same as *Anopheles lutzii* Theobald (not Cruz) = *A. cruzii* Dyar & Knab, is in error. *Kerteszia* is described as possessing scales on the abdomen, which is not the case with *cruzii*. This correction will have to be made in the place referred to and in our later article (Ins. Ins. Mens., v, 38, 1917), by substituting for the name *boliviensis* that of *cruzii*. *Kerteszia*, therefore, is still unknown to us in nature; but it evidently cannot be used as a subgeneric name for the bromelicolus species, and for these a new term will be required. We suggest *Dendropaedium*. This group is defined as having the thorax and abdomen hairy, without scales, the head with upright scales only. The thorax is elongated as in *Anopheles* proper and *Myzomyia*, from which it differs in having the hairs of the mesonotum not diffused over the surface, but gathered together in narrow depressed stripes, separated by broad straight bare spaces. The wing-scales are lanceolate as in *Anopheles*.

NOTES ON AMERICAN ANOPHELES

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

An attempt is here made to recognize the Anopheline genera proposed by Theobald in a subgeneric sense, using the scale characters to form groups within the genus. The latest works on the subject[1] have abandoned these groups, and, as Stanton remarks[2] "The natural affinities of species have been obscured by the division of the group into a multiplicity of genera." Still, I think this is in part due to the somewhat uncritical manner in which the scale-characters have been used. They are not of generic importance, clearly; but used as subgenera[3] they may be an assistance in classification. As used in the following, it appears that allied species are grouped together, proper

[1] Edwards, Bull. Ent. Research, iii, 241, 1912; Stanton, Bull. Ent. Research, vi, 159, 1915; Christophers, Ind. Jour. Med. Research, iii, 454, 1916; Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 962, 1917.

[2] Stanton, Bull. Ent. Research, iv, 129, 1913.

[3] Edwards at first (Bull. Ent. Research, ii, 141, 1911) used the names in the sense here proposed, but later abandoned the practice.

allowance being made for variation in the scale-characters. Used subgenerically, undue emphasis need not be laid upon them.

The subgenera occurring in America tabulate as follows:

Thorax and abdomen hairy, no scales.
Head with upright scales only.
Wing-scales lanceolate.
Thorax short, not over twice as long as wide,
Coelodiazesis Dyar & Knab
Thorax more elongate.
Hairs of mesonotum diffused.....*Anopheles* Meigen
Hairs in lines between broad bare spaces,
Dendropaedium Dyar & Knab
Wing-scales in part large and inflated,
Cycloleppteron Theobald
Head with flat scales in the median area.....*Stethomyia* Theobald
Thorax hairy or with a few scales on the margin; abdomen with scales.
Abdomen hairy dorsally with lateral scale-tufts,
Arribalzagia Theobald
Abdomen with large irregular black scales; no tufts,
Kerteszia Theobald
Thorax with distinct narrow curved scales.
Abdomen hairy, or with scales only on the anal segment.
Antennæ hairy .....*Myzorhynchella* Theobald
Antennæ with scales at the whorls.....*Chagasia* Cruz
Abdomen hairy, the last three segments scaled; no tufts,
Manguinhosia Cruz
Abdomen scaled in part or throughout and with lateral tufts,
Cellia Theobald

Genus ANOPHELES Meigen

Subgenus COELODIAZESIS Dyar & Knab

Coelodiazesis Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 177, 1906.
Cyclophorus Eysell, Arch. Schiffs-u. Trop.-Hyg., xvi, 421, 1912.

Anopheles (Coelodiazesis) barberi Coquillett.

Anopheles barberi Coquillett, Can. Ent., xxxv, 310, 1903.

Eastern United States, the larvæ in tree-holes.

Subgenus ANOPHELES Meigen

Anopheles Meigen, Syst. Beschr. bek. eur. zweifl. Ins., i, 10, 1818.

