT, E. C. JOHNSTON, E. P. RANKIN & EDWARD DRISCOLL). Survey of the fishing grounds on the coasts of Washington and Oregon in 1914. Appendix VII to the Report of the U.S. Commissioner of Fisheries for 1914. Bur. Fisheries Doc., **817**: 1-30, pl. 1, 2 charts, 4 tables.
1919. Early stages of the spiny lobster taken by the boat "Albacore". California Fish Game, **5** (1): 24, 25, fig. 14.
1919. Marine biological studies in California. Smithsonian Explorations, **2**: 41, 42, fig. 44.
1919. The schizopod crustaceans of the Canadian Arctic Expedition, 1913-18. Rep. Canadian Arctic Exped., 1913-18, **7** (B): 1-8, figs. 1-3.
1921. The marine decapod Crustacea of California, with special reference to the decapod Crustacea collected by the United States Bureau of Fisheries Steamer "Albatross" in connection with the biological survey of San Francisco Bay during the years 1912-13. Univ. California Publ. Zool., **23**: 1-470, figs. 1-165, pls. 1-50. [Reprinted, with portrait, revised title pages, and biographical note and bibliography by Lucile McCain, by Antiquariaat Junk, Lochem, Netherlands, 1972.]
1924. The Macrura and Anomura collected by the Williams Galapagos Expedition, 1923. Zoologica, New York Zool. Soc., **5** (15): 161-171, figs. 39-41.
1924. Crustacea (Macrura [sic] and Anomura). Expedition of the California Academy of Sciences to the Gulf of California in 1921, XXIV. Proc. California Acad. Sci., (4) **13** (24): 381-388.
1924. Report on the Macrura, Anomura, and Stomatopoda collected by the Barbados-Antigua Expedition from the University of Iowa in 1918. Univ. Iowa Stud. nat. Hist., **10** (4): 65-99, pls. 1-5.
1924. The macruran, anomuran, and stomatopod Crustacea. Bijdragen tot de Kennis der Fauna van Curaçao. Resultaten eener reis van Dr. C. J. van der Horst in 1920. Bijdr. Dierk. **23**: 61-81, figs. 1-7, pl. 8.
1924. Observations on the decapod Crustacea of Tortugas. Carnegie Inst. Year Book, **23**: 200, 201.
1924. Address before the U.S. Navy Conference on Oceanography, July 2, 1924. Report of Conference (mimeographed): 44-50.
1925. Some flower-like animals of the sea. Nature Mag., **5** (5): 277-281, illustr.
1925. (By W. H. LONGLEY, W. L. SCHMITT & W. R. TAYLOR). Observations upon the food of certain Tortugas fishes. Carnegie Inst. Year Book, **24**: 230-232.
1926. The macruran, anomuran, and stomatopod crustaceans collected by the American Museum Congo Expedition, 1909-1915. With field notes by Herbert Lang and James P. Chapin. Bull. American Mus. nat. Hist., **53** (1): 1-67, figs. 1-75, pls. 1-9.
1926. Report on the Crustacea Macrura (Families Penaeidae, Campylonotidae and Pandalidae) obtained by the F.I.S. "Endeavour" in Australian seas. With notes on the species "Penaeus" described by Haswell and contained, in part, in the collections of the Macleay Museum, at the University of Sydney. Biol. Res. "Endeavour" 1909-14, **5** (6): 311-381, pls. 57-68.
1926. Marine invertebrate studies at the Tortugas. Smithsonian misc. Coll., **78** (1): 40, figs. 43, 44.
1926. Study of the crustaceans of South America. Smithsonian misc. Coll., **78** (1): 40-44, figs. 45, 46.
1926. The compass medusa. Nature Mag., **8** (4): 228, illustr.
1927. Study of the crustaceans of South America. Smithsonian misc. Coll., **78** (7): 89-93, figs. 98, 99.
1927. Additional records of the occurrence of the fresh-water jelly-fish. Science, **66** (1720): 591-593.

1928. The crustaceans of South America. Explorations and Field-Work of the Smithsonian Institution in **1927** (Pub. 2912): 45-50, figs. 44-51.
1928. A voyage to the island home of Robinson Crusoe. *Nat. geogr. Mag.*, **54** (3): 353-370, illustr.
1929. (By WALDO L. SCHMITT & CLARENCE R. SHOEMAKER). The Crustacea of Beaufort, North Carolina. Explorations and Field-Work of the Smithsonian Institution in **1928** (Pub. 3011): 85-88, figs. 73-77.
