

ENTOMOLOGY.—*Type specimens of mosquitoes in the United States National Museum: II, The genus Aedes (Diptera, Culicidae).* ALAN STONE, Entomology Research Branch, U. S. Department of Agriculture, and KENNETH L. KNIGHT, Bureau of Medicine and Surgery, U. S. Department of the Navy.¹

(Received May 8, 1956)

The first part of this series dealing with the genera *Armigeres*, *Psorophora*, and *Haemagogus* appeared in this JOURNAL **45**: 282–289. 1955. The introductory remarks in that paper and especially those on early, possibly questionable, holotypes, apply equally well to this one. Following our treatment of nominal taxa requiring special attention we present a list of those in the collection based on unique specimens or for which holotypes were clearly designated.

We are particularly indebted to Dr. J. B. Schmitt and Dr. B. B. Pepper, of the Department of Entomology of Rutgers University, for giving to the U. S. National Museum most of the type material of mosquitoes from the New Jersey Agricultural Experiment Station, consisting of syntypes of five species described by Grossbeck and one species described by Coquillett.

Genus *Aedes* Meigen

Aedes aboriginis Dyar, Ins. Insc. Mens. **5**: 99. 1917.

A male, bearing the data, "Longmire Springs, Mt. Rainier National Park, Washington, 18. VI.17, H. G. Dyar," was selected as lectotype by Knight (1951, p. 96).

Culex aestivalis Dyar, Journ. New York Ent. Soc. **12**: 245. 1904.

This was based upon adult specimens referred to *Culex reptans* Meigen by Dyar (1904, p. 38) and a description of the larva. No type material was mentioned in either publication. The collection contains a male with terminalia mounted on a slide. The pinned specimen bears the labels: "2790 iss III.04 / H. G. Dyar Collector / See

slide No. 22 / *Aedes aestivalis* Dyar ♂ type." The slide bears a red type label with no number and the labels: "22 C. reptans [sic] 279.0 Kaslo B.C. Dyar III.04 / *Culex* (Culicada) *aestivalis* Dyar Type ♂ genitalia, Dec. 14, 1904." We select this as lectotype of the species. There are many other specimens from Kaslo, British Columbia, but none of these is marked as type.

Aedes stimulans albertae Dyar, Ins. Insc. Mens. **8**: 115. 1920.

The three syntypes from Edmonton, Alberta, are in the collection, and we select as lectotype the male collected May 17, 1919, which bears Dyar's determination and type label. The terminalia of this specimen are mounted on slide no. 1226.

Gymnometopa albonotata Coquillett, Proc. Ent. Soc. Washington **7**: 183. 1906.

This was originally described from five male and three female syntypes collected by A. Busck in the San Francisco Mountains, Santo Domingo, West Indies, Type no. 8297, U. S. National Museum. We select as lectotype an undissected male bearing the labels: "141.3 / SFrncsco Mts. St. Domingo W.I. Sept. 05 / Aug. Busck Collector / Type No. 8297 USNM" and Coquillett's determination label. The associated pupal skin of this specimen is mounted on a slide.

Aedes aldrichi Dyar and Knab, Proc. U. S. Nat. Mus. **35**: 57. 1908.

The type locality of this species is Market Lake, Idaho, according to the original description and the U.S.N.M. type catalogue, and the description was based upon six females. The collection contains two females from Market Lake and four from Lewiston, Idaho, and it is probable that these are the original six on which the description was based and that Dyar did not notice when writing the data that they were not all from Market Lake. Dyar labeled one of the Lewiston specimens with a type label, but we prefer to select as lectotype one of the two from the published type locality.

¹ Studies upon which this paper is based were conducted under an exchange of funds from the Office of Naval Research (Biological Science Division) to the Smithsonian Institution. The opinions or assertions contained here are the private ones of the writers and are not to be construed as official or reflecting the views of the Navy Department or the Naval service at large.

Aedes alleni Turner, Ins. Insc. Mens. **12**: 84. 1924.

The two syntype males are in the collection, neither bearing any collection data, but each with an unnumbered red type label. One bears a number, 1885, which associates it with a terminalia slide labeled: "Aedes alleni Turner. Type. Mission, Tex. Jan. 30, 1924. 1885." We select this specimen as lectotype.

Aedes allotecnon Kumm, Komp, and Ruiz, Amer. Journ. Trop. Med. **20**: 417, 1940.

This name was originally proposed in a key to the adults of the *Aedes* of Costa Rica and is validated by the comparative characters given in the key. The formal description by Kumm and Komp (1941, p. 18) described the female as well as the larva and male but only three males with associated larval skins are designated as types. These syntypes are in the collection and we select as lectotype specimen no. 156.

Aedes altiusculus Dyar, Ins. Insc. Mens. **5**: 101. 1917.

This was described from an unstated number of specimens from "Indian Henry's," Mount Rainier National Park, Washington. The collection contains a female and a male each bearing the label "Type No. 21545 U.S.N.M." These are labeled Longmire Springs, Wash., June 24, 1917. Presumably they were collected as larvae on June 13 at "Indian Henry's" and they emerged June 24. We select the male as the lectotype. There are two other females, dated June 25, that are presumably of the original series.

Stegomyia amesii Ludlow, Journ. New York Ent. Soc. **11**: 139. 1903.

This species was described from Samar, Leyte, and Luzon in the Philippines. Only one of the original syntypes is in the collection, and this is the only one entered in the type catalogue. It is rather certain that the other syntypes are lost. This is a female bearing the type label and the label "Stegomyia amesii Ludl., Oras, Samar, P.I., June-Dec. Type C.S.L." Knight and Hull (1952, p. 158) call this a holotype, but since no holotype was mentioned originally we here designate it as lectotype.

Aedes angustivittatus Dyar and Knab, Journ. New York Ent. Soc. **15**: 9. 1907.

This was described from 25 specimens from three localities in Costa Rica and Bluefields,

Nicaragua. There are 50 specimens in the collection bearing original data but only one, a female, bears the type label. Other labels on this specimen are: "Port Limon, C.R. / Fredk Knab Collector / Aedes angustivittatus Dyar and Knab Type." This we consider to be the holotype.

Culex annulifera Ludlow, Journ. New York Ent. Soc. **11**: 141. 1903.

The lectotype female selected by Knight and Hull (1951, p. 226) is in the collection.

Finlaya aranetana Banks, Philippine Journ. Sci. **1**: 1001. 1906.

The lectotype male selected by Knight and Marks (1952, p. 543) is in the collection.

Aedes argentescens Dyar and Knab, Proc. U. S. Nat. Mus. **35**: 55. 1908.

This species was described from six syntypes from Córdoba and Almoloya, Mexico. A male and a female, both from Córdoba, bear Museum type labels. It is impossible to determine which four of the remaining specimens bearing original data were intended to be syntypes. The male also bears the label "Aedes argentescens Dyar and Knab Type" and the rearing number 441.4. This specimen we select as lectotype. Unfortunately, there were 18 specimens originally under number 441.4, not all in the collection now, and it is impossible to determine which larval and pupal skins belong to this specimen.

Aedes argyrorhox Bonne-Wepster and Bonne, Ins. Insc. Mens. **7**: 179. 1920.

It was the intention of the authors of this species to deposit the type specimen in the Colonial Institute, Amsterdam, Holland, and an additional specimen, called a cotype, was deposited in the U. S. National Museum. No holotype was designated, nor has a lectotype since been selected. Knight and Marks (1952, p. 546) stated that the single "cotype" male in the U. S. National Museum was the holotype, but this is not the case. Dr. Bonne-Wepster informs us that the original specimens of all the new species described in the paper in which *argyrorhox* was described are in Amsterdam.

Aedes atlanticus Dyar and Knab, Journ. New York Ent. Soc. **14**: 198. 1906.

This is based upon a figure of the larva in the original publication and upon descriptions by

Smith and by Felt of what they took to be *Culex serratus* Theobald from the Atlantic coast of the United States. While several of the specimens in the collection may have been before Dyar and Knab, Smith, or Felt when they described this species, there is no certainty of this, and so we do not feel justified in selecting a lectotype from these specimens.

Culex atropalpus Coquillett, Can. Ent. **34**: 292. 1902.

