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BIOGRAPHICAL SKETCH OF HARRY A. BEATTY

By OLIVER C. SKOV

Harry A. Beatty was born on St. Croix, January 10, 1903. He received his early training in natural science on his father's sugar cane plantation, an interest which matured with the years into a vocation. The first rudiments of an education were received by him from a private instructor and later he entered the Richmond High School, graduating in 1918. By that time he had brought together a sizable collection of insects, birds and eggs. In 1919 he attended the Mount Hermon School in Massachusetts, majoring in zoology. However, his studies at Mount Hermon were never completed, as he had to return home after his second year on account of financial difficulties.

Beatty's interest in natural history never lagged for a moment. In 1924 he was at Guánica, Puerto Rico, working in sugar cane cultivation, and he improved every opportunity for observation on the bird life of the region. It was during these ramblings that he made the acquaintance of Dr. Stuart T. Danforth who encouraged him to publish his notes on the birds of St. Croix, and later on the birds of Guánica Lagoon. He was sent to the Dominican Republic in 1925 where he made extensive observations on the bird life inhabiting the jungles and the savannahs around La Romana, and making frequent short excursions into the interior of that Island, when opportunity permitted.

He returned to St. Croix in 1929 and a few months later was in New York, studying medical entomology under a Professor of Medicine who was associated with Columbia University. He again returned to St. Croix in 1933, this time to enter the Department of Health as supervisor and biologist on a malaria and filaria research and control project. This involved extensive field and laboratory work with mosquitos, rearing and dissecting the infected insects.

Although preoccupied with these studies he always found time for investigations in other fields, and the discovery that several species of native birds harbored filaria parasites followed. Beatty's researches received the attention of Professor O'Connor, of Columbia University, and Professor Augustine, of Harvard Medical School; and in 1935 Dr. O'Connor spent the winter working with him, returning again in the summer of 1936 ac-

accompanied by Dr. Augustine. The results of these joint investigations were published as short papers in leading medical journals.

At the time little was known of the fresh water fishes and the mollusca, and extensive collecting was undertaken; the latter receiving special attention to determine their status among disease carriers. His interest in the birds of the islands received priority among his pet avocations. His paper on the birds of St. Croix was published in 1930, and later his notes on the birds of Guánica Lagoon appeared. Since then many interesting short papers in natural science, particularly in the Virgin Islands, have been published and there is promise of many others to follow.

In 1937 he went to Venezuela on the Weber expedition, collecting some birds, but he was particularly interested in searching for blood parasites. He made a collection of skeletal material for the United States National Museum. The following year saw him engaged in short excursions to St. Thomas and St. John, and for two summers he made observations on the pelagic breeding birds of the Virgin Islands, establishing new records and extending the range of several species.

In 1941 Beatty left the Department of Health to work with the Virgin Islands Wildlife Research and Restoration Project, a transfer which took him on a two-months study tour of several of the large game reservations in the United States. He held the post as supervisor and biologist of the project, until August 1944. Then Beatty went to Mona Island, remaining there for six weeks while making extensive collections of birds, insects, mollusca, and crustacea and some plants. In this journey he spent one week in the Luquillo Mountains of Puerto Rico searching for crows and parrots before returning to St. Croix to prepare his manuscripts for publication.

He is an enthusiast of the 16 mm. movie camera and his color films of birds and insects are always entertaining.

INTRODUCTION

The island of St. Croix lies between 17th and 19th parallels north latitude and $64^{\circ} 10'$ and $65^{\circ} 30'$ west longitude. The length is 21 miles while the breadth is at most 6 miles on the western end, tapering wedgelike to a point on the eastern end. The mountain system, extending the length of the island, runs parallel to the north coast and fans out on the south side to form an extensive plain which, roughly, takes in about one third of the island. The highest peak is in Mount Eagle, near the centre of the range, at 1165 feet. The radiating spurs, abutting the shore line, come together to form valleys culminating in numerous bays.

On the south side the lowlands are planted to sugar cane and pasture lands. The western tip and eastern one third of the island are covered mainly with a semi-xerophytic type of vegetation, with dense thickets of organ cactus and bull cactus predominating. Of the original forests, which clothed the Island during an earlier era, only small pockets in the less accessible valleys have survived the onslaught, and there is some natural reforestation taking place where the second growth is reclaiming at a rapid rate large tracts of land which formerly were utilized for agricultural development.

The precipitation varies greatly from year to year, it being anywhere from 30 inches to 90 inches. Much of the rainfall finds its way into the sea but there are five quite large depressions along the coast, that become water holding areas, supporting a variety of bird and insect life. However, during drought years these so-called ponds turn into dust bowls. The few mangrove swamps on the Island are quite extensive.

The rainfall averages 46 inches annually, having a remarkable distribution over such a small land mass. The eastern one third receives approximately one half as much of the normal rainfall as the remainder of the Island and; therefore, has no permanent streams nor surface springs. The remaining portion of the Island is seamed with numerous streamways, although only a few of them maintain running water throughout the year.

The temperature is uniform; the daily and yearly fluctuations being gradual, and therefore, not marked. There is, however, a decided cooling off in temperature toward nightfall, which in the winter months can become quite cold. The average maximum on record is 92° and the minimum 59° with slight variations in either direction during some years. The humidity is not constant as there is not sufficient stored surface moisture to maintain it. During the dry seasons the evaporation rate is comparatively high, insects become inactive, and it would appear that there is no seasonal timetable for reproduction.

The short rain season comes in April-May, bringing with it the first burst of new foliage, and masses of flowers and winged insects begin swarming at dusk. The heavy rainfall occurs from October until January and many plants bloom a second time. Insects swarm again, following a rest period, and many species assume pest proportions.

The material upon which the present report is based was collected by the writer during the period from 1934 to 1945 and deposited in several institutions of scientific research. Much care was given to the preparation of the papers. The scientific nomenclature brought up-to-date in so far as has been made possible by existing limitations and although some slight discrepancies are sure to turn up, it is believed that on the whole, the publication of these papers without further delay should be undertaken; its value enhanced by the knowledge that no general treatise has appeared in print hitherto. It especially is in recognition of this latter circumstance that the task of accumulating the material was undertaken.

In the past there have been occasional short papers which discuss the various St. Croix faunas, but a relatively small portion of this literature is based upon study of extensive material, and, in fact, deals with odds and ends of insect material picked up by wandering naturalists. St. Croix seems always to be taken for granted and never seriously considered as an important integral part in any scientific survey of the Greater Antilles. To mammalogists it comes as a surprise to learn of the presence of a species of deer on the island, and that it occurs there abundantly. Ledru, in 1810, probably gave the earliest reference to the pelagic fauna, and in 1871 Cope discussed the ichthyology of St. Croix, but neither of these writers made mention of its fresh-water fishes.

The writer has already published on the "Birds of St. Croix" (Jour. Dept. Agr. P. R., 14(3): 135-150. Rio Piedras, August 1930), and, with my subsequent collections, this has been expanded by the late Dr. Stuart T. Danforth into a "Supplementary Account of the Birds of the Virgin Islands, with Notes on their Food Habits" together with a "List of Birds Known to Occur in the Virgin Islands" (Jour. Agr. U. P. R., 19(4): 439-72. Rio Piedras, December 1935). Chapman Grant in "The Growth of Herpetology in Puerto Rico and the Virgin Islands Area" (Jour. Dept. Agr. P. R., 16(4): 401-4. Rio Piedras, February 1933), lists all the reptiles from St. Croix.

THE ENDOPARASITES OF ST. CROIX, V. I.

By HARRY A. BEATTY

St. Croix enjoys a phenomenal freedom from the innumerable types of endoparasites which prey upon the mammals of the world and for that reason a check-list is offered to give proper recognition of the prevalent forms. The various organisms came under the writer's observation and were studied during a period of research with the Department of Health from 1933 until 1941. The bulk of Cestoda was determined by H. L. Van Volkenberg and in each case the initials V. V. following the name is an indication of this.

THE PROTOZOA

SARCODINA (RHIZOPODA)

GYMNAMOEBIDA

- 1 *Endamoeba histolytica*
Intestines of man.
- 2 *Endamoeba coli*
Intestines of man.

FLAGELLATA (MASTIGOPHORA)

MONOZOA

- 1 *Trypanosoma lewisi*
Blood parasite of rat *Rattus norvegicus*.
- 2 *Trichomonas humanis*
Intestines of man.
- 3 *Trichomonas* sp.
In ceca of fowl.
- 4 *Chilomastix mesnili*
Intestines of man.

DIPLOZOA

- 1 *Giardia lamblia*
Intestines of man.

INFUSORIA (CILIATA)

HETEROTRICHIDA

- 1 *Balantidium coli*
Intestines of man and swine.

SPOROZOA

COCCIDIDIA

- 1 *Isospora hominis*
Intestines of man.

HAEMOSPORIDIA

- 1 *Plasmodium vivax*
Man.
- 2 *Plasmodium malariae*
Man.
- 3 *Plasmodium falciparum*
Man.
- 4 *Haemoproteus* sp.
Observed in the nucleated red blood corpuscles in the white-crowned pigeon *Columba leucocephala*.
- 5 *Anaplasma marginale*
In blood of cattle.

PLATYHELMINTHES

- 1 *Fasciola hepatica*
In cattle and sheep. Det. V. V.
- 2 *Postharmostomum gallinum*
Det. W. A. Hoffman. Eight specimens were recovered from the cecum of a turkey chick that was fourteen days old.

GESTODA

- 1 *Dipylidium caninum*
Det. V. V. A common parasite in dogs.
- 2 *Hymenolepis nana*
From man.
- 3 *Taenia solium*
From man.
- 4 *Taenia saginata*
From man.
- 5 *Cystercercus tenuicollis*
This is not an uncommon worm in sheep but of many hundreds of wild deer that I have examined I found this worm in two instances only.
- 6 *Moniezia expansa*
Det. V. V. Found in sheep and goats.
- 7 *Anoplocephala perfoliata*
Det. V. V. Found in horse.