TABLE OF SPECIES

Tarsi wholly dark colored.
Hind tibiæ broadly white at apex.....*eiseni* Coquillett
Hind tibiæ without white apical ring.
Wings with a white spot at outer third of costa.
Palpi marked with white; third vein extensively white in the middle.....*pseudopunctipennis* Theobald
Palpi wholly black; third vein wholly black scaled, *punctipennis* Say
Wings without such spot on the costa.
Wings with patches of yellowish scales; sixth vein with three black spots.....*crucians* Wiedemann
Wings without patches of pale scales.
Wing at apex with a coppery spot on fringe, *occidentalis* Dyar & Knab
Wing-fringe uniformly dark throughout.
Body not wholly blackish; hairs of mesonotum yellow or white.
Palpi of the female blackish scaled throughout; wing scales forming spots at the bases of the fork-cells, *quadrimaculatus* Say
Palpi of the female with dull silvery white rings at bases of joints; scales of wings mesially not distinctly massed at bases of fork-cells.....*walkeri* Theobald
Body blackish throughout; hairs of mesonotum dark brown.....*atropos* Dyar & Knab
Tarsi speckled with white.
Hind tarsi with the last two joints largely black, *vestitipennis* Dyar & Knab
Hind tarsi with the last two joints wholly white, *annulipalpis* Lynch Arribálzaga

Anopheles (Anopheles) eiseni Coquillett.

Anopheles eiseni Coquillett, Journ. N. Y. Ent. Soc., x, 192, 1902.
Myzomyia tibiamaculata Neiva, Brazil-Medico, xx, 288, 1906.

Tropical America, the larvæ in tree-holes and pools in rocks.

Anopheles (Anopheles) pseudopunctipennis Theobald.

Anopheles pseudopunctipennis Theobald, Mon. Culic., ii, 305, 1901.
Anopheles franciscanus McCracken, Ent. News, xv, 12, 1904.
Anopheles peruvianus Tamayo, Mem. de la Municipalidad de Lima, 1906, xxxv, 1907.

Proterorhynchus argentinus Brèthes, Bol. Inst. Ent. y Pat. Veg., i, 15, 1912.

Anopheles tucumanus Lahille, An. Mus. Nac. Buen. Aires, xxiii, 253, 1912.

Tropical America and the adjacent warmer temperate regions, the larvæ in permanent ground pools.

Anopheles (Anopheles) punctipennis Say.

Culex punctipennis Say, Journ. Acad. Nat. Sci. Phil., iii, 9, 1823.

Culex hyemalis Fitch, Amer. Jn. Agr. & Sci., v, 281, 1847.

Anopheles perplexens Ludlow, Can. Ent., xxxix, 267, 1907.

Southern Canada, United States to central Mexico, the larvæ in ground pools, both permanent and temporary.

Anopheles (Anopheles) crucians Wiedemann.

Anopheles crucians Wiedemann, Ausser. zweifl. Ins., i, 12, 1828.

Southeastern United States and Greater Antilles, the larvæ in ground pools, especially near the coast.

Anopheles (Anopheles) quadrimaculatus Say.

Anopheles quadrimaculatus Say, Keating's Narr. Exp. Peter's Riv., ii, 356, 1824.

Anopheles guttulatus Harris, Hitch. Rept. Geol. Zool. Mass., 595, 1835.

Anopheles annulimanus van der Wulp, Tids. voor Ent., x, 129, 1867.

North America, east of the Rocky Mountains, the larvæ in permanent swamps, especially connected with rivers. The name *quadrimaculatus* apparently should be applied to the next species, but I have ignored that in order to avoid confusion that would result from the change.

Anopheles (Anopheles) occidentalis Dyar & Knab.

Anopheles occidentalis Dyar & Knab, Proc. Biol. Soc. Wash., xix, 159, 1906.

North America west of the Rocky Mountains and eastward through Canada to Maine, the larvæ in ground pools of permanent character.

Anopheles (Anopheles) atropos Dyar & Knab.

Anopheles atropos Dyar & Knab, Proc. Biol. Soc. Wash., xix, 160, 1906.

Florida Keys and Gulf Coast, the larva unknown.

Anopheles (Anopheles) walkeri Theobald.

Anopheles walkeri Theobald, Mon. Culic., i, 299, 1901.

Eastern North America, the larvæ in fluctuating swamps along rivers, filled by flood-water.

Anopheles (Anopheles) vestitipennis Dyar & Knab.

Anopheles vestitipennis Dyar & Knab, Broc. Biol. Soc. Wash., xix, 136, 1906.

Mexico, Central America and Greater Antilles, the larva unknown.

