

A Bibliography of Mosquito Writings of
C. S. Ludlow and D. W. Coquillett*

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The first woman known to us to publish extensively on the taxonomy of mosquitoes was Clara Southmayd Ludlow (1852-1924). She was born at Easton, Pennsylvania, December 26, 1852 and died at Washington, D. C., September 28, 1924. She received the degree of Bachelor of Science from Mississippi Agricultural College in 1900 and of Master of Science from the same institution in 1901. In 1908 she was granted the Ph.D. degree from George Washington University.

Dr. Ludlow was demonstrator of histology and embryology from 1907 to 1909 and instructor from 1909 to 1911 at George Washington University. She served as a lecturer on mosquitoes and disease at the Army Medical Museum from 1904 to 1910, as anatomist from 1916 to 1920 and as entomologist from 1916 until her death.

Her work at the museum primarily entailed the identification of disease-bearing insects submitted from Army posts and encampments throughout the world and the development and maintenance of a collection of the material. In the course of this work she published at least 49 articles dealing with mosquitoes, almost all of which deal with mosquito taxonomy. The publication phase of this work was performed largely on her own initiative. Although somewhat imperfect by present day standards, her publications should be evaluated against the status of womens' rights and mosquito taxonomy prevailing at the time. (Am. J. trop. Med. 4:565. 1924; Calvert, P. P., Ent. News 35:379-380. 1924.)

The U. S. National Museum, a unit of the Smithsonian Institution, has long been a locale of great importance to mosquito systematists. This has been true not only because of the presence there of the largest collection of mosquitoes in the New World but also because it has been the site of work for a succession of men who made notable contributions to the field of culicidology. This era began with Daniel William Coquillett (1856-1911).

Mr. Coquillett was born on a farm near Woodstock, Illinois on January 23, 1856. He very early became interested in entomology, publishing his first paper on insects in 1880. This article brought him to the attention of Professor Cyrus Thomas, then State Entomologist of Illinois, who requested

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him to prepare an article on lepidopterous larvae for publication in the State Entomologist's annual report. Subsequently, he accomplished other assignments for Professor Thomas.

In 1882, health problems caused Coquillett to move to Anaheim, California, where he rapidly regained his health and continued the collection and study of insects. It was at this time that he began to specialize in Diptera.

In 1885, Coquillett was appointed a field agent of the Division of Entomology, U. S. Department of Agriculture and, except for a brief period in 1886, was continuously connected with it until his death. While in California, he collaborated with Mr. Albert Koebele in the historic introduction and release of the vedalia beetle and the economic control of the cottony cushion scale on citrus in California which resulted.

In 1893, Coquillett was reassigned to Washington where he was soon detailed to study and identify Diptera. In 1896, he was appointed Honorary Custodian of Diptera in the U. S. National Museum; a position in which he remained until his death on July 8, 1911. When he came to the national collection, the Diptera section was very small, unarranged, and with the only types being Williston's in the Syrphidae. At his death, the collection was solidly established, well curated and possessing hundreds of types scattered through almost all families. (Banks, et al., Proc. ent. Soc. Wash. 13:195-210. 1911; Cresson, E. T., Ent. News 22:337-338. 1911; Hewitt, C. G., Can. Ent. 43:311-312. 1911.)

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1902. Description of a new *Anopheles*. J. Am. med. Assoc. 39:426-427.
- _____. Two Philippine mosquitoes. J. N. Y. ent. Soc. 10:127-131.
- _____. Note on *Culex annulatus*. J. N. Y. ent. Soc. 10:131.
1903. Some Philippine mosquitoes. J. N. Y. ent. Soc. 11:137-144.
- * _____. Report on the classification and seasonal flight of the mosquitos of the Philippine Islands. J. Assoc. Military Surgeons 12:84-107.
1904. Concerning some Philippine mosquitoes. Can. Ent. 36:69-72.
- _____. Mosquito notes. Can. Ent. 36:233-236.
- _____. Mosquito notes.—No. 2. Can. Ent. 36:297-301.
1905. Mosquito notes.—No. 3. Can. Ent. 37:94-102, 129-135.
- _____. A new North American *Taeniorhynchus*. Can. Ent. 37:231.
- _____. Mosquito notes.—No. 4. Can. Ent. 37:385-388.

* not seen

1906. Mosquito notes.—No. 4. (Continued). Can. Ent. 38:132-134.
- _____. A synonym. Can. Ent. 38:185.
- _____. An Alaskan mosquito. Can. Ent. 38:326-328.
- _____. *Anopheles crucians*, Wiedmann. Can. Ent. 38:296.
- _____. The distribution of mosquitos in the United States. As shown by collections made at army posts, 1904-1905. Med. Rec., 11 pp.
- _____. A new American mosquito. George Washington Univ. Bull. 5(4):83-84. [Reprinted 1907. George Washington Univ. Pub., nat. and phys. Sci. Series 1(10):85-86.].
- _____. Mosquito notes.—No. 5. Can. Ent. 38:367-368.
1907. Mosquito notes.—No. 5. (Continued). Can. Ent. 39:129-131, 266-268.
- _____. Mosquito notes.—No. 5. (Concluded). Can. Ent. 39:413-414.
1908. Mosquito notes.—No. 6. Can. Ent. 40:32-34, 50-52.
- _____. Mosquito notes.—No. 6. (Continued). Can. Ent. 40:331-332.
- _____. The mosquitos of the Philippine Islands. The distribution of certain species, and their occurrence in relation to the incidence of certain diseases. Ph.D. Thesis, George Washington Univ. 65 pp.
1909. Mosquito comment. Can. Ent. 41:21-24.
- _____. New Philippine mosquitoes. Can. Ent. 41:97.
- _____. Mosquito observations. Can. Ent. 41:233-235.
- _____. *Anopheles perplexens*. Can. Ent. 41:293.
1910. Mosquito observations.—(Continued). Can. Ent. 42:193-196.
1911. The Philippine mosquitoes. Psyche 18:125-133.
- _____. A new Alaskan mosquito. Can. Ent. 43:178-179.
1913. Disease-bearing mosquitoes of North and Central America, the West Indies, and the Philippine Islands. U. S. War Dept.; Office of the Surgeon General, Bull. #4, 97 pp.
1914. Philippine mosquitoes. Psyche 21:30-32.
- _____. *Myzomyia (Anopheles) ludlowii* Theobald. Psyche 21:32-33.
- _____. A new Anopheline. Psyche 21:129-130.
- _____. A new Aëdine. Psyche 21:159-160.