NEMATHELMINTHES

NEMATODA

- 1 *Strongyloides stercoralis*
Intestines of man.
- 2 *Trichuris ovis*
Det. V. V. In sheep.
- 3 *Trichuris vulpis*
Det. V. V. In dogs.
- 4 *Trichuris trichiura*
Intestines of man.
- 5 *Ancylostoma caninum*
From dogs.
- 6 *Necator americanus*
From man.
- 7 *Oesophagostomum radiatum*
Det. V. V. From cattle.
- 8 *Oesophagostomum columbianum*
Det. V. V. From sheep.
- 9 *Trichostrongylus colubriformis*
Det. V. V. From sheep and goats.
- 10 *Strongylus vulgaris*
Det. V. V. From horses and mules.
- 11 *Strongylus* sp.
Det. V. V. From horses and mules.
- 12 *Bunostomum phlebotomum*
Det. V. V. From cattle.
- 13 *Bunostomum trigonocephalum*
Det. V. V. From sheep and goats.
- 14 *Crassisoma urosulatum*
Det. V. V. From swine.
- 15 *Stephanurus dentatus*
Det. V. V. From swine.
- 16 *Habronema muscae*
Det. V. V. From horses and mules.
- 17 *Dictyocaulus viviparus*
Det. V. V. From cattle.
- 18 *Heterakis gallinae*
From domestic fowl.
- 19 *Enterobius vermicularis*
From man.
- 20 *Oxyuris equi*
Det. V. V. From horses and mules.

- 21 *Ascaris lumbricoides*
From man.
- 22 *Ascaris equorum*
Det. V. V. From horses and mules.
- 23 *Ascaris* sp.
From rat *Rattus rattus alexandrinus*.
- 24 *Ascaris* sp.
From dove *Zenaida aurita zenaida*.
- 25 *Ascaridia galli*
Det. V. V. From turkey and fowl.
- 26 *Toxocara canis*
Det. V. V. From dogs.
- 27 *Oxyspirura manson*i
From domestic fowls.
- 28 *Wuchereria bancrofti*
Blood parasite of man.
- 29 *Vagrifilaria columbigallinae*
Blood parasite of ground dove (*Columbigallina passerina nigrirostris*).
- 30 *Filariidae* gen & sp.
Blood parasite of ani (*Crotophaga ani*).
- 31 *Dirofilaria immitis*
From dogs.
- 32 *Onchocerca cervicalis*
Det. V. V. From cattle.
- 33 *Setaria equina*
Det. V. V. From horses and mules.
- 34 *Trichinella spiralis*
From swine.

THE ARACHNIDA OF ST. CROIX, V. I.

By HARRY A. BEATTY

This check-list of the ectoparasites occurring on mammals, birds and reptiles of St. Croix, V. I., holds no pretense for completeness but the material at hand is sufficiently representative to gain our interest, and especially is this true since the presence of these parasites have remained unrecorded from the island. All species mentioned here were taken off of their natural hosts and the determinations were made by H. E. Ewing, excepting the half-engorged nymphs of *Amblyomma* which were determined by C. N. Smith. This being the first reference to *Amblyomma* on St. Croix it may have arrived here quite recently, possibly from Antigua, B.W.I. where it is reported as common.

To encompass a complete faunal report on St. Croix it should be mentioned here that a large collection of spiders was sent to Elizabeth B. Bryant and her paper entitled "Notes on the Spiders of the Virgin Islands" appeared in the "Bulletin of the Museum of Comparative Zoology," Vol. LXXXIX, No. 7, 1942.

Order ACARINA

Suborder ASTIGMATA

SARCOPTIDAE

- 1 *Notoedres cati* Hering
Off domestic cat.
- 2 *Cnemidocoptes* sp.
Known as "scaly legs" of fowls.
- 3 *Sarcoptes scabiei canis* Gerlach
Off dog.
- 4 *Psoroptes communis* Furstenberg
Taken off cattle.

ANALGESIDAE

- 1 Analgesidae gen & sp.
Off Red-tailed Hawk (*Buteo jamaicensis*), and Bare-legged Owl (*Otus nudipes newtoni*).
- 2 Analgesidae gen & sp.
Taken off Ani (*Crotophaga ani*), Mockers (*Mimus polyglottos orpheus*), Thrasher (*Margarops f. fuscatus*), Yellow warbler (*Dendroica petechia cruciana*).

3 Analgesidae gen & sp.

Taken off Oyster-catcher (*Haematopus ostralegus palliatus*).

4 Analgesidae gen & sp.

Taken off Ground Dove (*Columbigallina passerina nigrirostris*),
Hummingbird (*Sericotes; h. holosericeus*), Kingbird (*Tyrannus d. dominicensis*).

5 Eupterolichus sp.

Off Ani (*Crotophaga ani*).

6 Falculifer sp.

Off Scaled Pigeon (*Columba squamosa*).

7 Pterodectes sp.

Off Mocker (*Mimus polyglottus orpheus*).

Suborder BRACHYPODA

DEMODICIDAE

1 Demodex canis Leydig

Taken off dog.

CHEYLETIDAE

1 Cheyletus sp.

Off domestic fowl.

Suborder MESOSTIGMATA

DERMANYSSIDAE

1 Liponyssus bursa Berlese

Off domestic fowl.

PARASITIDAE

1 Parasitidae gen & sp.

Taken off a beetle, *Metamasius hemipterus*.

2 Echinolaelaps echidninus Berlese

Off gray Rat, *Rattus rattus alexandrinus*.

3 Periglischrus sp.

Off leaf-nosed bat, *Artibeus j. jamaicensis*.

4 Gekobia. sp.

Taken from the abdomen of a gecko, *Hemidactylus mabouia*

5 Macrocheles sp.

Clustered about the thorax of beetle, *Cerambycidae* sp.

6 Galumna sp.

Collected from an old bird nest.

IXODIDAE

1 Ixodidae gen & sp.

Taken off Bat, *Noctilio leporinus mastivus*. Taken off Mongoose, *Herpestes birmanicus*.

2 Haemaphysalis chordeiles Packard

Taken off Wilson Plover (*Charadrius wilsonia*).

3 Dermacentor nitens Neumann

A common parasite of the Horse (*Equus caballus*) and Donkey (*Equus asinus*). Rarely found on the deer (*Odocoileus virginianus*).

4 Rhipicephalus sanguineus Latreille

Common parasite of dogs.

5 Boophilus annulatus microplus Canestrini

Abundant parasite of deer (*Odocoileus virginianus*), and cattle. Rare on sheep and goats.

6 Amblyomma sp.

Det. G. N. Smith. Nymph taken off man. May 1935.

THE INSECTS OF ST. CROIX, V. I.

By HARRY A. BEATTY

A study of Orthoptera and Isoptera have considerable interest, not only in the presence of several undescribed forms, but especially in the absence of species otherwise quite common on neighboring islands. Lepidoptera has received scant attention from entomologists. W. P. Comstock records 33 forms of the suborder Rhopalocera in "Scientific Survey of Puerto Rico and Virgin Islands," Vol. XII, part 4. My collection adds 10 forms, most of them common, to his list, and questions the occurrence of *Urbanus dorantes cramptoni* on St. Croix as no specimens have been taken, while *U. proteus* is an extremely abundant form. The status and economic value of the parasitic Hymenoptera is badly in need of determination. Some field work has been revealing and several very interesting observations would indicate that parasitization of many forms, in the Orthoptera, Diptera and Lepidoptera for example, apparently maintain them at a low status that is of economic importance. The absence of fruit infecting species of Diptera is quite marked. There are no records of occurrence of fruit-flies, *Anastrepha* species, in nispero (*Sapota achras*), papaya (*Carica papaya*), guavas (*Psidium guajava*).

The capture of six specimens of a Reduviid of the *Triotoma* family is of importance, since it established the presence of a genus that is well known to medical science as the host to *Trypanosoma*, which is a blood parasite of man. A great amount of time was devoted to research on Diptera, in particular the *Culicidae* and certain other species which infest flesh wounds. So far, *Cochliomyia americana* has not been taken on St. Croix. The study of *Culicidae* centered around a malaria and filaria control project sponsored by the Department of Health: The writer was in charge of the work for eight years and considerable laboratory and clinical experimentation was probed.

The writer devised a net which was extremely successful in capturing flying insects at dusk. By its use, many rare things were taken, and it will, no doubt, prove itself in other presumably well collected islands. The thing is simply a strong wire frame three feet long and one foot wide, fitted with a baggy fine-mesh netting, attached securely on the back of the seat and extended about one foot above the chauffeur's head on a topless roadster, also minus a windshield. Moving along at from five to ten miles per hour, at every half mile a stop was called and the catch collected, using a flash-light and aspirator; for speed is required to capture the active insects such as Staphylinidae.

THYSANURA

Determinations by Ashley B. Gurney

1 *Nicoletia* sp.

Taken in rotting log, Jealousy streamway. April 1938.

2 *Lepismatidae*. Genus?"Clearly a different genus to *Nicoletia* because of head shape and the presence of eyes." Taken in rotting stump, Jealousy streamway. April 1938.3 *Lepismatidae*Probably *Nicoletia* sp. "A somewhat unusual Thysanuran and apparently belongs to *Nicoletia*."

ORTHOPTERA

The following records are based on material determined by Ashley B. Gurney, and deposited in the U. S. National Museum.

FORFICULIDAE

1 *Doru albipes* F.

Under decomposing vegetable matter. May 1938.

2 *Labia curvicauda* Motschler

Taken at light. January 1936. Under decomposing vegetable matter. October 1936.

LABIDURIDAE

1 *Euborellia plebeja* Dohrn

Under rubbish heap. January 1939.

BLATTIDAE

1 *Aglaopteryx* n. sp.

Common in rotting stumps and under dry-scaling bark, in mats of dry vegetation draping over branches. May 1936.