1930. Some remarks on the biological phases of oceanography. *Trans. American Geophysical Union*, **10-11**: 292-295.
1930. The study of scientific material in the museum. *Mus. News*, **8** (12): 8-10.
1930. Some observations on the Crustacea of Tortugas, Florida. *Carnegie Inst. Year Book*, **29**: 343-346, figs. 1-10.
1931. Chinese stomatopods collected by S. F. Light. *Lingnan Sci. Journ.*, **8**: 127-148, pls. 16-19.
1931. Two new species of shrimp from the Straits of Formosa. *Lingnan Sci. Journ.*, **10**: 265-268, pl. 32.
1931. Crustaceans. Shelled invertebrates of the past and present, II. *Smithsonian Sci. Ser.*, **10**: 85-248, figs. 4-44, pls. 32-71.
1931. Some carcinological results of the deeper water trawlings of the Anton Dohrn, including description of two new species of Crustacea. *Ann. Rep. Tortugas Lab., Carnegie Inst. Year Book*, **30**: 389-394.
1931. Trawling for crustaceans at Tortugas, Florida, Explorations and Field-Work of the Smithsonian Institution in **1930** (Pub. 3111): 103-106, figs. 87-90.
1932. A new species of Pasiphaea from the Straits of Magellan. *Journ. Washington Acad. Sci.*, **22** (12): 333-335, fig. 1.
1932. Crustacea of the Tortugas region. *Carnegie Inst. Year Book*, **31**: 288, 289.
1932. *Coralliocaris pearsei* Schmitt new species. In A. S. Pearse, *Inhabitants of certain sponges at Dry Tortugas*. *Pap. Tortugas Lab. Carnegie Inst.*, **28**: 123, 124, fig. 1.
1933. Notes on shrimps of the genus *Macrobrachium* found in the United States. *Journ. Washington Acad. Sci.*, **23** (6): 312-317.
1933. Four new species of decapod crustaceans from Porto Rico. *American Mus. Novit.*, **662**: 1-9, figs. 1-4.
1934. Hancock Galapagos Expedition, 1933. Explorations and Field-Work of the Smithsonian Institution in **1933** (Pub. 3235): 18-22, figs. 21-27.
1934. Notes on certain pycnogonids including descriptions of two new species of *Pycnogonum*. *Journ. Washington Acad. Sci.*, **24** (1): 61-70, figs. 1, 2.
1935. Crustacea *Macrura* and *Anomura* of Porto Rico and the Virgin Islands. *Sci. Survey Porto Rico Virgin Is. (New York Acad. Sci.)*, **15** (2): 125-227, figs. 1-80.
1935. The West American species of shrimps of the genus *Penaeus*. *Proc. biol. Soc. Washington*, **48**: 15-24, pls. 1, 2.
1935. Mud shrimps of the Atlantic coast of North America. *Smithsonian misc. Coll.*, **93** (2): 1-21, pls. 1-4.
1935. Hancock Galapagos Expedition, 1934. Explorations and Field-Work of the Smithsonian Institution in **1934** (Pub. 3300): 17-22, figs. 12-17.
1935. The Galapagos Islands one hundred years after Darwin. *Nature Mag.*, **26** (5): 265-271, 312, 315, illustr.
1936. *Macruran* and *anomuran* Crustacea from Bonaire, Curaçao and Aruba. *Zoologische Ergebnisse einer Reise nach Bonaire, Curaçao und Aruba im Jahre 1930*, No. 16. *Zool. Jahrb. (Syst.)*, **67** (5/6): 363-378, pls. 11-13.
1936. Hancock Pacific Expedition, 1935. Explorations and Field-Work of the Smithsonian Institution in **1935** (Pub. 3382): 29-36, figs. 29-36.
1936. (By MARGARET E. VAN WINKLE & WALDO L. SCHMITT). Notes on the Crustacea, chiefly *Natantia*, collected by Captain Robert A. Bartlett in Arctic seas. *Journ. Washington Acad. Sci.*, **26** (8): 324-331.
1937. A new species of *Emerita* (Crustacea) from South Africa. *Ann. South African Mus.*, **32** (2): 25-29, pl. 3.
1937. The date of the crustacean plates of the "Disciples Edition" of Cuvier's *Règne Animal*. *Ann. Mag. nat. Hist.*, (10) **20**: 151, 152.
