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CUBA

ON AND CHARITIES

DIRECTION OF SANITATION

MOSQUITOES

OF THE

REPUBLIC OF CUBA

BY

DR. J. H. PAZOS

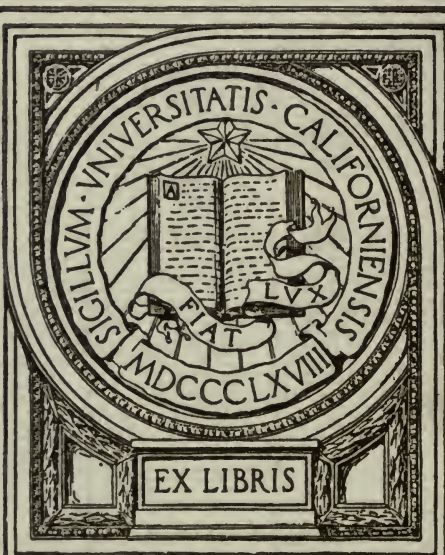
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MOSQUITOES OF THE REPUBLIC OF CUBA

To the Health Department of the Republic of Cuba is due the appearance at this World's Exposition of the greatest collection of mosquitoes which in the course of nine years we have been able to gather and classify, that is, since Medical Entomology acquired the importance it has to-day in the genesis of infectious diseases, transmitted by insects; where blood suckers (diptera) take an important place by their complicated cibarious parts, innoculating germs developed in their interior. The Island of Cuba, the first in showing this, has created a special Department (Sanidad y Beneficencia) in charge of a Secretary, Dr. Enrique Núñez.

It was high time that the world over should recognize Finlay as the discoverer of the transmission of the yellow fever through the proboscis of the female mosquito *Stegomyia*, thus rendering the tropical countries as inhabitable as any other region in the world, and making possible the most daring works of engineering, such as the Panama Canal, and directing industry and commerce into places where formerly it was certain death.

Up to the present time 45 well-defined species of mosquitoes have been found on this Island, as follows:

- 4 anopheles.
- 2 megarhinus.
- 1 bancroftia.
- 1 psorophora.
- 14 aedes.
- 1 aedeomyia.

~~2812~~

- 1 mansonia.
- 3 uranotaenia.
- 8 culex.
- 1 culiseta.
- 1 deinocerites
- 7 wyeomyia.
- 1 chaoborus.

Up to 1902 mosquitoes were scattered throughout the world according to Giles (note taken from Theobald) as follows:

- Europe—53 species.
- North America and Canada—36.
- Central America—2.
- West Indian Islands—28.
- South America and Islands—33.
- East Africa and Islands—6.
- South Africa—9.
- North Africa.—5.
- Central Africa—15.
- India—49.
- Malay Peninsula and Eastern Archipelago—37.
- China & Formosa—11.
- Japan—5.
- Central Asia—2.
- Australia—29.
- New Zealand—7.
- Oceanic Islands, Bermuda, Fiji, Mauritius and Madeira--7.

By the preceding statistics we see that Cuba has almost as many kinds of mosquitoes as Europe and India in proportion to her size.

It is to be supposed that a careful investigation throughout all the larvae-breeding places in the Island would duplicate the number of species catalogued to-day.

Out of all the species on the Island there appear 34 in the collection of samples.

We feel that we must not proceed without mentioning here our heartfelt thanks to Drs. L. O. Howard and Fredk. Knab, to Prof. Dyar and the entomologist Coquillett, members of the United States National Museum at Washington (the Smithsonian

Institution) who by suggestion of Dr. Howard, classified and returned to us our mosquitoes. We cannot overlook, either, the important help given to us in this work by Dr. John Guiteras, Director of the Bureau of Health, and Mr. J. R. Taylor, Chief of the Laboratory at *Las Animas Hospital*, Havana.

We show enlarged photographs of the principal species, which facilitate the study of same. These microphotographs were obtained with the obj. 64 m/m focal distance, E. Leitz, and some have been lantern projections.