2 *Supella supellectilum* ServilleA common species, at night on flowers of *Calyptrocordia alba*. October 1936. Attracted by light to houses. February, November, December, 1937. Under rubbish heaps. In sugar cane straw. March 1938.3 *Cariblatta antiguensis* S. & Z.Common under heaps of rubbish. Attracted by light to houses. September 1936. On fruit of *Calyptrocordia alba* and on leaves of *Terminalia catappa*. May & October, 1938.

- 4 *Ichnoptera rufa* DeGeer
Common under rubbish and on shrubbery at night. On fruit of *Calyptracordia alba*. April 1938.
- 5 *Symploce bilabiata* R. & H.
Common. Attracted by light to houses. Under rubbish. On shrubbery at night. On fruit of *Calyptracordia alba*. May and November, 1938.
- 6 *Symploce hospes* Perkins
Common. Under rubbish. On shrubbery at night. Attracted by light to houses. On fruit of *Calyptracordia alba*. May 1938.
- 7 *Symploce* n. sp.
Uncommon. Under rubbish and on shrubbery at night. May 1938.
- 8 *Periplaneta americana* Linn.
Very common in buildings. Ootheca parasitized by *Tetrastichus hagenowi*. 1935.
- 9 *Periplaneta brunnea* Burm.
Uncommon. In buildings. 1935.
- 10 *Periplaneta australasiae* F.
A common species in sugar cane fields and in woodlands, uncommon in buildings. 1935.
- 11 *Eurycotis improcera* Rehn
Common in rotting stumps, under scaling bark. 1935.
- 12 *Leucophaea maderae* F.
Not common. Local, in buildings. Feed on meat scraps and fruits. The ootheca is retained within the body of the female and the living nymphs extruded. 1935.
- 13 *Pycnoscelus surinamensis* Linn.
Common under rubbish. Frequently seen around chicken roosts feeding on droppings. Is host to the eye-worm, *Oxyspirura masoni*.
- 14 *Hemiblabera* n. sp.
This species is confined to the arid, eastern end of the island where small colonies can be turned up under heaps of rubbish. Not common. Specimens taken at Tagus. 1935.
- 15 *Plectoptera infulata* R. & H.
Rare. Only five specimens taken from foliage of *Lantana involucrata*. Constitution Hill. February 1939.
- 16 *Holocampsa nitidula* F.
Rare. Only three specimens were taken from a cellar, Mt. Pleasant. January 1941. One specimen collected from a shrub, June 1941, at River.

MANTIDAE

1 *Callimantis* sp.

Specimens were taken on foliage of *Lantana involucrata*. Barren Spot. May 1937. Rare.

PHASMIDAE

1 *Clonistria* sp.

Sept. 1937.

ACRIDIDAE (LOCUSTIDAE)

1 *Schistocerca americana* Drury

An uncommon locust. 1935.

2 *Schistocerca columbina* Thunberg

Uncommon. 1935.

3 *Scyllina* (*Plectrotettix*) *gregarius* Saussure
1935.

TETTIGONIIDAE (LOCUSTIDAE)

1 *Neoconocephalus triops macropterus* Redt.

Common. September to Jan. 1935.

2 *Neoconocephalus triops fuscostriatus* Redt.

Less common. 1935.

3 *Heterocous* sp. allied to *dubius* Caudell

In rotting logs. November 1935.

GRYLLIDAE

1 *Scapteriscus vicinus* Scudder

Rare, four specimens were collected in backyard soil in Christiansted where fruits imported from Porto Rico are distributed and the species may have been brought in. 1939.

2 *Anurogryllus muticus* DeG.

Common. July 1937.

3 *Gryllus assimilis* Fabr.

Uncommon. July 1937.

4 *Orocharis* sp.

Uncommon. In rotting branches. October 1937.

5 *Orocharis* sp. near *saltator* Uhler

Rotting wood. October 1937.

6 *Amphiacusta caraibea* Saussure

Common. October 1937.

7 *Oecanthus niveus* DeG.

Common on weeds. November 1935.

ISOPTERA

The writer is grateful to T. E. Snyder and H. R. Johnston for determination of all species of termites. There seems to be no account given in the literature on the manner in which termite colonies go about enlarging their nests. I have watched this procedure on several occasions and give here a brief history. The work is done at night. Tiny holes one sixteenth of an inch and about one inch apart are cut through the outer shell of the nest and from these apertures a greater part of the entire colony of soldiers and workers emerge. At once the workers trail off in several directions in columns sometimes five and six abreast and so closely packed as to be treading on each other's heels. Once these trails are established the workers may be observed traveling in both directions; the heavy laden returning to the nest with material or supplies. At the nest construction goes ahead at an energetic pace. Before daylight is heralded each tiny hole has a roof and the nest is at least one cell larger in diameter.

KALOTERMITIDAE

1 *Kaloterмес* (K) *bequaerti* Snyder

In a rotting log, near Crique streamway. April 1938. Det. H. R. J.

2 *Kaloterмес* (K) *snyderi* Light

A small colony in a dry-rotting log, winged adults, Prosperity Garden. April 1938. Det. H. R. J.

3 *Kaloterмес* (K) *incisus* Silv.

Workers and soldiers from a decaying log, Crique. September 1938. In a dry branch on the ground, Estate Fountain. January 1939. Det. H. R. J.

4 *Kaloterмес* (*Cryptoterмес*) *cavifrons* Banks

A small colony in a decaying mango stump (*Mangifera indica*), La Grange. March 1938. Det. H. R. J.

5 *Kaloterмес* (*Cryptoterмес*) *brevis* Walker

Winged adults taken at light. May 1938. Small colonies in wood-work and furniture. Det. T. E. S.

6 *Kaloterмес* (*Cryptoterмес*) sp.

Taken from rotting stump of *Hippomane mancinella*, South Gate Farm beach. April 1935. Det. T. E. S.

RHINOTERMITIDAE

1 *Heteroterмес* *convexinotatus* Snyder

In a dry-rot pine board, tunnels on soil, Coakley Bay (semi-arid region). May 1938. Some workers and soldiers taken from be-

neath dry cattle droppings, Barren Spot. September 1940. Det. H. R. J.

2 *Heterotermes* sp.

Taken from a rotting stump, Prosperity Garden March 1938. Det. T. E. S.

TERMITIDAE

1 *Nasutitermes* (N) *acajutlae* Holmgren

Nest on *Hippomane mancinella*, Shoys, April 1938. In dry branch of *Spondias mombin*, Estate Collins, March 1938. Rotting stump of *Coccoloba wifera*, Tagus. March 1938. Also taken on Green Cay Islet. Det. H. R. J.

2 *Nasutitermes* (N) *costalis* Holmgren

A small nest placed in a small tree. Three queens, macropterous and physogastric, were removed from a queen-cell. Crique. April 1938. Det. H. R. J.

3 *Termes* (T) *panamaensis* Snyder

Winged adults were taken at light. Constitution Hill. June 1938. Det. H. R. J.

4 *Mirotermes* n. sp.

Winged adults taken at light. Western suburbs of Christiansted. May 1935. Det. T. E. S.

EMBIIDINA

OLIGOTOMIDAE

Determinations were made by Ashley B. Gurney. Specimens in the U.S.N.M.

1 *Oligotoma saundersii* Westwood (= *O. latreillei* Rambur)

Taken under rubbish near Lower Love streamway. October 1940.

Taken at light. Golden Grove. October 1939.

2 *Oligotoma* sp. taken at light, Golden Grove. October 1940.

OLIGEMBIIDAE

1 *Oligembia brevicauda* Ross

Taken under rubbish near Castle Burke streamway. August 1940. Endemic, TYPE "under rubbish", Lower Love, August 1940.

CORRODENTIA

Determinations by Ashley B. Gurney.

PSOCIDAE

- 1 *Lachesilla pedicularia* L.
- 2 *Peripsocus* sp.

MALLOPHAGA

PHILOPTERIDAE

- 1 Philopteridae gen & sp.
Taken off ground dove (*Columbigallina passerina nigrirostris*), thrasher (*Margarops f. fuscatus*), kingbird (*Tyrannus d. dominicensis*).
- 2 *Lipeurus gallipavonis* Geoffroy
Taken off turkey.
- 3 *Lipeurus tropicalis* Peters
Off domestic fowl.
- 4 *Lipeurus* sp.
Off thrasher (*Margarops f. fuscatus*).
- 5 *Goniodes dissimilis* Nitzsch
Taken off domestic fowls.
- 6 *Goniodes meliagris* Linn.
Off domestic turkey.
- 7 *Goniodes numidae* Mjoberg
Taken off guinea-fowl (*Numida meleagris galeata*).
- 8 *Esthiopterum crassicornis* Scopoli
Taken off the Bahama pintail (*Anas bahamensis*).
- 9 *Columbicola* sp.
Off ground dove (*Columbigallina passerina nigrirostris*), scaled pigeon (*Columba squamosa*).
- 10 *Rallicola bisetosa* Piaget
Off clapper rail (*Rallus longirostris caribaeus*).
- 11 *Philopterus* sp.
Off the ani (*Crotophaga ani*), thrasher (*Margarops f. fuscatus*).
- 12 *Tricholoectes* sp.
Off hummingbird (*Sericotes h. holosericeus*).
- 13 *Physconelloides zenaidurae* McGr.
Off ground dove (*Columbigallina passerina nigrirostris*), scaled pigeon (*Columba squamosa*).
- 14 *Proctophylloides* sp.
Off hummingbird (*Sericotes h. holosericeus*)

TRICHODECTIDAE

- 1 *Felicola subrostrata* Nitzsch
Taken off cat.