This was described from 37 female and 3 male syntypes from Virginia, Maryland, Pennsylvania, and New Hampshire. The males and 31 of the females are now in the collection, none of them marked as type. We select as lectotype a female bearing the labels "Plummer's I., Md. 16.7.02 / H. S. Barber Collector."

Howardina aureostriata Grabham, Can. Ent. **38**: 171. 1906.

The original description of this species does not state the number of specimens but does state that they were collected at Newcastle, Jamaica, and that some came from bromeliads. In the collection there are seven specimens, each bearing the label "M Grabham Collector." Three have penciled "aureostriata" labels, one is dated April 1906, and one is labeled "Mavis Bank, in bromelias." It is quite possible that some or all of these are syntypes, but it would be difficult to prove. They should be considered if a neotype were desirable, but since the name is a homonym there is little need for type designation.

Culex aurifer Coquillett, Can. Ent. **35**: 255. 1903.

The three original female syntypes are in the collection, each bearing the label "Type No. 12022 U.S.N.M." We select as lectotype one of the two collected June 25, bearing Coquillett's determination label.

Aedes balteatus Dyar and Knab, Journ. New York Ent. Soc. **15**: 9. 1907.

Of the six original females, five now stand in the collection and one of these bears a type label. This we consider to be the holotype. It bears the labels "St. Domingo W.I. Aug. / Aug. Busck Collector / Type No. 10142 U.S.N.M. / *Culex balteatus* Coq. [sic]." The number 10152 in the original publication is a misprint.

Aedes (Ochlerotatus) bicristatus Thurman and Winkler, Proc. Ent. Soc. Washington **52**: 239. 1950.

According to the original description, "Type specimens have been deposited in the U. S. National Museum. Paratypes have been deposited. . . ." There are two specimens in the collection bearing determination labels with a red penciled border. These are presumably the "types." Of these two, a male and a female, we select as lectotype the male bearing the label "Lakeport, Lake Co. 10 March 1950. reared 39.5 ♂ Eric C. Winkler." The pupal skin and terminalia of this specimen are on two slides.

Culex borealis Ludlow, Can. Ent. **43**: 178. 1911.

This was described from an unstated number of specimens collected in Alaska in June, July, and August. There are five females of the syntype series in the collection, apparently all collected at Fort Gibbon, Alaska, in July. Each bears the label "Type No. 27809 U.S.N.M.," and they appear to be conspecific. We select as lectotype one labeled in Ludlow's handwriting "*Culex borealis* Ludl. Fort Gibbon Alaska July, C.S.L. Types." This specimen appears to have been correctly determined as a synonym of *communis* De Geer.

Culex bracteatus Coquillett, Proc. Ent. Soc. Washington **7**: 184. 1906.

The four original females are in the collection, only one bearing a type label. This, which also bears Coquillett's determination label, we consider to be the holotype.

Stegomyia busckii Coquillett, Can. Ent. **38**: 60. 1906.

The syntypes, two males and one female, are in the collection, each labeled "Type No. 9139 U.S.N.M." We select as lectotype the undissected male bearing Coquillett's determination label of, "*Gymnometopa busckii* Coq." It was collected in a cocoa plantation on Dominica, July 28, 1905, by August Busck.

Aedes cacothius Dyar, Ins. Insc. Mens. **11**: 44. 1923.

The six female syntypes are in the collection, all bearing the identical data as published. We designate one of these as lectotype.

Aedes callithotrys Dyar, Ins. Insc. Mens. **8**: 16. 1920.

Of the 816 specimens determined by Dyar as this species, he selected and labeled a male and a female as types. We select as lectotype the male, bearing the labels "1159 / White Horse, Y.T. VII.17.1919 / H. G. Dyar / Type No. 22616 U.S.N.M. / *Aedes callithotrys* Dyar ♂ Type." The terminalia are on slide no. 1159.

Aedes campestris Dyar and Knab, Journ. New York Ent. Soc. **15**: 213. 1907.

This was described from a number of syntypes from various localities in Saskatchewan and Utah. Fourteen of these are in the collection, one male and one female having been labeled as type. We select as lectotype the female which is indicated as type and bears the labels "19.VI.07 / Oxbow, Sask. / Fredk Knab Collector."

Aedes (Ochlerotatus) camposanus Dyar, Ins. Insc. Mens. **6**: 128. 1918.

This species was described from a male and a female from Guayaquil, Ecuador, designated as types, and 52 other specimens also from Guayaquil. We select as lectotype the male of the two "types."

Aedes centrotus Howard, Dyar, and Knab, Mosquitoes of North and Central America and the West Indies **4**: 747. 1917.

A female labeled "White River, Ont. 25.VI.07 / Fredk Knab Collector" was selected as lectotype by Knight (1951, p. 98).

Aedes (Stegomyia) christianus Dyar, Ins. Insc. Mens. **9**: 148. 1921.

The syntype series of this consisted of five males and three females in the U. S. National Museum and the private collections of C. W. Howard and C. S. Banks. The collection contains the two male and one female syntypes said to be deposited in the U. S. National Museum. We select as lectotype the male bearing the labels "Honam 3-4-20 / 1429 / Canton China / C. W. Howard / Type No. 24142 U.S.N.M. / *Aedes christianus* Dyar Type." The terminalia are on slide no. 1429.

Aedes stimulans classicus Dyar, Ins. Insc. Mens. **8**: 113. 1920.

The two male and one female syntypes are in the collection. Since this subspecies was based

largely on characters of the male terminalia, we select as lectotype the whole male mounted on a slide.

Aedes condolezens Dyar and Knab, Journ. New York Ent. Soc. **15**: 11. 1907.

This was described from 24 specimens from five localities in the Bahamas. Nineteen of these are in the collection and one only bears a type label. This female is labeled "Nassau 6-24'03 Bahama Is. / T. H. Coffin Coll. #10 / Type No. 10248 U.S.N.M. / *Aedes condolezens* D & K. Type." We consider this to be the holotype.

Aedes cuneatus Dyar and Knab, Proc. U. S. Nat. Mus. **35**: 54. 1908.

Two specimens of the original 35 are labeled with U.S.N.M. type labels, a female and a male. The female also bears the label "*Aedes cuneatus* D. & K. Type" and the rearing number 422.19. We select this specimen as lectotype. It was collected at Córdoba, Veracruz, Mexico, January 20, 1908, pupated January 28, and emerged January 31. There are two larval skins and a pupal skin associated with this type specimen. The other syntypes are not labeled as such and cannot be distinguished from similarly unlabeled syntypes of *Aedes argentescens* Dyar and Knab.

Culex curriei Coquillett, Can. Ent. **33**: 259. 1901.

This was described from five females from North Dakota, Colorado, Idaho, and California. Of these, only two from Boise, Idaho, have been found, one of them bearing the label "Type No. 5798 U.S.N.M." and Coquillett's determination label. This we consider to be the holotype since it is the only specimen bearing the type number, it bears Coquillett's determination label, and Boise is the only locality that Coquillett entered in the Museum type catalogue. We do not feel that Dyar and Knab (1906, p. 202) were justified in selecting a North Dakota specimen as lectotype or that this selection is acceptable.

Aedes cyclocerculus Dyar, Ins. Insc. Mens. **8**: 23. 1920.

The lectotype male selected by Knight (1951, p. 93) is in the collection.

Aedes cyprius Ludlow, Ins. Insc. Mens. **7**: 160. 1920.

This was described from 22 females collected in Siberia. There are 9 specimens bearing type

labels and 11 others that are probably of the original series. The locality of any one of the specimens labeled as type cannot be determined since only three of them bear any locality labels, and each one of these is marked both Selenga and Verkhne Udinsk with the dates July and August. We have selected one of the better specimens as the lectotype.

Grabhamia de Niedmannii Ludlow, Can. Ent. **36**: 234. 1904.

Although this was apparently described from several specimens, only one is in the collection. This bears a red type label (no number) and a label in Ludlow's handwriting reading "Grabhamia de niedemanni n. sp. Ludlow, Benicia Barracks, Cal. Type." We select this, a female, as lectotype. Four specimens in the British Museum sent to Theobald by Ludlow as this species are actually *Culiseta inornata* (Williston) rather than *Aedes squamiger* (Coquillett) of which *G. de niedmannii* is a synonym.