Those wishing to fathom the subject of our mosquitoes more deeply may look up, among other works, the second volume of *SANIDAD Y BENEFICENCIA*, 1909, official organ of the Health Department of the Republic of Cuba.

We give herewith only a brief extract of a few species, otherwise we might give these notes undue extension, when their special object is to serve as a guide for the study of the collection, which is preceded by the catalogue of the mosquitoes of the Republic of Cuba, the species of which are as follows:

- Anopheles albimanus, Wiedeman.
- „ vestitipennis, Dyar & Knab.
- „ grabhamii, Theobald.
- „ crucians, Wiedeman.
- Megarhinus haemorrhoidalis, Fabricius.
- „ portoricensis, von Roder?
- Bancroftia persephasa, Dyar & Knab.
- Psorophora howardii, Coquillett.
- Aedes sayi, Dyar & Knab.
- „ pазosi, Dyar & Knab.
- „ schwarzi, Dyar & Knab.
- „ pertinax, Grabham.
- „ jamaicensis, Theobald.
- „ pigmeus, Theobald. +
- „ sollicitans, Walker.
- „ bracteatus, Coquillett.
- „ condolecens, Dyar & Knab.
- „ scapularis, Rondani.
- „ mediovittata, Coquillett.

- Aedes niger*, Giles.
 „ *plutoeraticus*, Dyer & Knab.
 „ *calopus*, Meigen (*Stegomyia*)
Aedeomyia squamipennis, Lynch-Arribalzaga.
Mansonia titillans, Walker.
Uranotaenia saphirinus, Osten-Sacken. +
Uranotaenia socialis Theobald.
 „ *lowii*, Theobald.
Culex cubensis, Bigot.
 „ *similis*, Theobald.
 „ *innobilis*.
 „ *bisulcatus*, Coquillett.
 „ *corniger*, Theobald.
 „ *agitator*, Dyar & Knab. +
 „ *falsificator*, Dyar & Knab. +
 „ *invocator*, Dyar & Knab. +
Culiseta inornatus, Williston.
Deinocerites cancer, Theobald.
Wyeomyia conchita, Dyar & Knab.
 „ *mitchellii*, Theobald.
 „ *argyrura*, Dyar & Knab. +
 „ *sororeula*, Dyar & Knab.
 „ *antoinetta*, Dyar & Knab.
 „ *minor*, Dyar & Knab. +
 „ *violescens*, Dyar & Knab.
Chaoborus antillum, Dyar & Knab. +

Anopheles albimanus, Wiedeman.—A mosquito of a brownish color, wings spotted on their costal edges. Characteristic feature of hind legs, third pair, first tarsus, distal half, pure white, second and third pure white also; and the fourth white with black basal band. It stings during the hours of twilight about a metre high from the floor, even through thick clothing. It stands at an angle of 45 degrees, deposits its larvae in swampy ground or in slowly running water. In the Ariguanabo lagoon they are very abundant.

Note.—The species marked with a cross are missing in the collection.

Dr. Aristides Agramonte, was the first to successfully prove in 1900 in Havana, the malarial infection from the anopheles albimanus.

Geographic distribution: Havana, Drs. Agramonte, Guiterras and Mr. J. R. Taylor.—San Antonio de los Baños, Mangas, San Cristóbal, Dr. Pazos.—Guadiana, Guanés y Guanímar, Drs.



Naranjo y Pazos (August, 1909).—Jamaica, English Guiana, Rio Janeiro and India, Drs. Grabham, Rowland, Lutz and Giles.

Anopheles vestitipennis, Dyar & Knab.

A mosquito of gray feet, finely spotted with gray by reflection. It has no white rings. Wings spotted in different directions. Abundant in the Ariguanabo. The first specimen captured was in the swamps near Guanímar.

Anopheles grabhamii, Theobald.

The characteristic feature of this mosquito consists in its circular scales on the wings. Formerly it was incorrectly called *ciclopepteron* instead of *ciclopepidopteron*. Its habits differ little from others of its kind. The first student in Cuba to capture this anopheles was Mr. Taylor, of *Las Animas* Hospital, Havana.