MENOPONIDAE

- 1 *Menopon gallinae* Linn.
Off domestic fowl.
- 2 *Menopon numidae* Giebel
Off guinea-fowl (*Numida meleagris galeata*).
- 3 *Eomenacanthus stramineus* Nitzsch
Parasite on domestic fowls.
- 4 *Menacanthus* sp.
Taken off ground dove (*Columbigallina passerina nigrirostris*).
- 5 *Myrsidea incerta* Kellogg
Off thrasher (*Margarops f. fuscatus*).
- 6 *Trinoton querquedulae* Linn.
Off Bahama pintail (*Anas bahamensis*).
- 7 *Neocolpocephalum flavescens* Nitzsch
Off red-tailed hawk (*Buteo j. jamaicensis*).
- 8 *Colpocephalum* sp.
Off ani (*Crotophaga ani*).
- 9 *Colpocephalum* sp.
Off domestic turkey.
- 10 *Heterodoxus longitarsus* Piaget
Occasionally found on dogs. Det. J. C. Bequaert.

GYROPIDAE

- 1 *Gyropus ovalis* Nitzsch
Off guinea-pig (*Cavia cobaya*).

ODONATA

The dragonfly material which has served as a basis for the present paper was brought together over a period of years. Finding and rearing nymphs was one feature that received much attention but did not yield any important results since all of the species thus obtained were sooner or later taken as adults by net. A representative collection of Odonata was sent to Clarence H. Kennedy and I am indebted to him for many of the determinations used in this paper.

Suborder ANISOPTERA

AESCHNIDAE

AESCHNINAE

- 1 *Anax junius* Drury
Uncommon. Taken at Orange Grove stream. January 1936.
Crique Dam. November 1938. Rust-op-twist Pond. March 1941.

LIBELLULIDAE

LIBELLULINAE

- 2 *Orthemis ferruginea* F.
Common along streams and at ponds and watering troughs. 1936.
- 3 *Perithemis domitia* Drury
Common on streams. 1936.
- 4 *Micrathyria* sp.
Adult taken at Jealousy stream. November 1937.
- 5 *Erythrodiplax umbrata* Linn.
Uncommon. October 1938.
- 6 *Erythrodiplax berenice naeva* Hagen
Common on coastal marshes. 1935.
- 7 *Erythrodiplax connata justiniana* Selys
Common on streams. February 1936.
- 8 *Cannacria herbida* Gundlach
Orange Grove stream. November 1938.
- 9 *Lepthemis vesiculosa* Fabr.
Common on streams. 1936.
- 10 *Macrothemis celeno* Selys
Common on streams and ponds. 1936.
- 11 *Dythemis rufinervis* Burm.
Annaly stream. October 1936.
- 12 *Tramea abdominalis* Ramb.
Orange Grove stream. November 1938.
- 13 *Pantala flavescens* Fabr.
Orange Grove stream. December 1938.

Suborder ZYGOPTERA

CAENAGRIONIDAE

CAENAGRIONINAE

- 1 *Telebasis dominicanum* Selys
Crique Dam. January 1936.
- 2 *Ischnura ramburii credula* Calv.
Common on ponds. October 1936.
- 3 *Enallagma caecum* Hagen
Common on streams and ponds. August 1936.

NEUROPTERA

CHRYSOPIDAE

Determinations by Ashley B. Gurney.

1 *Chrysopa* sp.

Abundant on plants *Cryptocordia alba* at night. October 1936.

2 *Myrmeleon insertus* Hagen

Adults taken at light. April 1936.

3 *Vella* sp.

Taken at light. April 1936.

THYSANOPTERA

THIRIPIDAE

1 *Frankliniella difficilis* Hood

Det. D. Moulton. 1937.

2 *Frankliniella insularis* Franklin

In flowers of *Tabebuia pentaphylla*. 1937. Det. F. Andre.

3 *Heliothrips rubrocinctus* Giard

On avocado tree. April 1937.

PHLAEOTHIRIPIDAE

1 *Liothrips* sp.

Swarming over rocks on Buck Island. January 1939. Det. F. Andre.

ANOPLURA

HAEMATOPINIDAE

1 *Linognathus* sp.

Taken off goats.

2 *Haematopinus* sp.

Common parasite on swine.

3 *Haematopinus tuberculatus* Burmeister

Taken off donkey (*Equus asinus*).

PEDICULIDAE

1 *Pediculus humanus capitis* DeGeer

Taken from the scalp of man. Det. J. C. Bequaert.

PHTHIRIDAE

1 *Phthirus pubis* Linn.

Taken off man.

HOMOPTERA

CICADIDAE

1 *Proarna hilaris* Germar

Det. J. S. Caldwell.

CICADELLIDAE

- 1 *Carneocephala sagittifera* Uhler
Det. J. S. Caldwell.
- 2 *Sanctanus* sp.
Det. P. W. Oman.
- 3 *Deltocephalus flavicostus* Stål
Det. P. W. Oman.
- 4 *Deltocephalus sonorus* Ball
Det. J. S. Caldwell.
- 5 *Exitianus obscurinervis* Stål
Det. J. S. Caldwell.
- 6 *Acinopterus angulatus* Lawson
Det. J. S. Caldwell.
- 7 *Chlorotettix minimus* Baker
Det. J. S. Caldwell.
- 8 *Chlorotettix tethys* Van D.
Det. P. W. Oman.
- 9 *Nesosteles bisinuatus* DeL.
Det. J. S. Caldwell.
- 10 *Nesosteles calcarus* DeL.
Det. J. S. Caldwell.
- 11 *Nesosteles neglectus* DeL. & D.
Det. P. W. Oman.
- 12 *Nesostelus incisus* Mats.
Det. P. W. Oman.
- 13 *Protalebra brasiliensis* Baker
Det. P. W. Oman.
- 14 *Empoasca* sp.
Det. J. S. Caldwell.
- 15 *Hortensia similis* Walker
Det. P. W. Oman.

FULGORIDAE

1. *Catonia* sp.
Det. P. W. Oman.
- 2 *Bothriocera* sp.
Det. P. W. Oman.
- 3 *Oliarus complectus* Ball
Det. J. S. Caldwell.
- 4 *Thionia* sp.
Det. P. W. Oman.

- 5 *Colpoptera flavifrons* Osborn
Det. P. W. Oman.
- 6 *Colpoptera maculifrons* Muir
Det. P. W. Oman.
- 7 *Ormenis marginata* Brunnich
Det. P. W. Oman.
- 8 *Ormenis quadri-punctata* F.
Det. J. S. Caldwell.
- 9 *Flatoides* sp.
Det. P. W. Oman.
- 10 *Perigrinus maidis* Ashmead
Det. P. W. Oman.
- 11 *Sogata furcifera* Horvath
Det. J. S. Caldwell.
- 12 *Delphacodes propinqua* Fieber
Det. J. S. Caldwell.

APHIDIDAE

- 1 *Aphis rumicis* L.
Det. P. W. Mason. On *Samanea saman*. 1936.
- 2 *Aphis gossypii* Glover
On mellon, okra, cotton. 1936.
- 3 *Aphis maidis* Fitch
Corn. 1939.

COCCIDAE

The following species were determined by L. O. Howard in 1921.

- 1 *Margarodes formicarum* Guilding
In the soil in sugar cane fields.
- 2 *Conchaspis angraeci* Cockerell
- 3 *Orthezia praelonga* Douglas
- 4 *Asterolecanium pustulans* Cockerell
- 5 *Pseudococcus nipae* Maskell
On *Cocos nucifera*, *Psidium guajava*, *Mangifera indica*, *Annona muricata*.
- 6 *Pseudococcus virgatus* Cockerell
On beans, beets, carrots, cassava, yams, sweet potatoes, tomatoes, cotton, eggplant.
- 7 *Pseudococcus calceolariae* Maskell
On sugar cane.
- 8 *Pseudococcus citri* Risso
On citrus, corn.

- 9 *Pseudococcus bromeliae* Bouché
- 10 *Pseudococcus sacchari* Cockerell
On sugar cane.

COCCINAE

- 1 *Pulvinaria psidii* Maskell
On *Psidium guajava*.
- 2 *Pulvinaria urbicola* Cockerell
On beans, carrots, sweet potatoes.
- 3 *Ceroplastes floridensis* Comstock
On avocado, *Anacardium occidentale*, *Musa* sp., *Psidium guajava*,
Annona muricata, *Annona squamosa*.
- 4 *Ceroplastes denudatus* Cockerell.
On *Annona squamosa*, *A. muricata*.
- 5 *Vinsonia stellifera* Westwood
On *Mangifera indica*.
- 6 *Eucalymnus tessellatus* Signoret
- 7 *Coccus hesperidum* L.
On *Ficus* sp., *Mangifera indica*, *Carica papaya*.
- 8 *Coccus mangiferae* Green
On *Mangifera indica*.
- 9 *Coccus viridis* Green
On *Mammea americana*, *Zapota achras*.
- 10 *Saissetia hemisphaerica* Targioni
On beans, eggplants, okras, *Ficus* sp.
- 11 *Saissetia nigra* Nietner
On *Persea gratissima*, *Ficus* sp., *Annona muricata*, *Psidium guajava*,
Mammea americana, *Manihot manihot*.
- 12 *Saissetia oleae* Bernard
On *Anacardium occidentale*, *Persea gratissima*, *Musa* sp., *Psidium guajava*,
Ficus sp. *Mammea americana*, *Annona muricata*, *Zapota achras*.

DIASPINAE

Determinations by L. O. Howard.

- 1 *Chionaspis citri* Comstock
On citrus.
- 2 *Howardia biclavus* Comstock
On *Mammea americana*.
- 3 *Diaspis boisduvalli* Signoret
On *Musa* sp.

- 4 *Diaspis echinocacti opuntiae* Cockerell
On cactus.
- 5 *Aulacaspis pentagona* Targioni
On numerous plants.
- 6 *Hemichionaspis minor* Maskell
On *Lantana involucrata*.
- 7 *Aspidiotus destructor* Signoret
On sugar cane, *Cocos nucifera*.
- 8 *Aspidiotus lantaniae* Signoret
On *Zapota achras*, *Ficus* sp.,
- 9 *Targionia sacchari* Cockerell
On sugar cane.
- 10 *Targionia hartii* Cockerell
On *Dioscorea* sp.
- 11 *Lepidosaphes beckii* Newman
On citrus.
- 12 *Lepidosaphes alba* Cockerell
On *Manihot maniot.*
- 13 *Ischnaspis longirostris* Signoret
On *Cocos nucifera*, *Ficus* sp.