1938. Wake up, Railroad, solution to Washington's traffic problem. *Washington Daily News*, Monday, Feb. 28, 1938: 2.

1938. The Smithsonian-Hartford Expedition to the West Indies, 1937. Explorations and Field-Work of the Smithsonian Institution in **1937** (Pub. 3480): 57-64, figs. 61-67.
1938. Annotated list of fishes, Presidential Cruise, 1938. Appendix to the "Log [of] The Cruise 1938," by Captain D. J. Callaghan, U.S.N., Naval Aide to the President, with following title page: "The inspection cruise and fishing expedition of President Franklin D. Roosevelt on board U.S.S. Houston 16 July 1938—9 August 1938." (Privately printed and distributed during the month of November, 1938).
1939. The Presidential Cruise of 1938. Explorations and Field-Work of the Smithsonian Institution in **1938** (Pub. 3525): 1-14, figs. 1-11.
1939. Freshwater jellyfish records since 1932. *American Naturalist*, **73**: 83-89.
1939. Decapod and other Crustacea collected on the Presidential Cruise of 1938 (with introduction and station data). *Smithsonian misc. Coll.*, **98** (6): 1-29, figs. 1, 2, pls. 1-3.
1940. Taxonomy first and last. *The Explorer* (*Bull. Cleveland Mus. nat. Hist.*), **61**: 3, 7.
1940. (By WALDO L. SCHMITT & LEONARD P. SCHULTZ). List of the fishes taken on the Presidential Cruise of 1938. *Smithsonian misc. Coll.*, **98** (25): 1-10.
1940. Hancock Expedition of 1939 to the north coast of South America. Explorations and Field-Work of the Smithsonian Institution in **1939** (Pub. 3586): 51-56, figs. 53-61.
1940. The stomatopods of the west coast of America, based on collections made by the Allan Hancock Expeditions, 1933-38. *Allan Hancock Pacific Exped.*, **5** (4): 129-225, figs. 1-33.
1941. Alaska King Crab investigations, 1940. Explorations and Field-Work of the Smithsonian Institution in **1940** (Pub. 3631): 39-46, figs. 42-49.
1941. Charles Branch Wilson, October 20, 1861—August 18, 1941. *Science*, **94** (2442): 358, 359.
1941. What do you think of this, Mr. Motorist? *Washington Daily News*, Friday, Nov. 7, 1941: 40, illustr.
1942. Two new species of *Aeglea* from Chile. *Rev. Chilena Hist. nat.*, **44** (1940): 25-31, pl. 5.
1942. Some remarks on the endemic South American freshwater crustacean *Aeglea laevis* (Latreille). *Proc. 8th American Sci. Congress*, **3**: 491, 492.
1942. The species of *Aegla*, endemic South American fresh-water crustaceans. *Proc. U.S. natn. Mus.*, **91** (3132): 431-520, figs. 40-64, pls. 25-28.
1942. A new species of sand bug, *Blepharipoda doelloi*, from Argentina. *Smithsonian misc. Coll.*, **101** (18): 1-10, pl. 1.
1942. (By CARLOS E. PORTER & WALDO L. SCHMITT). The first free-living freshwater jellyfish from South America. *Science*, **96** (2501): 515.
1943. An unrecorded cause of "red water." *Science*, **98** (2532): 39.
1943. Obituary: Mary Jane Rathbun. *Journ. Washington Acad. Sci.*, **33** (11): 351, 352.
1944. Miscellaneous invertebrate animals of the Southwest Pacific. Mimeographed leaflet (7 pp.) by Smithsonian Institution, as part of series of such papers on various groups of animals of the Pacific area (for military personnel in area).
1944. Crustaceans and miscellaneous invertebrates; earthworms; leeches. *A Field Collector's Manual in Natural History*, Smithsonian Institution (Pub. **3766**): 61-69.
1945. Miscellaneous zoological material collected by the United States Antarctic Service Expedition 1939-41. *Proc. American Philosophical Soc.*, **89** (1): 297.
1945. Chronology of the U.S. Fisheries Steamer Albatross. Appendix A in JOEL W. HEDGPETH, *The United States Fish Commission Steamer Albatross*. *The American Neptune*, **5** (1): 15-26.
1946. A collection of shrimps from Santa Cruz Island, California. In WILLIS G. HEWATT, *Marine ecological studies on Santa Cruz Island, California*. *Ecol. Monogr.*, **16**: 208-210.
1947. The sun and the harvest of the sea. *Smithsonian ann. Rep.*, **1946**: 295-313, figs. 1-5, pls. 1-10. (Reprinted 1965).