Anopheles crucians, Wiedeman.

Very much like the *albimanus*, only that the rings on the feet are not white. It is found all over the Island.

Megarhinus haemorrhoidalis, Fabricius.

"N.º 271.—Magnificent metallic green culex, red anus hairs, iron greenish thorax. The female has not the hairs." Fe-



lipé Poey. This mosquito is very rare; we have not succeeded in capturing it. Its larvae, as large as those of the *psorophora*, are probably found in the *curujeyes* in the woods of Central Cuba.

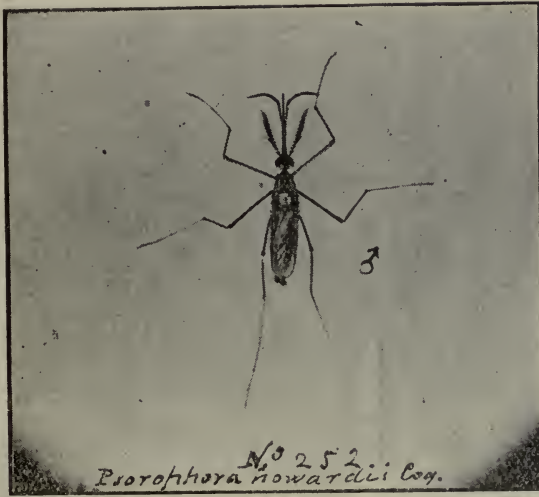
Megarhinus portoricensis, von Roder.?

Dr. L. O. Howard tells us that this species is rare, that he has seen but one specimen, in bad condition, to be properly

classified, and that its larvae will probably be found in the hollow of the trees in the woods.

Bancroftia persephasa, Dyar & Knab.

Only one specimen has been captured here, in San Antonio de los Baños. Type N.º 12,118, U. S. N. M., Washington.



Psorophora howardii, Coquillett.

It is the largest mosquito in Cuba. Its bite is not painful (Taylor). Generally caught in a state of larvae in quarries. One was caught on the fly in Candelaria by Mr. Patricio Cardin.

Aedes sayi, Dyar & Knab.

Captured in San Cristóbal, on the river bank.

Aedes pazosi, Dyar & Knab.

Captured in the river bank in San Cristóbal, Western Cuba.

Aedes schuarzi, Dyar & Knab.

A sanguinary day mosquito, captured in a lagoon in San Cristobal near the Railway Station; grayish black, having one-third of the third segment of the hind legs pure white.

Aedes pertinax, Grabham.

A day mosquito of this locality.



Aedes jamaicensis, Theobald.

The common mosquito of the fields, sanguinary, day, evening and night. The larvae live in pools and cart ruts on the public roads, abundant all the year, feet ringed of yellowish gray, black proboscis with basal third, lighter.

Aedes pigmeus, Theobald.

Captured by Mr. Gros, assistant in the *Las Animas* Hospital Laboratory.

Aedes sollicitans, Walker.

A mosquito of the sea coast. Special features proboscis with yellow band, gold-dark thorax, feet with white bands, and more especially, the yellow middle line of scales in the abdomen.—Taylor.

Aedes bracteatus, Coquillett.

Captured in San Antonio de los Baños, 1909. Also in the Isle of Pines.

Aedes condolecens, Dyar & Knab.

Captured in this city.

Aedes scapularis, Rondani.

Easily distinguished from other mosquitoes, even on the wing, on account of the large silvered area in the upper front section of the thorax. It abounds in this locality, as also in other parts of Cuba. It has been captured by Mr. Taylor.

Aedes mediovittata, Coquillett.

Very similar to our *stegomyia*, only instead of a lyre in the thorax it presents a gilt line. It might be called our rural *stegomyia*, abundant in this locality in the month of September. It has been caught in the hills of San Cristobal, Pinar del Rio Province.



Aedes niger, Giles.