ALEURODIDAE

Determinations by L. O. Howard.

- 1 *Aleurodicus cocois* Curtis
On *Cocos nucifera*, *Musa* sp.
- 2 *Bemisia inconspicua* Quaintance
On cabbage.
- 3 *Aleurothrixus floccosus* Maskell
On *Psidium guajava*, citrus.

HEMIPTERA

Harry G. Barber determined the bulk of *Hemiptera* in the collection, J. Bequaert reported on the *Polycetenidae*. Specimens are in U.S.N.M.

CORIXIDAE

- 1 *Trichocorixa pygmaea* Fieber
At light. February 1936. In brackish water, marsh, La Grange.
May 1936.
- 2 *Trichocorixa kollari* Fieber
In brackish pools, May 1936; Slob Pond, September, 1937.

BELOSTOMATIDAE

1 *Belostoma boscii* Lepeletier & Serville

Specimens were found hibernating in a dried out mud hole in six
[] inches of moist mud. October 37.

NOTONECTIDAE

1 *Notonecta indica* L.

Taken in Slob pond. October 1937.

2 *Buenoa femoralis* Fieber

Taken in Rust-op-twist pond. August 1936.

3 *Buenoa pallipes* F.

Taken in Slob pond. October 1937.

4 *Buenoa pallens* Champion

Taken at dusk by net. September 1937. In Slob pond. October 1937.

5 *Buenoa albidus* Champion

By car net at dusk. October 1937.

VELIIDAE

1 *Microvelia robusta* Uhler

By car net at dusk. September 1937.

GERRIDAE

1 *Limnogonus franciscanus* Stal

Taken in Slob pond. July 1937.

MIRIDAE

1 *Reuteroscopus ornatus* Reuter

By car net. October 1937.

2 *Cyrtopeltis varians* Distant

By car net at dusk. October 1937.

3 *Dolichomiris linearis* Reuter

Swept from grass. November 1937.

4 *Rhinacloa forticornis* Reuter

Swept from grass. November 1937.

5 *Sixeonotus* sp.

Swept from grass. November 1937.

ANTHOCORIDAE

- 1 *Paratriphleps pallidus* Reuter
By car net at dusk, October 1937.
- 2 *Asthenidea picta* Uhler
- 3 *Asthenidea* sp.
- 4 *Cardiastethus cubanus* Popp
By car net at dusk. October 1937.
- 6 *Cardiastethus* sp.
By car net at dusk. October 1937.
- 7 *Lasiochilus divisus* Champion
By net at dusk. October 1937.
- 8 *Lasiochilus pallidulus* Reuter
By car net at dusk. October 1937.

POLYCTENIDAE

- 1 *Hesperoctenes* sp.
Det. J. Bequaert. Taken off free-tailed bat, *Molossus major*. January 1945.

CIMICIDAE

- 1 *Cimex hemipterus* F.
Det. J. Bequaert. Human habitation, October 1935.

REDUVIIDAE

- 1 *Stenopoda cinerea* Laporte
Swept from grass. November 1936.
- 2 *Stenopoda culciformis* F.
Swept from grass. September 1937.
- 3 *Zelus longipes* Linn.
Swept from shrubbery. October 1936.
- 4 *Empicoris armatus* Champion
Specimen taken in house. November 1937.
- 5 *Ploiaria bispina* McAtee & Malloch
- 6 *Emesopsis nubilus* Uhler
At light. December 1936.
- 7 *Triatoma rubrofasciata* DeGreer
Six specimens taken, caught inside dwellings at night. July 1939, August 1940, September 1942, September 1943, November 1944, March 1945. Microscopic examinations revealed the presence of protozoan parasites of the form *Trypanosoma* in each.

TINGIDAE

- 1 *Corythucha gossypii* Fabr.
On cotton.
- 2 *Corythaica planaris* Uhler
On eggplant. April 1938.
- 3 *Teleonemia sacchari* F.
Swept by net from grass. July 1936.

PYRRHOCORIDAE

- 1 *Dysdercus andreae* Linn.
On cotton. October 1940.

LYGAEBIDAE

- 1 *Oncopeltus fasciatus* Dallas
Swept from shrubbery. 1937.
- 2 *Oncopeltus aulicus* Fabr.
- 3 *Lygaeus pulchellus* Fabr.
- 4 *Ortholomus jamaicensis* Dallas
- 5 *Ischnorhynchus championi* Distant
- 6 *Blissus leucopterus insularis* Barber
- 7 *Paromius longulus* Dallas
- 8 *Pachybrachius vinctus* Say
- 9 *Pachybrachius bilobatus* Say
- 10 *Ozophora* sp.

NEIDIDAE

- 1 *Metacanthus decorus* Uhler

COREIDAE

- 1 *Leptoglossus gonagra* Fabr
On *Psidium guajava*. October 1935.
- 2 *Leptoglossus stigma* Herbst
On *Psidium guajava*. October 1936.
- 3 *Phthia picta* Drury
On watermelons. October 1936.
- 4 *Spartocera fusca* Thunberg
On *Leucaena glauca*, Mt. Victory. March 1943.
- 5 *Chariesterus gracilicornis* Stal
- 6 *Catorhintha guttula* Fabr.
- 7 *Anasa scorbatica* Fabr.
- 8 *Megalatomus rufipes* Westwood

- 9 *Corizus hyalinus* Fabr.
- 10 *Corizus sidae* Fabr.
- 11 *Jadera rufofusca* Barber

PENTATOMIDAE

- 1 *Mormidea cubrosa* Dallas
- 2 *Solubea pugnax* Fabr.
- 3 *Euschistus crenator* Fabr.
- 4 *Euschistus* sp.
- 5 *Proxys victor* Fabr.
- 6 *Thyanta casta* Stal
- 7 *Thyanta perditor* Fabr.
- 8 *Loxa* sp.
- 9 *Nezara viridula* L.
- 10 *Acrosternum marginatum* P. B.
- 11 *Piezodorus guildingi* Westwood
- 12 *Arvelius albopunctatus* DeGeer
- 13 *Podisus sagitta* Fabr.

CYDNIDAE

- 1 *Aethus indentatus* Uhler
- 2 *Amnestus pusio* Stal
By car net at dusk. November 1937.
- 3 *Amnestus*, probably n. sp.
By car net at dusk. November 1937.

SCUTELLERIDAE

- 1 *Tetyra antillarum* Kirk
- 2 *Pachycoris torridus* Scop.
On wild croton. August 1937.
- 3 *Diolcus boscii* Fabr.
- 4 *Diolcus disjunctus* Barber
- 5 *Diolcus irroratus* Fabr.
- 6 *Augocoris illustris* Fabr.
On *Sapota achras*, Constitution Hill. June 1935.

COLEOPTERA

CICINDELIDAE

- 1 *Tetracha sobrina infusca* Mannerheim
Det. L. L. Buchanan. Under debris in a coconut grove, Concordia.
October 1936.

2 *Cicindela boops* Dejean

Det. J. M. Valentine. Taken on the sandy border of a small marsh, Granard. August 1937.

3 *Cicindela trifasciata* Fabr.

Det. J. M. Valentine. Taken on the sandy border of Salt Pond. October 1936.

4 *Cicindela trifasciata tortuosa* Dejean

Det. J. M. Valentine. Taken on the sandy flats of Krause Lagoon. October 1937.

CARABIDAE

1 *Calosoma granulatum coxale* Mots.

Det. J. M. Valentine. Observed feeding abundantly on the pupae *Laphygma frugiperda* in a field of *Panicum maximum*. August 1938.

2 *Dyschirius* sp.

Det. L. L. Buchanan. 1937.

3 *Clivina insularis* Duval

Det. J. M. Valentine. October 1937.

4 *Clivina* sp.

Det. L. L. Buchanan. By net. October 1937.

5 *Tachys* sp.

Det. L. L. Buchanan. By net. October 1937.

6 *Micratopus insularis* Darlington

Det. J. M. Valentine. By net. 1937.

7 *Micratopus* sp.

Det. L. L. Buchanan. By net. September 1937.

8 *Pseudaptinus* sp.

Det. L. L. Buchanan. By net. October 1937.

9 *Apenes pallipes* Fabr.

Det. L. L. Buchanan. By net. October 1937.

10 *Apenes marginalis* Dejean

Det. L. L. Buchanan. By net. October 1937.

11 *Perigona nigriceps* Dejean

Det. L. L. Buchanan. By net. October 1937.

12 *Pentagonica flavipes* Leconte

Det. L. L. Buchanan. By net. October 1937.

13 *Solenophorus pubifer* Putzeys

Det. L. L. Buchanan. By net. October 1937.

14 *Stelenophorus* sp.

Det. L. L. Buchanan. By net. October 1937.

15 *Stelenophorus* sp.

Det. L. L. Buchanan. By net. October 1937.

HALIPLIDAE

1 *Haliplus* sp.

Det. L. L. Buchanan. By net. October 1937.

DYTISCIDAE

Determinations by L. L. Buchanan. Specimens were taken by car net at dusk. October 1937.

- 1 *Rhantus calidus* Fabr.
- 2 *Laccophilus* sp.
- 3 *Canthydrus* sp.
- 4 *Copelatus* sp.
- 5 *Thermonectes* sp.
- 6 *Megadytes*, probably *fraternus* Sharp
- 7 *Celina* sp.
- 8 *Pronoterus* sp.
- 9 *Notomicrus* sp.
- 10 *Bidessus* sp.
- 11 *Eretes sticticus* L.

GYRENIDAE

1 *Dineutes americanus* L.

Det. L. L. Buchanan. By car net. October 1937.

HYDROPHILIDAE

Determinations by L. L. Buchanan.

1 *Enochrus* sp.