Aedes diantaeus Howard, Dyar, and Knab, Mosquitoes of North and Central America and the West Indies **4**: 768. 1917.

This was described from two males collected in May and June at Dublin, N. H., by August Busck. The June specimen, with terminalia on slide no. 484, we here select as lectotype.

Culex dupreei Coquillett, Can. Ent. **36**: 10. 1904.

This was based on a specimen of each sex collected by J. W. Dupree at Baton Rouge, La. These are in the collection, each bearing the label "Type No. 7340 U.S.N.M." The female, which bears Coquillett's determination label, is lost except for the abdomen and one wing. We select as lectotype the male, which is in good condition, with its terminalia mounted on a slide.

Aedes epactius Dyar and Knab, Proc. U. S. Nat. Mus. **35**: 53. 1908.

This was described from 10 syntypes in the collection from Mexico. One male and one female bear the red labels, "Type No. 11963 U.S.N.M." We select as lectotype the female, which also bears the labels "416.25 / *Aedes epactius* D. & K. Type." This was reared from a pupa collected at Córdoba, Veracruz, February 18, 1908, by Knab. The pupal skin of this specimen has not been found.

Aedes epinolus Dyar and Knab, Ins. Insc. Mens. **2**: 61. 1914.

This was described from 25 females from two localities in Peru. There are 24 of these in the collection, one labeled "type," the others "paratype." We select as lectotype the one labeled "type" from Ventanilla, Peru, February 4, 1914.

Aedes (Ochlerotatus) eucephalaeus Dyar, Ins. Insc. Mens. **6**: 127. 1918.

The original syntype series of this consisted of three males and two females collected by Bonne-Wepster in Paramaribo, Surinam, and labeled A, B, C, D, and L. These each bear the label "Type No. 21911 U.S.N.M." Adult A, larval and pupal skins B, and terminalia slide 971 from specimen D, are also labeled type by Dyar. We select as lectotype male specimen D with terminalia and associated larval and pupal skins on two slides.

Aedes euedes Howard, Dyar, and Knab, Mosquitoes of North and Central America and the West Indies **4**: 714. 1917.

The syntypes of this are a male and female from Ottawa and a male and female from Trenton, Ontario, Canada. We select as lectotype the male from Trenton, May 24, 1900, with terminalia mounted on slide no. 446.

Aedes euplocamus Dyar and Knab, Journ. New York Ent. Soc. **14**: 199. 1906.

This was described from larvae collected at Zent, near Port Limón, Costa Rica. No topotypic material determined as this species has been found in the collection. While it might be possible to identify certain larval and pupal skins in the collection from the type locality as being the species described by Dyar and Knab, no reared adults have been found associated with these skins, and it would not be possible to be certain what specimens were originally studied. For this reason we feel it best to consider that no syntype material is available for lectotype designation.

Aedes fisheri Dyar, Ins. Insc. Mens. **5**: 19. 1917.

Five of the six original female syntypes from Lake Tahoe, Calif., June 20, 1920, are in the collection and we select as lectotype the one bearing Dyar's determination label.

Culex fletcheri Coquillett, Proc. U. S. Nat. Mus. **25**: 84. 1902.

The two syntype females are in the collection, and we have selected as lectotype the specimen bearing Coquillett's determination label.

Stegomyia gardnerii Ludlow, Can. Ent. **37**: 99. 1905.

The lectotype male selected by Knight and Hull (1952, p. 172) is in the collection.

Aedes gonimus Dyar and Knab, Ins. Insc. Mens. **5**: 165. 1918.

The four syntype females are in the collection all bearing type labels. We select as lectotype the one with Dyar's determination label.

Aedes grahami Ludlow, Ins. Insc. Mens. **7**: 154. 1920.

This was described from a male and a female from Siberia. We select as lectotype the male collected at Mostovoi in July.

Grabhamia grisea Ludlow, Can. Ent. **39**: 130. 1907.

It is not clear from the original description of this how many specimens were involved, but possibly there was only one. There is one female in the collection bearing an unnumbered U.S.N.M. type label and a label in Ludlow's handwriting as follows: "Grabhamia grisea n. sp. Ludlow type Boise Bks, Ida. July." We consider this to be the holotype.

Aedes grossbecki Dyar and Knab, Journ. New York Ent. Soc. **14**: 201. 1906.

This was described in a key to larvae from specimens determined by Coquillett as *Culex squamiger* Coquillett, and by reference to a description by Smith and Grossbeck (1905, p. 13) of *Culex squamiger*. There is apparently no type material of this species.

Aedes habanicus Dyar and Knab, Journ. New York Ent. Soc. **14**: 198. 1906.

This was described from larvae collected at Havana, Cuba, October 28, 1903, by John R. Taylor. The only material in the collection bearing these data is a slide with the fragments of a larval skin along with fragments of two larval skins of the genus *Psorophora*, one of which con-

tains a *Culex* larval skin. We select as lectotype these *Aedes* fragments, consisting of a siphon, anal segment, and abdomen.

Aedes hemisurus Dyar and Knab, Journ. New York Ent. Soc. **14**: 190, 199. 1905.

The authors of this name called it a new species in the center heading and a new name at the end of the brief statement concerning it. There is no description except for the characters given in the key and reference to Grabham's figure (1905, p. 405) of the larva of *Culex confirmatus* from Jamaica. Although there are adults in the collection determined as *hemisurus* these are not associated with larval skins, and there are no larvae from Jamaica in the collection; and so it is probable that there are no specimens that can be said to be of the type series.

Aedes cinereus hemiteus Dyar, Ins. Insc. Mens. **12**: 179. 1924.

The five syntypes were said to be all females, but one of them is a male. The specimen in best condition is a female from Lake Center Camp, Plumas County, Calif., the type locality, June 1, and we select this as the lectotype.

Aedes triseriatus var. *hendersoni* Cockerell, Journ. Econ. Ent. **11**: 199. 1918.

This was described from two females, one of which is in the collection and bears the labels "Box Elder Cr. Wyo. Aug. 25, '17. Schwabe and Henderson / Janthinosoma n. sp. / Psorophora hendersoni Ckll TYPE / Aedes triseriatus Say." The first three labels are in Cockerell's handwriting and the fourth was written by Dyar. This is the specimen which Knight and Marks (1952, p. 572) called a holotype. We here select it as lectotype.

Aedes (Finlaya) heteropus Dyar, Ins. Insc. Mens. **9**: 152. 1921.

The original 20 specimens, all labeled "Type No. 24865 U.S.N.M." are in the collection. We select as lectotype a male dated July 1, with terminalia on slide no. 1542.

Aedes hexodontus Dyar, Ins. Insc. Mens. **4**: 83. 1916.

The female lectotype from Fallen Leaf, Lake Tahoe, Calif., selected by Knight (1951, p. 93) is in the collection.

Aedes terreus homoeopus Dyar, Ins. Insc. Mens. **10**: 92. 1922.

This was described from three males from Costa Rica and Mexico, all of which bear type labels. We select as lectotype the specimen collected at Alajuela, Costa Rica, October 1921.

Aedes hortator Dyar and Knab, Journ. New York Ent. Soc. **15**: 12. 1907.

We consider as holotype of this species the female of the two original specimens bearing the type label.

Howardina inaequalis Grabham, Can. Ent. **39**: 25. 1907.

This was described from an unstated number of adult specimens, presumably of both sexes, and larvae. There are eight specimens in the collection labeled "Kingston, Jam. M. Grabham Collector." It is not certain that all these can be considered as syntypes of *inaequalis*, but it is quite probable that most of them are. There are two males labeled *inaequalis*, one of the labels being on the pinned specimen itself, the other on the slide of the terminalia. We select as lectotype the specimen with the determination label on the pin.

Culex inconspicuus Grossbeck, Ent. News **15**: 333. 1904.

This was described from three males and one female reared from larvae collected on Garret Mountains, Paterson, N. J. The collection contains all these, one of each sex being labeled as type and the second male as cotype. We select as lectotype the male type collected October 5, with the terminalia still on the specimen.

Aedes increpitus Dyar, Ins. Insc. Mens. **4**: 87. 1916.