Anopheles (Anopheles) annulipalpis Lynch Arribálzaga.

Anopheles annulipalpis Arribálzaga, Nat. Arg., i, 149, 1878.

Anopheles annulipes Theobald (not Walker), Mon. Culic., v, 84, 1910.

Argentina, the larva unknown.

Subgenus DENDROPAEDIUM Dyar & Knab

Dendropaedium Dyar & Knab, Ins. Ins. Mens., vi, 141, 1918.

TABLE OF SPECIES

Wing with four white spots involving costa and first vein.
Third vein broadly white in the middle.
Hind tarsi with the last four joints black, apically ringed with white, the fifth wholly black.....*bellator* Dyar & Knab
Hind tarsi with these joints white with black rings at their bases .....*cruzii* Dyar & Knab
Third vein black, a minute white spot at base, *hylephilus* Dyar & Knab
Wing with only the outer two spots involving the costa, *neivai* Howard, Dyar & Knab

Anopheles (Dendropaedium) bellator Dyar & Knab.

Anopheles bellator Dyar & Knab, Proc. Biol. Soc. Wash., xix, 160, 1906.

Island of Trinidad, the larvæ in Bromeliaceæ.

Anopheles (Dendropaedium) cruzii Dyar & Knab.

Anopheles lutzii Theobald (not Cruz), Mon. Culic., i, 177, 1901.
Anopheles cruzii Dyar & Knab, Proc. U. S. N. M., xxxv, 53, 1908.

Brazil, the larvæ in Bromeliaceæ.

Anopheles (Dendropaedium) hylephilus Dyar & Knab.

Anopheles hylephilus Dyar & Knab, Ins. Ins. Mens., v, 38, 1917.

Venezuela, Ecuador and Panama, the larva unknown.

Anopheles (Dendropaedium) neivai Howard, Dyar & Knab.

Anopheles neivai Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 986, 1917.

Panama and southern Mexico, the larvæ in Bromeliaceæ.

Subgenus CYCLOLEPPTERON Theobald

Cycloleppteron Theobald, Mon. Culic., i, 205, 1901.

Anopheles (Cycloleppteron) grabhamii Theobald.

Anopheles grabhamii Theobald, Mon. Culic., i, 205, 1901.

Greater Antilles, the larvæ in ground pools.

Subgenus STETHOMYIA Theobald

Stethomyia Theobald, Journ. Trop. Med., v, 181, 1902.

Anopheles (Stethomyia) nimba Theobald.

Stethomyia nimba Theobald, Mon. Culic., iii, 62, 1903.

British Guiana and Brazil, the larva unknown.

Subgenus ARRIBALZAGIA Theobald

Arribalzagia Theobald, Mon. Culic., iii, 81, 1903.

TABLE OF SPECIES

Wing-scales considerably inflated, black ones on the base of the fourth vein being noticeable.

Third vein spotted; fourth and fifth hind tarsals white at base and tip ..... *intermedium* Chagas

Third vein with a black spot at base, the rest mixed; fourth hind tarsal with a white middle band beside the white apices, the fifth commonly all white.

White on hind tarsi less extensive, appearing black with white rings; fifth joint sometimes with a small black band, *punctimacula* Dyar & Knab

White on hind tarsi extensive, appearing white with black dots ..... *mediopunctatus* Theobald

Wing-scales narrower, broadly elliptical to lanceolate.

Third vein mixed; fourth tarsal with white tip, the fifth all black, *maculipes* Theobald

Third vein spotted; fourth and fifth tarsi white at base and tip.

Tarsi white at base and tip only.

Third vein white-scaled, a black spot at base and before tip; tip white..... *pseudomaculipes* Chagas

Third vein with five white spots, or four when the middle one is absent, the tip black, *apicimacula* Dyar & Knab

Fourth hind tarsal with a middle white ring beside the tips, fifth all white..... *strigimacula* Dyar & Knab

Anopheles (Arribalzagia) intermedium Chagas.

Cycloleppteron intermedium Chagas, in Peryassú, Os Culic. do Brazil, 85, 1908.

Brazil, the larva unknown.

Anopheles (Arribalzagia) punctimacula Dyar & Knab.

Anopheles punctimacula Dyar & Knab, Proc. Biol. Soc. Wash., xix, 136, 1906.