In pools. October 1937.

2 *Berosus* sp.

In Slob Pond. October 1937.

3 *Hydrous insularis* Castelnau

In Slob pond. October 1937.

4 *Hydrous ater* Olivier

In rain pools, October 1936.

5 *Neohydrophilus medius* Brullé

"Appears to be this species".

6 *Tropisternus lateralis* Fabr.

In rain pools. October 1937.

7 *Oosternum costatum* Sharp

By car net. October 1937.

8 *Phaenonotum estriatum* Say

By car net. October 1937.

- 9 *Cercyon* sp.
On fungus. January 1939. By car net. October 1937.
- 10 *Cercyon* sp.
By car net. October 1937.
- 11 *Cercyon* sp.
By car net. October 1937.
- Paracymnus* sp.
By car net. October 1937.

STAPHYLINIDAE

All of the Staphylinidae were determined by Richard E. Blackwelder exclusive of a few species which were determined by Edward A. Chapin as indicated. Many of the recorded species were taken by the compiler during the years from 1935 to 1939. An additional number of species were discovered by Blackwelder during a visit to the island from October 23 to December 6, 1936.

Blackwelder, Richard E.: "Monograph of the West Indian Beetles of the Family *Staphylinidae*." United States National Museum Bulletin 182. Washington, D. C., 1943.

Oxytelinae

- 1 *Carpelimus fulvipes* Erichson
By car net at dusk. November 1936.
- 2 *Carpelimus sericeus* Cameron
In bat guano. October.
- 3 *Carpelimus correctus* Blackwelder
- 4 *Carpelimus beattyi* Blackwelder
In bat guano. November.
- 5 *Carpelimus imitator* Bierig
Under debris. November.
- 6 *Carpelimus flavipes* Erichson
By car net at dusk. September.
- 7 *Carpelimus haplomus* Blackwelder
Flying to light. November.
- 8 *Apocellus ustulatus* Erichson
In dung. August.
- 9 *Oxytelus insignitus* Gravenhorst
In dung. October.
- 10 *Oxytelus incisus* Motschulsky
In dung. November. By car net. October.
- 11 *Bledius beattyi* Blackwelder
"Collected the type under a stone at the edge of a small stream."
Crique. October.

Osoriinae

- 1 *Thoracophorus brevicristatus* Horn¹
Under rotting log. November. By car net at dusk. November.
- 2 *Paralispinus exiguus* Erichson
In fungus. Annaly.

Steninae

- 1 *Stenus* sp.
Det. E. A. Chapin. Under debris, Caledonia. June 1938.

Paederinae

- 1 *Lithocharis sororcula* Kraatz
In dung, flying at dusk. October.
- 2 *Lithocharis secunda* Blackwelder
In dung. By car net at dusk. November.
- 3 *Lithocharis limbata* Erichson
In decaying fruit. November.
- 4 *Lithocharis dorsalis* Erichson
By car net at dusk. November.
- 5 *Stilomedon audanti* Blackwelder
By car net at dusk. November.
- 6 *Sunius debilicornis* Wollaston
By car net at dusk. October.
- 7 *Scopaeus* sp.
Det. E. A. Chapin. In flowers. August, 1938.
- 8 *Lobrathium nitidum* Erichson
By car net at dusk. November.

Staphylininae

- 1 *Philonthus hepaticus* Erichson
Under beached seaweed. November.
- 2 *Philonthus ventralis* Gravenhorst
By car net at dusk. November.
- 3 *Philonthus discoidens* Gravenhorst
In dung. August.
- 4 *Cafius subtilis* Cameron
Under moist seaweed on beach. November.
- 5 *Cafius caribaeus* Bierig
Under moist seaweed.
- 6 *Cafius bistriatus* Erichson
Under moist seaweed.
- 7 *Erichsonius humilis* Erichson
By car net at dusk. October.

- 8 *Diochus nanus* Erichson
In rotting fruit. By net at dusk. November.
- 9 *Xantholinus humeralis* Erichson
In dung. August.
- 10 *Xantholinus beattyi* Blackwelder
In dung.
- 11 *Leptacinus* sp.
Det. E. A. Chapin. In debris, Caledonia. June 1938.

Tachyporinae

- 1 *Coproporus rutilus* Erichson
By car net at dusk June 1938.

Aleocharinae

- 1 *Gyrophæna* sp.
Det. E. A. Chapin. In rotting log, Prosperity. April 1938. In fungus, Annaly. November 1938.
- 2 *Atheta* sp.
Det. E. A. Chapin. In dung. December 1937.

SCAPHIDIIDAE

- 1 *Baeocera* sp.
Det. H. S. Barber.

HISTERIDAE

- 1 *Hister confinis* Er
Det. H. S. Barber. In debris. December, 1937.
- 2 *Hister* sp.
Det. H. S. Barber.

LYCIDAE

- 1 *Thonalmus* sp.
Det. H. S. Barber. On shrubbery. August 1936.
- 2 *Leptolycus* sp.
Det. H. S. Barber. On shrubbery. April 1935.

LAMPYRIDAE

- 1 *Pyrractomena galeata* E. Olivier
Det. H. S. Barber. East End. July 1935.

CANTHARIDAE

- 1 *Belotus* sp.
Det. H. S. Barber. By car net at dusk. October 1937.

OEDEMERIDAE

1 *Oxacis* sp.

Det. H. S. Barber. By car net at dusk. October 1937.

2 *Ananca vittata* Fabricius

Colony in house, Cane Bay. April 1936.

MELOIDAE

1 *Zonitis annulicornis* Chevrolat

Det. H. S. Barber. By net at dusk. October.

ELATERIDAE

1 *Chalcolepidius virginalis* Candèze

Det. J. M. Valentine. At night. October.

2 *Aeolus* sp.

Det. W. S. Fisher. On mangrove bush. October 1937.

3 *Conoderus bifoveatus* Beauvois

Det. W. S. Fisher. Under scaling bark. October.

4 *Conoderus lividus* DeGeer

Det. J. M. Valentine.

BUPRESTIDAE

1 *Polycesta thomae* Chevrolat

Det. W. S. Fisher.

DERMESTIDAE

1 *Globicornis fulvipes* Guérin

Det. H. S. Barber. By car net at dusk. November 1937.

2 *Attagenus* sp.

Det. H. S. Barber. By car net at dusk. October 1939.

NITIDULIDAE

Determinations by Edward A. Chapin.

1 *Carpophilus* sp.

By car net at dusk. November 1938.

2 *Haptoncus luteolus* Erichson

In ripe fruit of *Anacardium occidentale*. July.

3 *Stelidota geminata* Say

On fruit of *Spondias purpurea*. May 1935.

4 *Stelidota* sp.

By car net at dusk. October 1937.

5 *Lobiopa insularis* Castelnar

In ripe fruit of Mango, *Spondias mombin*, *Spondias purpurea*. September 1941.

6 *Epuraea* sp.

MONOTOMIDAE

1 *Europs* sp.

Det. W. S. Fisher. By car net at dusk. October 1937.

CUCUJIDAE

1 *Monanus concinnulus* Walker

Det. W. S. Fisher.

2 *Telephanus pallidulus* Chevrolat

Det. W. S. Fisher. By car net. October.

CRYPTOPHAGIDAE

Determinations by W. S. Fisher.

1 *Cryptophagidae* Gen & sp.?2 *Loberus testaceus* Reitter

By car net at dusk. September 1937.

3 *Loberus* sp.

By car net at dusk. September 1937.

4 *Ephistemus* sp.

By car net at dusk. September 1937.

5 *Hapalips* sp.

By car net at dusk. September 1937.

MYCETOPHAGIDAE

1 *Typhaea stercorea* L.

Det. W. S. Fisher. By car net at dusk. November 1937.

PHALACRIDAE

1 *Phalacrus* sp.

Det. W. S. Fisher. By car net at dusk. September 1939.

COCCINELLIDAE

Determinations by Edward A. Chapin.

1 *Scymnus* sp.

On shrubbery. October 1937.

2 *Decadiomus* sp.

On shrubbery. November 1939.

3 *Scymnillodes* sp.

By car net at dusk. October 1939.

4 *Psyllobora lineola* F.

By car net at dusk. November 1939.

5 *Coleomegilla cubensis* Casey

By car net at dusk. October 1939.

6 *Cycloneda sanguinea limbifer* Casey

By car net. October 1937.

7 *Azya* sp.8 *Naemia seriata* Melsheimer

ALLECULIDAE

1 *Hymenorus* sp.

Det. E. A. Chapin.

TENEBRIONIDAE

1 *Opatrinus anthracinus* Mulsant

Det. R. E. Blackwelder.

2 *Opatrinus gemellatus* Olivier

Det. E. A. Chapin. By net. October 1939.

3 *Blapstinus* n.sp.

Det. E. A. Chapin. By net. October 1937.

4 *Blapstinus* n. sp.

Det. E. A. Chapin. By net. October 1939.

5 *Phaleria variabilis* Quedenfeldt

Det. E. A. Chapin. By net. October 1939.

6 *Diaperis maculata* Olivier

Det. R. E. Blackwelder.

7 *Tribolium castaneum* Herbst

Det. E. A. Chapin. By net. October 1939.

8 *Alphitobius diaperinus* Panzer

Det. R. E. Blackwelder.

9 *Alphitobius piceus* Olivier

Det. R. E. Blackwelder.

10 *Alphitobius* sp.

Det. R. E. Blackwelder.

11 *Eutomus* sp.

Det. E. A. Chapin.

12 *Zophobas morio* F.

Det. E. A. Chapin.

13 *Prateus* sp.

Det. E. A. Chapin. By car net at dusk. October 1939.

14 *Trachyscelis* sp.

Det. E. A. Chapin. By car net at dusk. October 1939.

PTINIDAE

1 *Gibbium psylloides* Czemp.

Det. W. S. Fisher.

2 *Ptinus* sp.

Det. W. S. Fisher. By car net at dusk. October 1937.