This was described from an unstated number of specimens of a species that was very common in the Yosemite Valley. There are a great many specimens from the Yosemite Valley under this name in the collection, but only one specimen, a male, bears the type number. One female is also marked type but was not given a red type label. We select as lectotype the male, bearing the following labels: "FB25 / Fallen Leaf, Lake Tahoe, Cal. June 3, 1916 / Type No. 20350 U.S.N.M. / H. G. Dyar Coll. / *Aedes increpitus* Dyar Type ♂."

Aedes indolecens Dyar and Knab, Journ. New York Ent. Soc. **15**: 11. 1907.

This was described from 30 specimens from Cayamas and Havana, Cuba, and Santo Domingo, West Indies. One female bears the type label and this we consider the holotype. The other labels on this specimen are: "Cayamas, Cuba 8.5 / E. A. Schwartz collector / in woods / *Aedes indolecens* D. & K. Type."

Aedes infirmatus Dyar and Knab, Journ. New York Ent. Soc. **14**: 190, 197. 1906.

This was described in a larval key from specimens collected by Dupree at Baton Rouge, La. There are no reared adult specimens bearing original data and only three slides of larval skins of Dupree material. One slide contains two skins and is labeled as from New Orleans, one contains one larval skin with no locality label, and one from Baton Rouge contains two larval skins and fragments of pupal skins. This last slide was apparently prepared from alcoholic material subsequent to description of the species. These are topotypic and might be syntypic, but we prefer to select no lectotype from this poor and uncertain material.

Aedes innuitus Dyar and Knab, Ins. Insc. Mens. **5**: 166. 1918.

The two male and two female syntypes are in the collection, and we select as lectotype the male bearing Dyar's determination label, with the terminalia mounted on slide no. 708.

Aedes intrudens Dyar, Ins. Insc. Mens. **7**: 23. 1919.

Dyar stated that he selected as types specimens from Karner, N. Y., in the New York State Collection and specimens from Ontario and Alberta [U. S. National Museum]. We select as lectotype the specimens bearing the labels "White River, Ont. 25.VI.07 / Fredk Knab collector / See slide No. 467 / Type No. 21823 U.S.N.M." The terminalia are on slide no. 467.

Aedes ioliota Dyar and Knab, Ins. Insc. Mens. **1**: 77. 1913.

The four original females of this species, from Trinidad, West Indies (F. W. Urich collector), are in the collection, one labeled as type with a determination label, the other three labeled as

paratypes. The one labeled as type we consider to be the holotype.

Aedes (Taeniorhynchus) jacobinae Serafim and Davis, Ann. Ent. Soc. Amer. **26**: 14. 1933.

The original description of this species states that the male holotype and female allotype are to be deposited in the U. S. National Museum. The only specimens in the collection are a slide of the male terminalia bearing the labels "J. H. Sch. of Hyg. Protozoology *Aedes jacobinae* Davis Jacobina, Bahia, Brazil, Dec. 1931. J. Serafim / genitalia ♂ holotype," and a female, bearing the labels: "Jacobina, Bahia, Brazil Jan. 1932 / N. C. Davis Coll. / Slide a 29.III.49." This slide has not been found. The pin also holds the cleared female terminalia in glycerine. It is probable that only the terminalia of the holotype are in existence.

Culex knabi Coquillett, Proc. Ent. Soc. Washington **7**: 183. 1906.

This was described from seven syntype females. Six of these are in the collection but none bears a type label. We select as lectotype the specimen bearing the labels "No. 291a / See F. Knab's Entom. notes / Tehuantepec, Oax., Mex. / *Culex knabi* Coq." The pupal skin of this specimen is mounted on a slide.

Culex labeculosus Coquillett, Ent. News **16**: 116. 1905.

The eight syntypes are in the collection and we select as lectotype a male bearing the labels "Type No. 8314 U.S.N.M. / Slide 707 / *Culex labeculosus* Coq. / Ent. News xvi.116, 1905 6 ♀ 2 ♂ 8314." The terminalia are on slide no. 707.

Verrallina laternaria Coquillett, Proc. Ent. Soc. Washington **7**: 184. 1906.

Four of the five original males of this have been found. Only one of these bears a type label and this one, which is also labeled "*Verrallina laternata*" [sic], we consider to be the holotype.

Culex lativittatus Coquillett, Ent. News **17**: 109. 1906.

This was described from a large series of both sexes from Santa Clara and Alameda Counties, Calif. There are 37 specimens in the collection that are probably of the original series. No one of these bears a type label. We select as lectotype

a female bearing the labels "Arden 19 July 03 / L. S. Jr. U. Lot 45 Sub. 1 / *Ochlerotatus lativittatus* Coq."

Aedes leuconotips Dyar, Ins. Insc. Mens. **8**: 24. 1920.

The male selected as lectotype by Knight (1951, p. 93) is in the collection.

Taeniorhynchus lineatopennis Ludlow, Can. Ent. **37**: 133. 1905.

Knight and Hull (1953, p. 468) selected as lectotype one of three females, each bearing the label "Type No. 27794 U.S.N.M." Only one of these specimens bears any other label, and this label reads "*Taeniorhynchus lineatopennis* Ludl. Camp Gregg, Angeles, Pampanga, P.I. Sept. Type C.S.L.," in Ludlow's handwriting. This is the specimen that was selected as lectotype. The label is obviously erroneous, since it was Camp Stotsenburg at Angeles. To accept this lectotype designation we must assume that Ludlow wrote the wrong locality for the camp rather than the wrong camp for the locality. There seems no way of proving that this specimen is not one of the two original syntypes so we feel that the lectotype designation can stand.

Aedes lithocoetor Dyar and Knab, Journ. New York Ent. Soc. **15**: 201. 1907.

The five syntypes of this species are in the collection, a male and a female being labeled as types. We select as lectotype the female, bearing the following labels "101.5 / Rio Chagres, Panama / Collected by August Busck / Type No. 10868 U.S.N.M. / *Aedes lithocoetor* D. & K. Type." No larval or pupal skin has been found for 101.5.

Aedes (A.) margarsen Dyar and Shannon, Ins. Insc. Mens. **13**: 80. 1925.

The male selected by Laffoon (1946, p. 237) as lectotype is in the collection.

Grabhamia mediolineata Ludlow, Can. Ent. **39**: 129. 1907.

This was apparently described from several female specimens. There are two in the collection that are apparently syntypes. One bears the labels "Type No. 10282 U.S.N.M. / *mediolineata* Ludlow." The second is labeled "Type No. — U.S.N.M. / *Grabhamia mediolineata* n. sp.

Ludlow, Fort Lincoln, N. D." We select the second of these as lectotype since it has the locality label on it and it is somewhat the better specimen.

Stegomyia mediovittata Coquillett, Can. Ent. **38**: 60. 1906.

This was described from 34 specimens collected by August Busck in Santo Domingo, West Indies. The collection contains one male bearing the type label and many more than 33 specimens bearing original data. It is not possible to pick the original syntypes from these, but we accept the specimen marked as type as the holotype. This bears the labels "99.4 / St. Domingo W. I. Aug. / Aug. Busck Collector / Type No. 9138 U.S.N.M. / *Gymnometopa mediovittata* Coq." The larval and pupal skins are mounted on a slide.

Aedes melanimon Dyar, Ins. Insc. Mens. **12**: 126. 1924.

This was described from 15 females and 2 males, and all of them are in the collection. Five are labeled as types, including the 2 males, and the rest as paratypes. We select as lectotype one of the 2 males with terminalia mounted on slide no. 1955.

Aedes mercurator Dyar, Ins. Insc. Mens. **8**: 13. 1920.

This was described from 65 specimens collected at Dawson, Yukon Territory, July 1919. There are 84 specimens in the collection bearing the original data. One male and one female bear the type label and Dyar's determination label. We select as lectotype the male, with terminalia on slide no. 1165, collected July 15, 1919.

Aedes meridionalis Dyar and Knab, Journ. New York Ent. Soc. **14**: 195. 1906.