Principal characteristics: proboscis with white band, abdomen with white basal bands, and feet with bands of same color. Like the *Culex sollicitans* it is a sea coast mosquito. It flies on deck when boats tie up at Júcaro, Isle of Pines, in large quantities in the early morning. Once we caught a specimen in a tank in Ceiba del Agua. Very common in the Isle of Pines in July, and on the North and South coast in Western Cuba.

Aedes plutocraticus, Dyar & Knab.

Very scarce in this city.

*Stegomyia calopus*, Meigen. (*Aedes*, according to Dyar & Knab)

A mosquito easily distinguished, both sexes having a silver lyre of two strings on its back. It is the yellow fever transmitter. A town mosquito breeding its larvae in rain water barrels. Abundant throughout the year; and to this same abundance in the towns is due in part the success of the Health Department of Cuba in banishing yellow fever from the Island, endemic in Colonial times. It may live captive for 145 days (Dr. Guiteras.)

Aedomyia squamipennis, Lynch-Arribalzaga.

Wing scales very similar to those of the *Mansonia titillans*. Abundant on the banks of the Ariguanabo river.



Mansonia titillans, Walker.

Easily recognized, it being the first to come to sting us on the banks of our rivers. Feet ringed with very light white and

cream, proboscis with a small white ring at the union of the front third with the two basal or hind thirds, black eyes, the extremity of the abdomen as if truncated. Its sting is painful. The specimens of this kind in other localities are transmitters of the filaria bancrofti, as in Zambesi, Lake Nyassa (Africa), according to the scholar R. Blanchard.

Uranotaenia saphirinus, Osten-Sacken.

Rather rare in this city. Osten-Sacken's diagnosis is the following: "Fuscus; fronte, thoracis linea media et pleurarum strigis cyaneo-micantibus; pedibusnigris, coxis, femorumque basi pallida; femorum tiarum que extremo apice supreme niveis". Its length is 2.5 mm. Also found in the United States.

Uranotaenia socialis, Theobald.

A mosquito captured by Mr. E. Gros, assistant *Las Animas* Hospital.

Uranotaenia lowii, Theobald.

A very small mosquito caught on the fly. Mr. J. R. Taylor has succeeded in getting the larvae until now unknown. The main in this species is that both sexes have the palpa very short, and the tarsus of the hind legs white.

Culex corniger, Theobald.

The general color of this mosquito is light gray in both sexes. We are not familiar with the biology of this insect. The samples we have examined have been sent to us by the National Department of Agriculture. We have not been able to catch it.

Culex similis, Theobald.

This mosquito is very similar to the cubensis, erroneously known formerly by nigritulus. It is smaller than the cubensis, and the abdominal bands not so clear.

Culex cubensis, Bigot.

This mosquito appears in the cities in day time, and strange enough, it stings in the afternoon. The thorax is yellowish gray, like iron, abdomen ringed with cream bands, basal, circular form, lower part of abdomen cream white. The male flies over the heads of persons standing and wearing a black hat.

This mosquito was the first to serve Dr. Mario Lebreto to repeat the work of Manson, of England, in regard to filarial



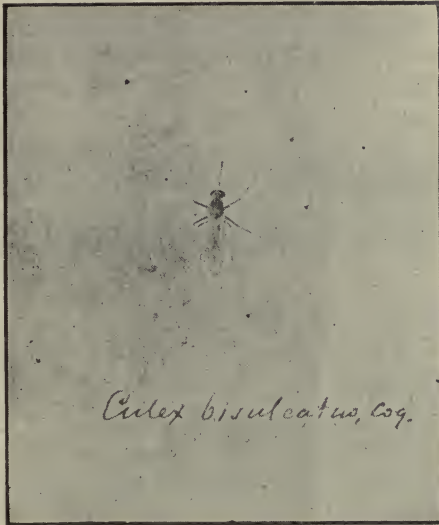
infection, which he proved in the Medical Congress of 1905, exhibiting wonderful preparations which are microphotographed, showing the filaria in the interior of the mosquito. It is, therefore, the transmitter of the filaria in Cuba.

Culex innobilis, Dyar & Knab.