ANOBIIDAE

1 Anobiidae Gen & sp.

Det. W. S. Fisher. By car net at dusk. October 1937.

BOSTRYCHIDAE

Determinations by W. S. Fisher.

1 *Apate monachus* F.

By car net at dusk. September 1937.

2 *Tetrapriocera tridens* F.

Under log. September 1937.

3 *Xylomeira torquata* F.

CISIDAE

1 *Cis hirtellus* Jacq. Duval

Det. J. M. Valentine.

2 *Cis* sp.

Det. W. S. Fisher. By car net at dusk. October. On fungus.
January 1939.

3 *Ceracis* sp.

Det. W. S. Fisher. On fungus. November 1938.

SCARABAEIDAE

Determinations by E. A. Chapin.

1 *Aphodius lividus* Olivier

In dung. December 1937.

2 *Aphodius cuniculus* Chevrolat

In dung. April 1941.

3 *Pleurophorus parvulus* Chevrolat4 *Ataenius frater* Leconte

In dung. April 1941.

5 *Ataenius edwardsi* Chapin

In dung. June 1939.

- 6 *Ataenius gracilis* Melsheimer
By car net at dusk. October 1939.
- 7 *Ataenius miamii* Cartw.
By car net at dusk. October 1939.
- 8 *Ataenius darlingtoni* Hntn.
By car net at dusk. October 1939. In manure. December 1937.
- 9 *Ataenius imbricatus* Melsheimer
In dung. April 1941.
- 10 *Ataenius strigicauda* Bates
By car net at dusk. September 1937.
- 11 *Ataenius beattyi* Chapin
In dung. April 1938.
- 12 *Trox suberosus* F.
Under debris. August 1936. At light. November 1944.
- 13 *Phyllophaga microphylla* Moser
Feeding at night on leaves of *Terminalia catappa*. September 1938.
On leaves of *Genipa americana*. August.
- 14 *Ligyris tumulosus* Burmeister
At light. September 1936.
- 15 *Ligyris cuniculus* F.
At light. September 1936.
16. *Strataegus barbigerus* Chapin
At light. October 1936.

CERAMBYCIDAE

Determinations by W. S. Fisher.

- 1 *Methia necydalea* F.
- 2 *Chlorida festiva* L.
- 3 *Eburia decemmaculata* F.
At light. September 1936.
- 4 *Elaphidion insulare* Neuman
Larvae in branch of *Annona squamosa*. August 1935.
- 5 *Heterachthes cylindricollis* F.
- 6 *Heterachthes quadrimaculatus* F.
At light. September 1936.
- 7 *Stizocera vanzwaluwenburgi* Fisher
- 8 *Cylindera flava* F.
At light. September 1936.
- 9 *Lagochirus araneiformis* Linn.
- 10 *Leptostylus testaceus* Froelich
At light. September 1936.

11 *Lepturges guadeloupensis* Fleutiaux & Sallé

12 *Ataxia alboscuteolata* Fisher

By net. September 1936.

13 *Estola* sp.

"Probably a new species but do not like to describe it on a single specimen."

CHRYSOMELIDAE

Determinations by H. S. Barber.

1 *Lema* sp.

2 *Nodonota* sp.

By car net at dusk. November 1937.

3 *Cerotoma ruficornis* Olivier

By car net at dusk. October 1937.

4 *Homophoeta albicollis* F.

By car net at dusk. October 1939.

5 *Oedionychis bicolor* L.

6 *Podagrica* sp.

7 *Altica*, near *purpurescens* Suffrian

On shrubbery. September 1938.

8 *Altica* sp.

On shrubbery. September 1938.

9 *Chalepus sanguinicollis* L.

By car net at dusk. November 1937.

10 *Phyllotreta fallax* Suffrian

11 *Deloyala guttata* Olivier

Swept from shrubbery. October 1937.

BRUCHIDAE

1 *Callosobruchus maculatus* F.

Det. H. S. Barber. November 1939.

BRENTIDAE

1 *Brentus volvulus* L.

Under scaling bark of decaying tree. November 1939.

CURCULIONIDAE

Determinations by L. L. Buchanan.

1 *Artipus* sp.

September 1937.

2 *Diaprepes abbreviatus rohrii* F.

On shrubbery. September 1937.

- 3 *Lachnopus curvipes* F.
On acacia bush. November 1938.
- 4 *Apodrusus*, near *argentatus* Wolcott
- 5 *Anthonomus* sp.
Reared from larvae in ripe fruit of *Malpighia puniceifolia*. May 1941.
- 6 *Anacentrinus* sp.
By net. September 1937.
- 7 *Sternechus* sp.
- 8 *Chalcodermus* sp.
Eaten by frog *Eleutherodactylus lentus*. August 1936.
- 9 *Chalcodermus ebeninus* Boheman
On corn. July 1938.
- 10 *Euscepes batata* Waterhouse
In sweet potatoes. February 1936.
- 11 *Anchonus* sp.
On shrubbery. September 1937.
- 12 *Cassonus canaliculatus* F.
On shrubbery. September 1937.
- 13 *Metamasius hemipterus* Linn.
On shrubbery. September 1938. Specimens were infested with *Analgesid* mites attached to thorax.
- 14 *Cosmopolites sordidus* Germar
January 1936. From roots of banana.
- 15 *Calendra* (*Calandra*) *oryzae* Linn.
In stored corn.
- 16 *Cryptorhynchinae*
"Genus not found."

SCOLYTIDAE

Determinations by M. W. Blackman.

- 1 *Hypothenemus flavipes* Hopkins
In seed pod of *Albizia lebbek*. April 1936.
- 2 *Coccotrypes* sp.
By car net at dusk. October 1937.
- 3 *Xyleborus affinis* Eichoff
By car net at dusk. October 1937.
- 4 *Xyleborus confusus* Eichoff
By car net at dusk. October 1937.
- 5 *Xyleborus sacchari* Hopkins
Car net at dusk. October 1937.
- 6 *Xyleborus propinquus* Eichoff
Car net at dusk. October 1937.

DIPTERA

I am greatly indebted to Alan Stone for his determinations in the *Culicidae* at a time when I was engaged in Malaria control and *Filaria* studies with the Department of Health. The *Culicoides* were examined by the late W. A. Hoffman. The bulk of Diptera was determined by C. T. Greene and D. G. Hall. A small collection of *Hippoboscidae* and *Streblidae* was determined by J. Bequaert.

TIPULIDAE

Determinations by Alan Stone.

- 1 *Limonia* (*Rhipidia*) *domestica* Osten Sacken
December 1937.
- 2 *Limonia* (*Geranomyia*) *antillarum* Alexander
At light. December 1937.
- 3 *Limonia* (*Geranomyia*) *virescens* Loew
December 1937.
- 4 *Limonia* sp.
Decembr 1937.
- 5 *Limonia* sp.
December 1937.

PSYCHODIDAE

- 1 Psychodidae Gen & sp.
Det. C. T. Greene.

CHIRONOMIDAE

- 1 Chironomidae Gen & sp.
Det. C. T. Greene. October 1935.
- 2 *Chironomus* sp.
Det. A. Stone. October 1935.
- 3 *Chironomus redeuns* Walker
Det. C. T. Greene. August 1935.

CERATOPOGONIDAE

- 1 *Culicoides furens* Poey
Det. W. A. Hoffman. A vicious feeder. July 1935.
- 2 *Culicoides laughnani* Edwards
Det. W. A. Hoffman. Found breeding in fresh water puddles near streams. May 1936, August 1936.
- 3 *Culicoides* sp. near *laughnani*
Det. W. A. Hoffman. August 1938.

4 *Culicoides* n. sp.

Det. W. A. Hoffman. Taken at Crique Dam. January 1936.
Constitution Hill. May 1936, January 1937. Diamond. September 1938.

5 *Forcipomyia propinqua* Williston

Swarming at dusk. October 1937. Det. Alan Stone.

6 *Forcipomyia raleighi* Macfie

Det. H. K. Townes. October 1936.

7 *Forcipomyia* sp.

Det. A. Stone. December 1937.

8 *Dasyhelea* sp.

Det. A. Stone. Peters Rest School. December 1937.

9 *Bezzia setulosa* Loew

Peters Rest School, December 1937. Det. A. Stone.

CULICIDAE

Determinations by Alan Stone.

1 *Corethrella appendiculata* Grabham

Reared from larvae in tree holes. October 1935.

2 *Anopheles albimanus* Wiedemann

Larvae found wherever there are collections of fresh water, preferably in unshaded situations. October 1935.

3 *Anopheles grabhamii* Theobald

Strictly a fresh water species, the larvae found in shaded pools and sluggish streams. October 1935.

4 *Uranotaenia loewii* Theobald

Uncommon. Larvae collected in fresh water pools. September 1935.

5 *Uranotaenia cooki* Root

Rare, larvae found in shaded pools. October 1936.

6 *Psorophora jamaicensis* Theobald

Larvae in fresh rain pools in pasturelands. August 1935.

7 *Psorophora pygmaea* Theobald

Rain pools and near the coast in slightly brackish pools. October 1935.

8 *Psorophora insularia* Dyar & Knab

Adults were taken by net at Williams Pond. November 1935.

9 *Psorophora coffini* Dyar & Knab

Adults by net. Christiansted. October 1935.

10 *Aedes taeniorhynchus* Wiedemann

Larvae in fresh water pools. Adults biting by day. September 1935.