Anopheles malefactor Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 198, 1907.

Panama, the larvæ in ground pools. In the monograph, Mr. Knab, at the last moment, placed *punctimacula* with *apicimacula* on his own responsibility. I agree with him in the reduction by one of the number of species, but I think that the single type of *punctimacula* is clearly a *malefactor* and not an *apicimacula*.

Anopheles (Arribalzagia) mediopunctatus Theobald.

Cycloleppteron mediopunctatus Theobald, Mon. Culic., iii, 83, 1903.

Trinidad and Brazil, the larvæ unknown.

Anopheles (Arribalzagia) maculipes Theobald.

Arribalzagia maculipes Theobald, Mon. Culic., iii, 81, 1903.

Brazil, the larvæ in ground pools. The specimen from Trinidad recorded in the Monograph (page 992, Chaquanas, Trinidad, March, 1914, I. F. Lasalle) is not *maculipes,* but the variety of *apicimacula* without the central black spot on the third vein of the wing.

Anopheles (Arribalzagia) pseudomaculipes Chagas.

Arribalzagia pseudomaculipes Chagas, in Peryassú, Os Culic. do Brazil, 108, 1908.

Brazil, the larva unknown.

Anopheles (Arribalzagia) apicimacula Dyar & Knab.

Anopheles apicimacula Dyar & Knab, Proc. Biol. Soc. Wash., xix, 136, 1906.

Mexico, Central America and Trinidad, presumably also the northern coast of South America, the larvæ in pools in stream-beds.

Anopheles (Arribalzagia) strigimacula Dyar & Knab.

Anopheles strigimacula Dyar & Knab, Proc. Biol. Soc. Wash., xix, 136, 1906.

Tropical Mexico, the larvæ in pools in stream-beds.

Subgenus KERTESZIA Theobald

Kerteszia Theobald, Ann. Nat. Mus. Hung., iii, 66, 1905.

Anopheles (Kerteszia) boliviensis Theobald.

Kerteszia boliviensis Theobald, Ann. Nat. Mus. Hung., iii, 66, 1905.

Bolivia, the larvæ unknown. The identification of this species with *A.* (*Dendropaedium*) *cruzii* D. & K. made by Mr. Knab has been corrected on a previous page.

Subgenus MYZORHYNCHELLA Theobald

Myzorhynchella Theobald, Mon. Culic., iv, 78, 1907.

TABLE OF SPECIES (FROM PERYASSU)

1. Extremidade do pé (= os 4 ultimos articulos tarsaes) posterior completamente branca. Mesonoto unicolor, com 3 estrias escuras; azas com as costas distinctamente manchadas de amarello. Abdomen piloso, excepto o segmento genital que possue escamas,
lutzii Cruz

2. Idem, mas com as manchas da costa brancas e escamas brancas no segmento genital. Especie menor que a *lutzii*.....*parva* Chagas
3. Idem, mas junto ás extremidades basaes dos 2os e 3os articulos posteriores ha um anel preto.....*nigritarsis* Chagas
5. Pernas posteriores com as extremidades apical da tibia e basal do metatarso brancas em grande extensão.....*gilesi* Neiva

Anopheles (Myzorhynchella) lutzii Cruz.

Anopheles lutzii Cruz, Brazil-Medico, xv, 423, 1901.
Myzorhynchella nigra Theobald, Mon. Culic., v, 78, 1907.

Brazil, the larvæ unknown. The species is not before me.

Anopheles (Myzorhynchella) parva Chagas.

Myzorhynchella parva Chagas, Nov. Esp. de Cul. Braz., 4, 1907.

Brazil, the larva unknown.

Anopheles (Myzorhynchella) nigritarsis Chagas.

Myzorhynchella nigritarsis Chagas, in Peryassú, Os Culic. do Brazil, 97, 1908.

Brazil, the larvæ unknown. The species is not before me.

Anopheles (Myzorhynchella) gilesi Neiva.

Myzorhynchella gilesi Neiva, in Peryassú, Os Culic. do Brazil, 103, 1908.

Brazil, the larvæ unknown. The species is not before me.

Subgenus CHAGASIA Cruz

Chagasia Cruz, Brazil-Medico, xx, 199, 1906.

Anopheles (Chagasia) farjardi Lutz.