1948. C. McLean Fraser: An appreciation; June 1, 1872 — December 26, 1946. *Allan Hancock Pacific Exped.*, **4** (1938-48): preface (i-iii) and frontispiece.
1950. Joseph A. Cushman and the National Museum. *Cushman Laboratory for Foraminiferal Research*, Memorial Volume: 29-35.
1950. Obituary: Samuel Frederick Hildebrand. *Journ. Washington Acad. Sci.*, **40** (1): 29-32.
1950. Samuel Frederick Hildebrand; August 15, 1883 — March 16, 1949; An appreciation. *Copeia*, **1950** (1): 1.
1953. Mimeographed report of conference (chaired by Waldo L. Schmitt) on the importance and

- needs of systematics in biology, issued by the National Academy of Sciences — National Research Council, Washington, D.C., sponsored by the NRC Division of Biology and Agriculture, organized by the Society of Systematic Zoology, and containing "Applied systematics" (pp. 4-12) and other remarks by the chairman (pp. 16-23, 27, 31, 32, 35, 38, 43-45, 47, 49-53).
1954. Applied systematics: The usefulness of scientific names of animals and plants. Ann. Rep., Smithsonian Institution, **1953** (Pub. 4158): 323-337.
1954. Copepoda. In PAUL S. GALTISOFF et al., Gulf of Mexico, its origin, waters, and marine life. (Fishery Bull., 89), Fishery Bull. U.S. Fish Wildl. Serv., **55**: 439-442.
1957. Marine Crustacea (except ostracods and copepods). In: JOEL W. HEDGPETH, (ed.), Treatise on Marine Ecology and Paleoecology, 1. Geol. Soc. America, Memoir, **67**: 1151-1159.
1957. A narrative of the Smithsonian-Bredin Caribbean Expedition, 1956. Ann. Rep., Smithsonian Institution, **1956** (Pub. 4285): 443-460, pls. 1-8.
1959. Clarence Raymond Shoemaker; March 12, 1874 — December 28, 1958. Journ. Washington Acad. Sci., **49** (2): 64, 65.
1959. Introduction to chapter on barnacles. In: DIXY LEE RAY (ed.), Marine boring and fouling organisms: 187-189. (University of Washington Press, Seattle).
1959. Narrative of the 1958 Smithsonian-Bredin Caribbean Expedition. Ann. Rep., Smithsonian Institution, **1958** (Pub. 4366): 419-430, pls. 1-10.
1962. Comments offered at The International Conference on Taxonomic Biochemistry, Physiology, 4, 5.
1964. Washington's transit and traffic problems (mimeographed, personally distributed, and copyrighted): 1-40.
1964. Leonhard Stejneger. Systematic Zoology, **13** (4): 243-249, illustr.
1965. Crustaceans: 1-204, 76 figs. (University of Michigan Press, Ann Arbor).
1967. (By GEORGE A. LLANO & WALDO L. SCHMITT). Preface. In GEORGE A. LLANO & WALDO L. SCHMITT, (eds.), Biology of the Antarctic Seas III. Antarctic Research Series, vol. 11. American Geophysical Union Pub., **1579**: vii.
1968. (By WALDO L. SCHMITT & GERHARD PRETZMANN). Eine neue Trichodactylus-Art aus Kolumbien. Entomol. Nachrichtenblatt, **15** (2): 6.
1969. Colombian freshwater crab notes. Proc. biol. Soc. Washington, **82**: 93-111, figs. 1-7.
1972. Response to "A tribute to Waldo LaSalle Schmitt" by George A. Llano. In MEREDITH L. JONES, ed., The Panamic biota: some observations prior to a sea-level canal. Bull. biol. Soc. Washington, **2**: 5, 6.
1973. Mary J. Rathbun, 1860-1943. Crustaceana, **24** (3): 283-297, pl. 1.
1973. (By WALDO L. SCHMITT, JOHN C. MCCAIN & EDWARD S. DAVIDSON). Decapoda I. Brachyura I. Fam. Pinnotheridae. Crustaceorum Catalogus, **3**: 1-160.

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SOME ASPECTS OF OSMOREGULATION IN *MYSIS RELICTA* LOVÉN (MYSIDACEA)

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Introduction. — *Mysis relicta* Lovén is a freshwater mysid that occurs in great numbers in deep lakes formed at the periphery of glaciers during the Pleistocene in North America and Eurasia (Ricker, 1959). It has also been found sporadically