This was described in the larval stage from a specimen collected at Las Loras, near Puntarenas, Costa Rica, which had been determined by Coquillett as *Janthinosoma musica* Say. There are 22 topotypic adult specimens and several larval skins collected by Knab. One male bears the labels "No. 333b See F. Knab's Entom. notes / Las Loras nr. Puntarenas, C. R. / *Aedes meridionalis* D. & K. Type." Since the species was described from the larva, we select the larval skin associated with this adult as the lectotype. The pupal skin and the adult are part of the same

individual, but left undescribed in the original publication. No specimen from the type locality bears any determination label by Coquillett.

Catatassomyia meronephada Dyar and Shannon, Ins. Insc. Mens. **13**: 71. 1925.

This was described from 16 females from Los Banos, Laguna, Luzón, Philippine Islands. Fifteen of these syntypes are in the collection and one in the British Museum. We select as lectotype a specimen collected May 12, 1921, bearing the additional label "Mt. Makiling 1500-2000 Ft."

Aedes metalepticus Dyar, Ins. Insc. Mens. **8**: 51. 1920.

There are seven specimens in the collection labeled "Type No. 22714, U.S.N.M." and apparently five specimens were returned to Italy. It is probable that Dyar intended the one male to be the type, although it is not clear from the original description. We select as lectotype this male, from Scais, July 19, 1901, bearing Dyar's label "*Aedes metalepticus* Dyar Type ♂," with the terminalia on slide no. 1236, also labeled "type."

Aedes metoecopus Dyar, Ins. Insc. Mens. **13**: 30. 1925.

The original description mentions no types, Dyar merely stating that both sexes were before him, and we know only that the specimens came from Ecuador. There are nine specimens from Ecuador in the collection, but only one of each sex bears a Museum type label (without number). We select as lectotype a male bearing the labels "2107 / 86 / Ecuador F. Campos R. / *Aedes* (Finlaya) *metoecopus* Dyar Type." The terminalia are on slide no. 2107.

Aedes (*Skusea*) *miachaetessa* Dyar and Shannon, Ins. Insc. Mens. **13**: 78. 1925.

The lectotype female selected by Knight and Hull (1953, p. 478) is in the collection.

Aedes stimulans mississippii Dyar, Ins. Insc. Mens. **8**: 113. 1920.

The two syntypes, male and female, are in the collection, and we select as lectotype the male, which bears Dyar's determination and type label in addition to the Museum type label. The terminalia are mounted on slide no. 1263.

Culex mitchellae Dyar, Journ. New York Ent. Soc. **13**: 74. 1905.

This was described from 61 specimens, one from Jacksonville, Fla., being selected as type [holotype]. Only one of the specimens bears the type label, and it also bears the labels "[3]7 & 8 / Miami, Fla. / H. G. Dyar Collector / *Culex mitchellae* Dyar Type 8402." The published type number is 8407, and the slide of larval and pupal skins bears the label "*Culex mitchellae* Dyar Type 8407 *Culex sylvestris* Theobald [3]7 & 8." The slide also contains a larval and pupal skin of *Aedes vexans* (Meigen). On going to the type catalogue we found that the number 8407 is assigned to *Mimagyrta pulchella* and that *Culex mitchellae* is listed under number 8402, with Jacksonville, Fla., as the locality. We conclude that 8402 is the correct type number, which was changed to 8407 in labeling the slide and in publication by error, and that the type locality is Jacksonville, since Miami is not even listed in the original publication as one of the localities for the species.

Aedes (Heteronychia) muelleri Dyar, Ins. Insc. Mens. **8**: 81. 1920.

The original description of this species states, "Types, No. 22826, U. S. Nat. Mus; male and female, Mexico City, Mexico (Juan Müller)." These two syntypes are in the collection with the male labeled as type, the female as paratype. We select as lectotype the male, with terminalia mounted on slide no. 1253.

Aedes mutatus Dyar, Ins. Insc. Mens. **7**: 24. 1919.

Dyar labeled one of the numerous males from Missoula as type and this we consider to be the holotype. It bears the labels "Missoula, Mont. July 6, 1917 / H. G. Dyar Coll. / Type No. 21918 U.S.N.M. / Slide 663 / *Aedes mutatus* Dyar Type." The slide is of the terminalia.

Stegomyia nigritia Ludlow, Can. Ent. **42**: 194. 1910.

This was described from two females collected at Cottabato, Mindanao, Philippine Islands, in December. There is a single female in the collection bearing the label "*Stegomyia nigritia* n. sp. Type P. I. Nov." Since no other specimen has been found that could be considered as the type, we select this specimen as lectotype in spite of the difference in date of collection.

Grabhamia nigromaculis Ludlow, George Washington Univ. Bull. **5** (4): 83. 1906.

This was described from an unstated number of specimens collected at Fort Keogh, Mont., and Fort Lincoln, N. D. The collection contains five syntypes labeled "Type No. 10147 U.S.N.M." Four were collected at Fort Keogh, September 1906, and the fifth at Fort Makenzie, Wyo., a place not mentioned in the original description. We select as lectotype the female from Fort Keogh bearing a determination label.

Aedes niphadopsis Dyar and Knab, Ins. Insc. Mens. **5**: 166. 1918.

The three syntype females are in the collection, and we select as lectotype the one bearing Dyar's determination label.

Aedes (Finlaya) niveus nipponicus LaCasse and Yamaguti, Mosquito Fauna of Japan and Korea, pt. **2**: 79. 1948.

The original description of this species designates no types but states that it was collected in a number of places on Kyushu and Honshu, Japan. A male and female in the collection are labeled as types, but since these were collected on August 29, 1949, more than a year after the species was published, they cannot be considered as types. The earliest adult labeled *nipponicus* was collected in May 1948, still too late for the March 1 publication. There is a single larval slide collected in September 1947, but it is not labeled *nipponicus* and may not have been seen by LaCasse or Yamaguti. It is probable that there is no true type material in existence.

Culex nivitarsis Coquillett, Proc. Ent. Soc. Washington **6**: 168. 1904.

This was said to have been described from a female and a male collected at Paterson, N. J., May 12, by J. B. Smith, and the specimens returned to the collector. The New Jersey collection contained these two specimens, each marked as type, but the female is dated May 17. Both were from Garret Mountain. These are now deposited in the U. S. National Museum collection, and we select the female as lectotype, since the male lacks the abdomen and all but one leg.

Aedes obturbator Dyar and Knab, Journ. New York Ent. Soc. **15**: 9. 1907.

This was described from 22 specimens from Tarpon Bay, Bahama Islands, only 12 of which

are now under the name in the collection. Only one of these bears a type label, and this female we consider to be the holotype.

Danielsia pagei Ludlow, Psyche **18**: 128. 1911.

The lectotype female selected by Knight and Hull (1953, p. 463) is in the collection.

Aedes pagetonotum Dyar and Knab, Smithsonian Misc. Coll. **52**: 253. 1909.

A note in the collection reads, "Note re *Aedes pagetonotum* D. & K. Jan 28, 1925. Located 8 types. The 2 gone may have been sent to Dr. Hewitt by me not then known to be types. H. G. Dyar." The eight types are in the collection, seven of them bearing type labels. We select as lectotype the first specimen listed in the description, a male bearing the labels "15.5.00 / Ottawa / Through J. Fletcher / See slide No. 343 / Type No. 12057 U.S.N.M." The male terminalia are on slide no. 343.

Culex pallidohirta Grossbeck, Can. Ent. **37**: 359. 1905.

There are two syntype females of this in the collection, one labeled as cotype that has been in the collection for a considerable time, the other labeled female type and recently presented to the collection by Rutgers University. We select as lectotype this latter specimen, bearing the label "Orange Mts., N. J. V. 26."

Aedes palustris Dyar, Ins. Insc. Mens. **4**: 89. 1916.

This was described from an unstated number of syntypes in the collection. Several bearing the original data have been found and one male and one female bear type labels. We have selected as lectotype the male, bearing the labels "FK π / Fallen Leaf, Lake Tahoe, Cal. June 6, 1916 / Type No. 20351 U.S.N.M. / H. G. Dyar Coll / *Aedes palustris* Dyar Type σ ."

Aedes palustris var. *pricei* Dyar, Ins. Insc. Mens. **5**: 16, 1917.