A mosquito found in the rural zone of San Antonio de los Baños, by the river. General color light gray above, much lighter underneath, the thorax a little lighter than the rest of the body.

Culex bisulcatus, Coquillet.

Upper part of thorax yellowish gray, and faintly marked with three longitudinal lines over whole thorax, gray pleuras, much lighter than the rest of the mesothorax, a greenish color



is seen by transparence in its upper part. The larvae are found in the *curujey*.—Bromelaceas.

Culex agitator, Dyar & Knab.

It inhabits the woods of the Ariguanabo river.

Culex falsificator, Dyar & Knab.

“Proboscis black, enlarged toward the apex. Occiput clothed with broad, flat, bronzy-scales, a small area of narrow, curved ones behind. Abdomen dull black above, with transverse, basal segmental, dull white band beneath, yellowish scaled; the apices of the segments marked with indistinct pale brown bands. Wings with the scales narrowly ovate on the second to fourth veins outwardly. Legs black seven specimens, Havana, Cuba, February 15, 1904.—J. R. Taylor.”

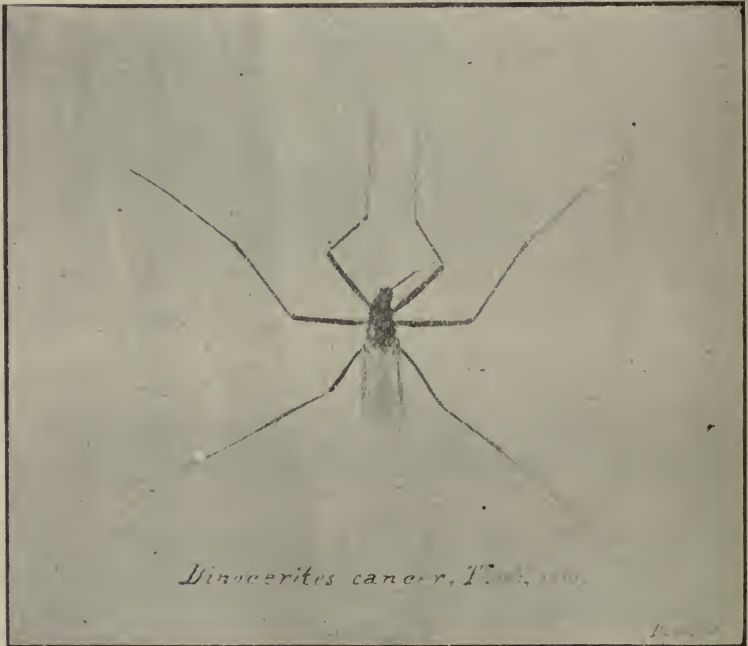
Type N.º 12,108, U. S. N. M.

Culex invocator, Dyar & Knab.

We know nothing of the biology of this mosquito. It may be captured in this city.

Culiseta inornatus, Williston.

“Ailes a nervures transverses caractéristiques, la surnuméraire plus près de la base de l'aile que la moyenne, la postérieure plus longue que la moyenne et tout près d'elle. Pattes brun jaunâtre, une tache claire au genou.—R. Blanchard”.—
Captured in Havana by Mr. E. Gros.

*Deinocerites cancer*, Theobald.

The larvae, live in crab holes containing salt water. They abound in Mariel. It is found among the mangrove trees. The antennae are so large that they resemble, when flying, a spider

with distended feet. A very appropriate remark of Mr. Taylor. Its general color is dark brown. It has no colored rings.



Wyeomyia conchita, Dyar & Knab.

Its larvae are found in the *curujey*, as are also the following species which offer but slight differentials: *W. mitchelli*, D. & K., *W. argyrura*, D. & K., *W. sororecula*, D. & K., *W. antoinetta*, D. & K., *W. violescens*, D. & K., and.

Chaoborus antillum, Knab. (A new species).

The Academy of Sciences of Havana has been duly advised of the discovery of this species. It is found in this city.

Dr. José H. Pazos, San Antonio de los Baños.—Pinar del Río, Province.—Republic of Cuba.—September 11, 1914.

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