1915. The synonymy of *Anopheles christophersi*, Theo., and *A. indefinita*, Ludl. Bull. ent. Res. 6:155-157.
- _____. A question of synonymy. Psyche 22:137-140.
1916. Mosquitoes and man. Science 43:784-785.
- _____. Mosquitoes and man again. Science 44:788-790.
1917. *Cycloleppteran* Theobald (Diptera: Culicidae). Psyche 24:53.
1918. *Trichoprosopon* Theobald (Diptera; Culicidae). Psyche 25:66-68.
- _____. A note on *Limatus durhami* Theobald. Psyche 25:127-128.
1919. One phase of the mosquito work connected with the army camps in 1918. Proc. Am. Soc. trop. Med., Atlantic City meeting. June 16-17, 1919. New Orleans Med. and Surgical Journal 72:139-144. (This paper also reprinted in Military Surgeon 47, 6 pp., Sept. 1919).
- _____. New Siberian Culicidae. Insec. Inscit. Menst. 7:151-161.
- _____. New mosquitos from Panama. Psyche 26:166-169.
1920. Siberian *Anopheles*. Psyche 27:74-78.
1921. A new Philippine mosquito. Military Surgeon 49:690-691.
1922. Special entomological mounts. Am. J. trop. Med. 2:551-553.
1924. An inexpensive form of mosquito control. Military Surgeon 54:619-620.

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1896. New Culicidae from North America. Can. Ent. 28:43-44.
- _____. In Howard, L. O. The principal household insects of the United States. Mosquitoes and fleas. List of the mosquitoes of the United States. U. S. D. A. Ent. Dept. Bull 4:22-24.
1898. Report on a collection of Japanese Diptera, presented to the U. S. National Museum by the Imperial University of Tokyo. Proc. U. S. nat. Mus. 21:301-340.
1899. In Ashmead, W. H. Reports upon the insects, spiders, mites and myriapods collected by Dr. L. Stejneger and Mr. G. E. H. Barrett-Hamilton on the Commander Islands. Diptera, pp. 341-346. The Fur Seals and Fur-Seal Islands of the North Pacific Ocean, Part IV, Govt. printing office, Washington, D. C.
1900. Report on a collection of dipterous insects from Puerto Rico. Proc. U. S. nat. Mus. 22:249-270.

1900. In Howard, L. O. How to distinguish the different mosquitoes of North America. Synoptic tables of the North American mosquitoes. U. S. D. A. Div. of Ent. Cir. 40 (second series):4-7.
- _____. Papers from the Harriman Alaska Expedition. IX. Entomological results (3): Diptera. Proc. Wash. Acad. Sci. 2:389-464.
1901. Three new species of Culicidae. Can. Ent. 33:258-260.
- _____. Diptera. Psyche 9:149-150.
- _____. A systematic arrangement of the families of the Diptera. Proc. U. S. nat. Mus. 23:653-658.
- _____. Papers from the Hopkins Stanford Galapagos Expedition, 1898-1899. II. Entomological results (2): Diptera. Proc. Wash. Acad. Sci. 3:371-379.
1902. New Diptera from North America. Proc. U. S. nat. Mus. 25:83-126.
- _____. Three new species of *Culex*. Can. Ent. 34:292-293.
- _____. New forms of Culicidae from North America. J. N. Y. ent. Soc. 10: 191-194.
- _____. New orthorrhaphous Diptera from Mexico and Texas. J. N. Y. ent. Soc. 10:136-141.
1903. Four new species of *Culex*. Can. Ent. 35:255-257.
- _____. *Culex consobrinus* again. Can. Ent. 35:218.
- _____. A new culicid genus related to *Corethra*. Can. Ent. 35:189-190.
- _____. Notes on *Culex Kelloggi*, Theobald. Can. Ent. 35:261.
1903. A new *Anopheles* with unspotted wings. Can. Ent. 35:310.
1904. A brief history of North American dipterology. Proc. ent. Soc. Wash. 6:53-58.
- _____. Notes on *Culex nigritulus*. Ent. News 15:73-74.
- _____. New North American Diptera. Proc. ent. Soc. Wash. 6:166-192.
1905. A new *Culex* from Australia. Ent. News 16:116.
1906. On the breaking-up of the old genus *Culex*. Science 23:312-314.
- _____. A new *Culex* near *currieri*. Ent. News 17:109.
- _____. Dr. Dyar's square dealing. Ent. News 17:224.
- _____. A classification of the mosquitoes of North and Middle America. U. S. D. A. Bur. Ent. Tech. Ser. 11, 31 pp.

1906. New Culicidae from the West Indies and Central America. Proc. ent. Soc. Wash. 7:182-186.
- _____. Five new Culicidae from the West Indies. Can. Ent. 38:60-62.
1908. Dr. Dyar's criticism of "Mosquito Life". Can. Ent. 40:81-83.
1910. The type-species of the North American genera of Diptera. Proc. U. S. nat. Mus. 37:499-647.

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