The number of original specimens of this variety was not stated, but inasmuch as there is only one in the collection bearing the type label "Type No. 21043 U.S.N.M." we consider this as the holotype. It is a female, also bearing the labels "Fallen Leaf, Lake Tahoe, Cal. June 9, 1916 /

H. G. Dyar Coll / *Aedes palustris* var. *pricei* Dyar. Type."

Reedomyia pampangensis Ludlow, Can. Ent. **37**: 94. 1905.

This was described from three specimens taken in September at Angeles, Pampanga, Luzón, Philippine Islands. No specimen bearing these data has been found in the collection, but there is one female bearing the labels "Type No. 27795 U.S.N.M. / *Reedomyia pampangensis* Ludl. Camp Wm. McKinley, Rizal, P.I. Oct. 25, Nov. 3, 05 Type." The last label is in Ludlow's handwriting. Knight and Hull (1953, p. 454) have accepted this as the holotype, but since it was collected after the publication of the name it does not seem possible to consider this as of the type series, and it is probable that there are no syntypes in existence.

Aedes panayensis Ludlow, Psyche **21**: 159. 1914.

The male lectotype selected by Laffoon (1946, p. 242) is in the collection.

Aedes (Culicelsa) perichares Dyar, Ins. Insc. Mens. **9**: 36. 1921.

This was described from nine males and five females from Ciruelas, Costa Rica. These syntypes are all in the collection, each bearing the label "Type No. 23972 U.S.N.M." We have selected as lectotype a female bearing the label "*Aedes perichares* Dyar Type."

Aedes pertinax Grabham, Can. Ent. **38**: 316. 1906.

This was described from an unstated number of specimens from Jamaica. There are three males and two females in the collection bearing the labels "Rec'd from Dr. Grabham 10 July 1906 / Kingston, Jam. IV.10.06 temp. pools." It is quite certain that these are syntypes, and we select as lectotype a male bearing Dyar's label "pertinax" and with the terminalia mounted on slide no. 206.

Aedes pionips Dyar, Ins. Insc. Mens. **7**: 19. 1919.

Dyar labeled a male and a female as types of this species, selected from 152 specimens. We select as lectotype the male bearing the labels "994 / B9 / White River, Ont. June 19, 1918 / H. G. Dyar coll. / Type No. 21922 U.S.N.M. / *Aedes pionips* Dyar Type." The terminalia are on slide no. 994.

Aedes pix Martini, Mosquitoes of Mexico: 55. 1935.

Two females were sent to the British Museum in 1950, and these were marked as cotypes by Mattingly (1955, p. 29). One of these was sent to the U. S. National Museum and was labeled as lectotype by John Lane. Through the kind offices of Mr. Mattingly, Dr. Weyer permitted this specimen to be deposited in the U. S. National Museum. Lane and Cerqueira, in Lane (1953, p. 652), state that the lectotype is in the British Museum, apparently forgetting that it had been deposited in Washington. The second specimen was in very poor condition and is probably lost.

Aedes plutocraticus Dyar and Knab. Journ. New York Ent. Soc. **15**: 11. 1907.

Fifty-eight of the original 63 specimens of this species are in the collection and a female bears the type label. We consider this to be the holotype. Its data are: "Nassau, Bahamas 6-21-03 T. H. Coffin Coll. #10."

Aedes podographicus Dyar and Knab. Proc. Biol. Soc. Washington **19**: 165. 1906.

Two specimens in the collection, a male and a female, bear type labels. We select as lectotype the female, bearing the labels "No. 325j. See F. Knab's Entom. Notes / Sonsonate, Salv. / Type No. 10015 U.S.N.M. / *Aedes podographicus* D. and K. Type." Number 325j applies to several specimens, no larval skins of which were saved.

Culex portoricensis Ludlow, Can. Ent. **37**: 386. 1905.

Syntypes of this stand under two Museum catalogue numbers in the collection, 10007 and 27804, the specimens apparently having been received and entered at two different times. We have selected as lectotype a male bearing the original data and the type no. 10007.

Culex pretans Grossbeck, Ent. News **15**: 332. 1904.

This was described from 15 females collected in four localities in New Jersey. There are 11 of these specimens in the collection, one labeled type and the others labeled cotype. The one labeled type was collected at Great Piece Meadow, N. J., May 12, and we select this as lectotype.

Aedes prolixus Dyar, Ins. Insc. Mens. **10**: 2. 1922.

"The three syntype males of this are in the collection and we select as lectotype the one from Anchorage, Alaska, with terminalia mounted on slide no. 1579.

Culex pullatus Coquillett, Proc. Ent. Soc. Washington **6**: 168. 1904.

The one female and ten males reared from larvae are all labeled "Type No. 8030 U.S.N.M." The female bears Coquillett's determination label, but we select as lectotype a male with terminalia mounted on slide no. 21. It is from Kaslo, British Columbia, and emerged June 12.

Aedes punctodes Dyar, Ins. Insc. Mens. **10**: 1. 1922.

The male lectotype selected by Knight (1951, p. 97) is in the collection, with the terminalia mounted on slide no. 1582.

Culex quadrivittatus Coquillett, Can. Ent. **34**: 293. 1902.

Seven of the original eight females are in the collection, and one of these bearing the type label and Coquillett's determination label we consider to be the holotype.

Aedes quaylei Dyar and Knab, Journ. New York Ent. Soc. **14**: 191. 1906.

This name was proposed for the salt-marsh form of *Culex curriei* Coquillett from the Pacific coast as treated by Quayle (1906, p. 4), and the only characters given are to be found in the key to the larvae. No specimens are labeled as types in the collection, and most of the specimens that might have been those seen by Dyar and Knab when they described *quaylei* are probably also the syntypes of *Culex lativittatus*. We do not feel that any specimens in the collection can be certainly identified as syntypes of *quaylei*.

Aedes (Ecculex) rhecter Dyar, Ins. Insc. Mens. **9**: 51. 1921.

This was described from one male and five female syntypes from Lomagundi and Lorenzo Marquez, Portuguese East Africa. The male bears the labels "Howard Coll. / Lomagundi Nov. '09 / Slide 709 / Type No. 23928 U.S.N.M. / *Aedes rhecter* Dyar Type," and we designate this as the lectotype. The terminalia are mounted on slide no. 709.

Aedes riparius Dyar and Knab, Journ. New York Ent. Soc. **15**: 213. 1907.

Only two of the original 68 specimens, a male and a female, are labeled as types. We select as lectotype the female, in excellent condition, collected June 21, 1907.

Stegomyia scutellaris var. *samarensis* Ludlow, Journ. New York Ent. Soc. **11**: 138. 1903.

This was described with no statement as to the number of specimens, time of collection, or locality other than Samar. The collection contains four females and two males, each bearing the label "Type No. 27790, U.S.N.M.," and one of these bears the additional label "*Stegomyia samarensis* Ludlow, Catabig, Samar, P.I., Type C.S.L." This is a female in fairly good condition, and we here designate it as lectotype.

Aedes sansoni Dyar and Knab, Can. Ent. **41**: 102. 1909.

This was described from five syntypes collected at Banff, Alberta. Dyar (1917, p. 114) selected specimen no. 10 as the type [lectotype].

Aedes septemstriatus Dyar and Knab, Journ. New York Ent. Soc. **15**: 10. 1907.

Two of the original three specimens are in the collection, and we consider the holotype to be a female bearing the following labels: "8 / Bluefields Nicar. / W. F. Thornton Collector / Type No. 10144 U.S.N.M. / *Haemagogus septemstriatus* D. & K. Type."

Taeniorhynchus sierrensis Ludlow, Can. Ent. **37**: 231. 1905.

There are 12 syntypes of this species in the collection, and we have selected as lectotype a female bearing the determination label in Ludlow's handwriting.

Culex siphonalis Grossbeck, Can. Ent. **36**: 332. 1904.

This was described from two females and five males reared from larvae collected at Livingston Park, N. J. All these specimens are in the collection, labeled "N Brunswick" with dates of V.9, V.10, and V.11. One female and one male are labeled as types and the rest as cotypes. We select as lectotype the female "type" collected May 10.

Culex squamiger Coquillett, Proc. U. S. Nat. Mus. **25**: 85. 1902.

The four female syntypes are in the collection, and we select as lectotype the one from Palo Alto (labeled "Stan U Cal.") and bearing Coquillett's determination label.