Pyretophorus farjardi Lutz, in Bourroul, Mosq. do Brasil, 16, 1904.
Chagasia nivae Cruz, Brazil-Medico, xx, 199, 1906.

Brazil, the larvæ unknown.

Subgenus MANGUINHOSIA Cruz

Manguinhosia Cruz, Um Nov. Gen. Braz. da s.-f. "Anophelinæ," 1907.

Anopheles (Manguinhosia) peryassui Dyar & Knab.

Manguinhosia lutzi Cruz (not *Anopheles lutzii* Cruz), Um Nov. Gen. Braz. da s.-f. "Anophelinæ," 1907.

Anopheles peryassui Dyar & Knab, Proc. U. S. N. M., xxxv, 53, note, 1908.

Brazil, the larvæ unknown.

Subgenus CELLIA Theobald

Cellia Theobald, Journ. Trop. Med., v, 183, 1902.

TABLE OF SPECIES

Hind tarsi all white beyond the second joint.
Scales on the dorsum of all the abdominal segments.
Lower fork of the second vein with a white patch at the tip, *argyritarsis* Robineau-Desvoidy
Lower fork of second vein with a black patch at the tip, *pictipennis* Philippi
Scales on the last two abdominal segments only, *braziliensis* Chagas
Hind tarsi similar but with a black spot on the last joint.
Palpi with the last two joints white except narrowly at bases, *tarsimaculata* Goeldi
Palpi with the last joint only white.....*albimanus* Wiedemann

Anopheles (Cellia) argyritarsis Robineau-Desvoidy.

Anopheles argyritarsis Robineau-Desvoidy, Mém. Soc. d'Hist. Nat., iii, 411, 1827.

Tropical American mainland, Lesser Antilles, the larvæ in ground pools and artificial receptacles. The abdominal scale-tufts, which condition the subgeneric reference, are occasionally wanting in this species.

Anopheles (Cellia) pictipennis Philippi.

Culex pictipennis Philippi, Verh. z.-b. Ges. Wien, xv, 596, 1865.

Anopheles albitarsis Lynch Arribálzaga, El Nat. Arg., i, 151, 1878.

Anopheles bigotii Theobald, Mon. Culic., i, 135, 1901.

Chile and Argentina, the larva unknown. This is not before me.

Anopheles (Cellia) braziliensis Chagas.

Cellia braziliensis Chagas, Nov. Esp. de Cul. Braz., 18, 1907.

Brazil, the larvæ unknown.

Anopheles (Cellia) tarsimaculata Goeldi.[1]

Anopheles tarsimaculata Goeldi, Os Mosq. no Pará, 133, 1905.
Anopheles gorgasi Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 198, 1907.

Tropical American mainland, Lesser Antilles, the larvæ in ground pools of any kind except artificial.

Anopheles (Cellia) albimanus Wiedemann.[1]

Anopheles albimanus Wiedemann, Dipt. Exot., 10, 1821.
Anopheles cubensis Agramonte, El Progreso Medico, x, 460, 1900.
Anopheles argyrotarsis albipes Theobald, Mon. Culic., i, 125, 1901.
Anopheles dubius Blanchard, Les Moust., 205, 1905.

Tropical America, including the Greater Antilles and southern Florida, the larvæ in ground pools, often of brackish water.

NEW MUSCOID GENERA, SPECIES AND SYNONYMY

(*Diptera*)

By CHARLES H. T. TOWNSEND

In the revision of muscoid groups and genera, based mostly on material in the National Museum collection, it becomes necessary to characterize the following new genera and species:

Pseudogymnosoma, new genus.

Genotype, *Pseudogymnosoma inflatum,* new species.

No hypopleurals. Abdomen inflated and globose, like *Rhodogyne,* nearly bare. Head much like *Stomorhina,* but epistoma short and not widened nor sprung convexly, the face being dished. No facial carina. Arista plumose. Palpi widened and flattened. Upper facets of male eyes greatly enlarged. Male hypopygium small.

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[1] Compare an article by James Zetek on the relationship of these two forms (Ann. Ent. Soc. Am., viii, 221–271, 1915). The same intergradation in palpal coloration has recently been observed in specimens from Guayaquil, Ecuador (F. Campos R.).