Culex sylvicola Grossbeck, Can. Ent. **38**: 129. 1906.

The original series on which this name was based consisted of 21 males and 20 females in the New Jersey Agricultural Experiment Station collection. A male and one female, each labeled type, and 24 "cotypes" are still in existence, and all but 13 of the "cotypes" are in the U. S. National Museum collection. We select as lectotype the female "type" labeled "Livingston Park, N. J. V.6."

Aedes tahoensis Dyar, Ins. Insc. Mens. **4**: 82. 1916.

This was described from an unstated number of specimens reared at Fallen Leaf, Lake Tahoe, Calif., the latter part of May and first of June 1916. The collection contains one undissected male labeled "FE14 / Fallen Leaf, Lake Tahoe, Cal., June 5, 1916 / Type No. 20352 U.S.N.M. / H. G. Dyar Coll. / *Aedes Tahoensis* Dyar Type ♂." There are a great many other specimens of the type series, but we select as lectotype the male mentioned above.

Aedes thibaulti Dyar and Knab, Proc. Ent. Soc. Washington **11**: 174. 1910.

This was described from a pair from Scott, Ark., both bearing a type label. The male bears the determination label, and the terminalia are on slide no. 524. The female is lost from the point except for one femur. We select the male as lectotype.

Aedes thorntoni Dyar and Knab, Journ. New York Ent. Soc. **15**: 10. 1907.

The seven original specimens are in the collection, and the female bearing the type number and Dyar's determination and type label we consider to be the holotype.

Aedes tormentor Dyar and Knab, Journ. New York Ent. Soc. **14**: 191. 1906.

This species was described in a key to the larvae from specimens collected in Baton Rouge,

La., by Dupree. A female in the collection bears the labels "Baton Rouge, La. / J. H. Dupree #106 / *Culex serratus* Coq. / *Aedes tormentor* D. & K. "serratus" [Dyar's handwriting]. There are also the fragments of a larval skin on a slide, but the slide is not numbered and may not belong to this specimen. Since there is no determinable larval material from the original series, we feel that no lectotype can be selected.

Aedes traversus Dyar, Ins. Insc. Mens. **13**: 215. 1925.

The three original syntype females, all bearing identical original data, are in the collection. We have labeled the best of these as lectotype.

Culex trichurus Dyar, Journ. New York Ent. Soc. **12**: 170. 1904.

The original description of this is of the egg and four larval instars. A female collected in British Columbia flying over a pool containing larvae of this species produced eggs, which hibernated over winter and produced larvae the following spring. The only adult material was said to be the badly rubbed original female and a broken male reared in Massachusetts by Dimmock from a similar larva. Neither of these specimens has been found in the collection. There is one slide of fragments of three larval skins, two of them, at least, not last stage, that are probably of the original series, but these are so poor that there seems no point in selecting a lectotype from them.

Culex trivittatus Coquillett, Journ. New York Ent. Soc. **10**: 193. 1902.

This was described from two females collected at Chester, N. J. Only one of these appears to be in the collection, and this bears the type label and Coquillett's determination label. This we consider to be the holotype. There is one other specimen from Chester, but this has no type label and bears the label "Aldrich Collection," which throws some doubt on its being the other original specimen.

Aedes uncatus Grabham, Can. Ent. **39**: 25. 1907.

This was described from an unstated number of adults, presumably of both sexes, and larvae, from Jamaica. There are two females and five males in the collection labeled "Kingston Jam. / M. Grabham Collector." We select as lectotype

a male which also bears the labels "See slide No. 210" and "uncatus," the latter in pencil, probably by Dyar. The terminalia are mounted on slide no. 210.

Aedes vinnipegensis Dyar, Ins. Insc. Mens. **7**: 34. 1919.

Thirty-six of the original 37 females are in the collection, but only one bears the type number. This, which we consider to be the holotype, bears the original data and Dyar's handwritten label "Aedes vinnipegensis Dyar Type."

Aedes whitmorei Dunn, Proc. Ent. Soc. Washington **20**: 128. 1918.

The 12 syntype females of this are in the collection, all in rather poor condition. We select as lectotype one bearing the label "Aedes whitmorei Dunn. Cotype."

The following taxa are in the collection based either on unique specimens or on clearly designated holotypes:

Aedes acrophilus Dyar, 1917

Aedes (*A.*) *adustus* Laffoon, 1946

Anisocheleomyia albitarsis Ludlow, 1905

Aedes aloponotum Dyar, 1917

Aedes (*Finlaya*) *ananae* Knight and Laffoon, 1946

Aedes (*Stegomyia*) *arboricolus* Knight and Rozeboom, 1946

Aedes (*Howardina*) *argyrites* Dyar and Nuñez Tovar, 1927

Aedes (*Geoskusea*) *baisasi* Knight and Hull, 1951

Aedes (*Stegomyia*) *bambusicolus* Knight and Rozeboom, 1946

Aedes (*A.*) *bifolius* King and Hoogstraal, 1947

Culex bimaculatus Coquillett, 1902

Aedes (*Stegomyia*) *boharti* Knight and Rozeboom, 1946

Aedes (*Christophersiomyia*) *brayi* Knight 1947

Aedes (*A.*) *campylostylus* Laffoon, 1946

Culex cantator Coquillett, 1903

Aedes cataphylla Dyar, 1916

Aedes (*Finlaya*) *leucocelaenus clarki* Galindo, Carpenter, and Trapido, 1953

Aedes colonarius Dyar, 1924

Aedes (*Finlaya*) *croceus* Knight and Laffoon, 1946

Aedes (*Geoskusea*) *daggyi* Stone and Bohart, 1944

Aedes (*Skusea*) *dasyorrrhus* King and Hoogstraal, 1946

Aedes decticus Howard, Dyar, and Knab, 1917

Aedes (*Finlaya*) *dobodurus* King and Hoogstraal, 1946

Aedes (*Finlaya*) *dorseyi* Knight, 1946

- Aedes (Stegomyia) downsi* Bohart and Ingram, 1946
Aedes (A.) dux Dyar and Shannon, 1925
Aedes dyanor Dyar, 1921
Aedes (Ochlerotatus) edgari Stone and Rosen, 1952
Aedes (Finlaya) eucleptes Dyar, 1921
Aedes euochros Howard, Dyar, and Knab, 1917
Aedes (Mucidus) ferinus Knight, 1947
Aedes (A.) foliformis King and Hoogstraal, 1947
Aedes (Stegomyia) guamensis Farner and Bohart, 1944
Aedes (Stegomyia) gurneyi Stone and Bohart, 1944
Aedes (Stegomyia) hakanssoni Knight and Hurlbut, 1949
Aedes (A.) hamistylus Laffoon, 1946
Aedes (Finlaya) harperi Knight, 1948
Aedes (Ochlerotatus) hastatus Dyar, 1922
Aedes (Stegomyia) hensilli Farner, 1945
Aedes (Finlaya) hollandius King and Hoogstraal, 1946
Aedes (Stegomyia) hoogstraali Knight and Rozeboom, 1946
Verrallina insolita Coquillett, 1906
Aedes iridipennis Dyar, 1922
Aedes (A.) johnsoni Laffoon, 1946
Aedes (Finlaya) keefei King and Hoogstraal, 1946
Aedes klotsi Matheson, 1933
Aedes (Finlaya) knighti Stone and Bohart, 1944
Aedes labradorensis Dyar and Shannon, 1925
Aedes (Finlaya) lacteus Knight, 1946
Aedes (Stegomyia) laffooni Knight and Rozeboom, 1946
Aedes (Skusea) lamelliferus Bohart and Ingram, 1946
Aedes (Finlaya) laoagensis Knight, 1946
Aedes (A.) leilae King and Hoogstraal, 1947
Aedes (Finlaya) lewelleni Starkey and Webb, 1946
Aedes (Finlaya) leucopleurus Rozeboom, 1946
Aedes leucotaeniatus Komp, 1938
Aedes (Pseudoskusea) lunulatus King and Hoogstraal, 1946
Aedes (Finlaya) luzonensis Rozeboom, 1946
Aedes (A.) macrodixoa Dyar and Shannon, 1925
Aedes (Stegomyia) marshallensis Stone and Bohart, 1944
Aedes masamae Dyar, 1920
Aedes (Ochlerotatus) mathesoni Middlekauff, 1944
Aedes (Finlaya) medleri Knight and Laffoon, 1946
Aedes milleri Dyar, 1922
Aedes (A.) milnensis King and Hoogstraal, 1947
Aedes mimesis Dyar, 1917
Aedes (A.) multifolium King and Hoogstraal, 1947
Aedes (A.) neomacrodixoa King and Hoogstraal, 1947
Finlaya nigra Ludlow, 1905
Pseudoskusea nigrotarsis Ludlow, 1908
Aedes (Aedimorphus) oakleyi Stone, 1939
Aedes (Finlaya) okinawanus Bohart, 1946
Aedes oligopistus Dyar, 1918
Popea palawanensis Ludlow, 1914
Aedes (Ochlerotatus) fulvus pallens Ross, 1943
Taeniorhynchus palliatus Coquillett, 1906
Aedes (Stegomyia) pandani Stone, 1939
Aedes (Finlaya) paradissimilis Rozeboom, 1946
Aedes (A.) parasimilis King and Hoogstraal, 1947
Aedes (Stegomyia) paullusi Stone and Farner, 1947
Aedes pearyi Dyar and Shannon, 1925
Aedes (Stegomyia) pernotatus Farner and Bohart, 1944
Aedes platylepidus Knight and Hull, 1951
Aedes (Finlaya) plumiferus King and Hoogstraal, 1946
Aedes poliochros Dyar, 1919
Aedes polyagrus Dyar, 1918
Aedes prodotes Dyar, 1917
Aedes (Ochlerotatus) pseudodiantaeus Smith, 1952
Stegomyia punctifemore Ludlow, 1921
Aedes (A.) quadrispinatus King and Hoogstraal, 1947
Stegomyia quasinigritia Ludlow, 1911
Aedes (Stegomyia) quasiscutellaris Farner and Bohart, 1944
Aedes (A.) reesi King and Hoogstraal, 1947
Aedes (Stegomyia) riversi Bohart and Ingram, 1946
Aedes (Stegomyia) rotanus Bohart and Ingram, 1946
Aedes (Stegomyia) saipanensis Stone, 1945
Aedes (Finlaya) saperoi Knight, 1946
Aedes schizopinax Dyar, 1929
Aedes (Finlaya) scutellalbum Boshell-Manrique, 1939
Aedes (Stegomyia) scutoscriptus Bohart and Ingram, 1946
Aedes (A.) sentanius King and Hoogstraal, 1947
Aedes (Aedimorphus) senyavinensis Knight and Hurlbut, 1949
Aedes (Finlaya) sherki Knight, 1948
Aedes (A.) simplus King and Hoogstraal, 1947
Aedes (Finlaya) solomonis Stone and Bohart, 1944
Aedes (Finlaya) stonei Knight and Laffoon, 1946
Aedes (Finlaya) subalbitarsis King and Hoogstraal, 1946
Aedes (Levua) suvae Stone and Bohart, 1944
Aedes thaxteri Dyar and Knab, 1919
Aedes (Taeniorhynchus ?) thelcter Dyar, 1918
Aedes (A.) trispinatus King and Hoogstraal, 1947
Aedes (Finlaya) tsiliensis King and Hoogstraal, 1946
Aedes (Leptosomatomyia) variepictus King and Hoogstraal, 1946
Culex varipalpus Coquillett, 1902
Aedes ventrovittis Dyar, 1916
Aedes tortilis virginensis Dyar, 1922
Aedes zoösofus Dyar and Knab, 1918

LITERATURE CITED

- DYAR, H. G. *Notes on the mosquitoes of British Columbia*. Proc. Ent. Soc. Washington **6**: 37-41. 1904.
- . *Notes on the Aedes of Montana*. Ins. Insc. Mens. **5**: 104-121. 1917.
- DYAR, H. G., and KNAB, F. *The larvae of Culicidae classified as independent organisms*. Journ. New York Ent. Soc. **14**: 169-230. 1906.
- . *On the identity of Culex pallidohirta (Diptera, Culicidae)*. Proc. Ent. Soc. Washington **12**: 81-82. 1910.
- GRABHAM, M. *Notes on some Jamaican Culicidae*. Can. Ent. **37**: 401-411. 1905.
- KNIGHT, K. L. *The Aedes (Ochlerotatus) punctator subgroup in North America (Diptera, Culicidae)*. Ann. Ent. Soc. Amer. **44**: 87-99. 1951.
- KNIGHT, K. L., and HULL, W. B. *The Aedes mosquitoes of the Philippine Islands. I. Keys to species. Subgenera Mucidus, Ochlerotatus, and Finlaya (Diptera, Culicidae)*. Pacific Sci. **5**: 211-251. 1951.
- . *The Aedes mosquitoes of the Philippine Islands. II. Subgenera Skusea, Christophersomyia, Geoskusea, Rhinoskusea, and Stegomyia (Diptera, Culicidae)*. Pacific Sci. **6**: 157-189. 1952.
- . *The Aedes mosquitoes of the Philippine Islands. III. Subgenera Aedimorphus, Banksinella, Aedes, and Canraedes (Diptera, Culicidae)*. Pacific Sci. **7**: 453-481. 1953.
- KNIGHT, K. L., and MARKS, E. N. *An annotated checklist of the mosquitoes of the subgenus Finlaya, genus Aedes*. Proc. U. S. Nat. Mus. **101**: 513-574. 1952.
- KUMM, H. W., and KOMP, W. H. W. *Aedes (Howardina) allotecnion, a new species of Aedes from Costa Rica and a description of the larva, adult and male terminalia of Aedes quadrivittatus Coq.* Proc. Ent. Soc. Washington **43**: 17-25. 1941.
- LAFFOON, JEAN. *The Philippine mosquitoes of the genus Aedes, subgenus Aedes*. Journ. Washington Acad. Sci. **36**: 228-245. 1946.
- LANE, JOHN. *Neotropical Culicidae* **2**: 553-1112. 1953.
- MATTINGLY, P. F. *Mosquitoes (Diptera, Culicidae) from the Tropical Institute of Hamburg*. Proc. Roy. Soc. Ent. Soc. London (B) **24**: 1955. 27-33.
- QUAYLE, H. J. *Notes on the egg-laying habits of Culex curriei Coq.* Ent. News **17**: 4-5. 1906.
- SMITH, J. B., and GROSSBECK, J. A. *Description of some mosquito larvae, with notes on their habits*. Psyche **12**: 13-18. 1905.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

PHILOSOPHICAL SOCIETY

1409TH MEETING, APRIL 8, 1955

J. R. HELLER, of the National Institutes of Health, addressed the Society on *Some observations on cancer research and control*. Cancer control, from the standpoint of the Public Health Service is an entity that is susceptible to the same type of attack that has proved so successful in many other chronic diseases. The factors useful in this control may be summarized as follows:

1. Education, for both lay and professional people through all media.
2. Diagnosis, through the skillful application of all known methods.
3. Epidemiology: i.e., the study of its incidence, which shows very curious variation. For example, breast cancer is very low in Japanese women, stomach cancer very high in Japanese men, cervical cancer very low in Jewish women and two times higher in Negroes than in whites. Lung cancer six times higher in men than women, and particularly high in Austria, Scandinavia, and England.

4. Prevention, particularly through the removal of known carcinogens from the environment; e.g., beryllium, tar, sunlight.

5. Treatment: Surgery, radiation, and we hope ultimately chemical agents. (No one has been cured chemically yet, though some cancers respond favorably.)

6. Research in causes of cancers; and note the plural (there are probably as many kinds of cancer as there are other diseases, so we will have *cures*). Specific areas for research are: into carcinogenesis, into the nature and metabolism of cancers themselves, and into the "Host-parasite relationship." Illustrative of the latter is the fact that "an irascible old curmudgeon hangs on a long time, while the gentle sweet person goes fast."

A series of colorful slides showing the changing and increasingly important cancer problem in the last forty years was shown. Cancer now ranks second in causes of death, and certain types, such as lung cancer, have shown phenomenal increases. This type has doubled in the past ten years and is 26 fold up over 40 years ago.

Dr. Heller also described in details the project in Shelby County, Tenn., where an attempt is