- 11 *Aedes mediovittatus* Coquillett
Larvae in water holes in trees, adults biting by day. Common in jungles. October 1935.
- 12 *Aedes aegypti* L
Common about dwellings. Breed in fresh water. 1935.
- 13 *Aedes scapularis* Rondani
Larvae in rain pools. September 1936.
- 14 *Aedes sollicitans* Walker
Larvae in slightly brackish rain pools at Liaka. November 1936.
- 15 *Aedes tortilis* Theobald
Larvae in rain pools. East End. August 1935.
- 16 *Culex bahamensis* Dyar & Knab
Larvae in black masses in brackish pools near the coast. August 1935.
- 17 *Culex habitator* Dyar & Knab
Common. Breeds in fresh water. September 1935.
- 18 *Culex nigripalpus* Theobald
Breeds in fresh water and sometimes the larvae are found in slightly brackish pools. May 1935.
- 19 *Culex quinquefasciatus* Say
Breeds in fresh water, rarely in slightly brackish pools. September 1935.
- 20 *Culex atratus* Theobald
Larvae found in fresh and slightly brackish pools. March 1935.
- 21 *Culex erraticus* Dyar & Knab
Larvae in fresh water pool. December 1935.
- 22 *Culex infictus* Theobald
In fresh water pools. January 1937.
- 23 *Culex americanus* N. L.
Adults were taken from a rotting palm trunk which had become hollowed out. Crique. 1938.
- 24 *Culex chrysonotum* Dyar & Knab
Larvae from fresh water pool. September 1935.
- 25 *Culex* sp.
Captured on arm, Fairplain. February 1936. Crique. August 1938.
- 26 *Deinocerites cancer* Theobald
Breeds in slightly brackish water, preferably down in large land-crab holes. November 1935.

MYCETOPHILIDAE

- 1 *Mycetophila insipiens* Williston
Det. A. Stone. 1935.

- 2 *Sciara* sp.
Det. A. Stone.

CECIDOMYIDAE

- 1 *Diplosis* sp.
Det. C. T. Greene. From sorghum. April 1936.
2 Cecidomyidae gen. & sp.
Det. C. T. Greene. 1936.

SIMULIIDAE

- 1 *Simulium quadrivittatum* Loew
Adults taken on arm biting man. Not a common species. Crique.
1936.

STRATIOMYIDAE

Determinations by C. T. Greene.

- 1 *Hermetia illucens* Linn.
Preyed upon by *Stictia signata*. Janury 1936.
2 *Neorondania chalybea* Wiedemann 1936
3 *Cyphomyia marginata* Loew
Resting on orange leaves. May 1937.
4 *Cyphomyia lasiophthalmus* Williston
September 1938.
5 *Euryneurasoma slossonae* Johnson
August 1937.

TABANIDAE

- 1 *Stenotabanus stigma* F.
Det. A. Stone. Taken on dog. August 1941.

BOMBYLIIDAE

Determinations by C. T. Greene.

- 1 *Anthrax aedipus* Fabr.
August 1936.
2 *Anthrax* sp.
August 1936.
3 *Hyperalonia cerberus* Fabr.
August 1936.
4 *Villa fauna* Fabr.
May 1938.
5 *Bombylius* sp.

ASILIDAE

- 1 *Leptogaster* sp.
April 1938.
- 2 *Ommatius marginellus* Fabr.
April 1936.

DOLICHOPODIDAE

Determinations by C. T. Greene.

- 1 *Chrysotus* sp.
April 1936.
- 2 *Gymnopternus* sp.
"Shining green." May 1936, August 1936, June 1941.
- 3 *Plagioneurus univittatus* Loew
On swamp grass. May 1936.
- 4 *Pelastoneurus unguiculatus* Aldrich
On swamp grass. May 1936.
- 5 *Dolichopodidae* gen & sp.
"Near *Mesorhaga*." On grass. May 1936.
- 6 *Sciapus graenicheri* Van Duzee
September 1940.

EMPIDIDAE

- 1 *Drapetis* sp.
Det. C. T. Greene.

PHORIDAE

- 1 *Megaselida scalaris* Loew
February 1936. Det. C. T. Greene.
- 2 *Megaselida* sp.
Det. C. T. Greene. Reared from larvae in rotting fruit of
Anacardium occidentale. June 1937.
- 3 *Puliciphora* sp.
September 1936.

SYRPHIDAE

Determinations by C. T. Greene. Specimens swept from grass.

- 1 *Baccha clavata* F.
March 1937.
- 2 *Baccha conformis* Loew
November 1936.
- 3 *Baccha cylindrica* F.
August 1936.

- 4 *Baccha dimidiata* F.
August 1936.
- 5 *Baccha latiusculus* Loew
April 1936.
- 6 *Baccha stenogaster* Williston
August 1936.
- 7 *Toxomerus geminatus* Say
September 1941.
- 8 *Toxomerus politus* Say
August 1938.
- 9 *Toxomerus* sp.
"Banded abdomen." Grove Place. January 1941.
- 10 *Allograpta fuscisquama* Curran
September 1936.
- 11 *Allograpta venusta* Curran
August 1936.
- 12 *Volucella unipunctata* Curran
September 1937.
- 13 *Eristalis vinetorum* Fabr.
October 1940.

TACHINIDAE

- * Determinations by D. G. Hall.
- 1 Tachinidae gen & sp.
August 1936.
 - 2 *Trichopoda haiiensis* Desvoidy
October 1936
 - 3 *Trichopoda* sp.
Preyed upon by *Stictia signata*. November 1936.
 - 4 *Lydella bigeminata* Curran
August 1936.
 - 5 *Ocyptera* sp.
August 1936.
 - 6 *Nemorilla maculosa* Macquart
October 1938.
 - 7 *Phorocera divisa* Aldrich & Webber
Adults in dwellings. May 1941.
 - 8 *Argyrophylax* sp.
April 1936, August 1936.
 - 9 *Ormia* sp.
April 1936.

10 *Gonia* sp.

May 1941.

SARCOPHAGIDAE

1 *Sarcophagula occidua* Fabr.

January 1936. Det. D. G. Hall.

2 *Sarcophaga hillifera* Aldrich

Det. M. T. James. October 1943.

3 *Sarcophaga* sp.

Det. D. G. Hall. November 1936.

4 *Helicobia surrubea* V. de W.

March 1936.

MUSCIDAE

1 Muscidae

Genus uncertain. Det. D. G. Hall. October 1938.

2 *Cochliomyia macellaria* F.

Reared from larvae taken off dead animals. Det. D. G. Hall.

3 *Lucilia eximia* Macquart

Det. M. T. James. August 1936.

4 *Lucilia* sp.Det. D. G. Hall. Preyed upon by *Stictia signata*. November 1936.5 *Pyrellia* sp.

Det. D. G. Hall. August 1936.

6 *Morellia scapulata* Bigot

Det. D. G. Hall. March 1936.

7 *Orthellia* sp.

Det. D. G. Hall. September 1937.

8 *Synthesiomyia nudiseta* V de W.

Det. M. T. James. October 1938.

9 *Musca domestica* L.

Det. D. G. Hall. November 1936.

10 *Haematobia irritans* L.

Annoying domestic animals. Det. D. G. Hall. 1941.

11 Muscinae gen & sp.

Det. D. G. Hall. On fruit of *Calyptracordia alba*. 1936.

ANTHOMYIIDAE

Determinations by D. G. Hall.

1 Anthomyiidae gen & sp.

Swept from grass. August 1936.

- 2 *Anthomyiidae* gen & sp.
August 1936.
- 3 *Anthomyiidae* gen & sp.
Hovering about dead horse. April 1936.
- 4 *Anthomyia* sp.
Swarming. June 1941.
- 5 *Atherigona orientalis* Schiner
September 1938.
- 6 *Lispa* sp.
August 1936.
- 7 *Phaonia* sp.
April 1936.
- 8 *Fannia femoralis* Stein
November 1936.

BORBORIDAE

- 1 *Leptocera* sp.
Det. D. G. Hall. July 1938.
- 2 *Leptocera discalis* Malloch
October 1937.

SAPROMYZIDAE

Determinations by D. G. Hall. Material swept from vegetation.

- 1 *Sapromyzidae*
Probably *Camptoprosopella* sp. August 1936.
- 2 *Carpolonchaea pendula* Bezzi
June 1941.
- 3 *Neogriphoneura sordida* Wiedemann
September 1938.
- 4 *Sapromyza* sp.
June 1941.
- 5 *Minettia* sp.
April 1941.
- 6 *Minettia slossonae* Coquillett
April 1941.

ORTALIDAE

Determinations by C. T. Greene. Material swept from vegetation.

- 1 *Acrosticta* n. sp.
"Red abdomen." June 1941.
- 2 *Euxesta annonae* Fabr.
June 1941.

- 3 *Euxesta spoliata* Loew
June 1941.
- 4 *Euxesta thomae* Loew
June 1941.
- 5 *Euxesta stigmatias* Loew
June 1941.
- 6 *Euxesta sororcula* Wiedemann
June 1941.

TRYPETIDAE

- 1 *Anastrepha mombinpraeoptans* Sein
Det. A. Stone. Reared from larvae in *Spondias mombin*, August-October, 1940. Reared from *Spondias purpurea*.
- 2 *Ensina picciricola* Bigot
Det. C. T. Greene. September 1942.
- 3 *Trypanea dacetoptera* Phillips
Det. C. T. Greene. June 1943.

SEPSIDAE

- 1 *Sepsis pusio* Schiner
Det. D. G. Hall. August 1936.
- 2 *Sepsis* sp.
Det. D. G. Hall. August 1936.

EPHYDRIDAE

Determinations by D. G. Hall. Material swept from grass.

- 1 Ephydridae gen & sp.
May 1937.
- 2 *Discomyza dubia* Williston
November 1939.
- 3 *Discomyza maculipennis* Wiedemann
November 1939.
- 4 *Paralimna obscura* Williston
September 1938.
- 5 *Psilopa nigrimana* Williston
May 1937.
- 6 *Psilopa* sp.
June 1941.
- 7 *Ceropsilopa* sp.
December 1940.
- 8 *Plagiops nitidifrons* Cresson
June 1940.

- 9 *Scatella* sp.
November 1946.

CHLOROPIDAE

- 1 *Chloropidae* gen & sp.
Det. D. G. Hall. October 1939.
- 2 *Hippelates apicata* Malloch
On sores. Det. C. W. Sabrosky. October 1939.
- 3 *Hippelates peruanus* Becker
On dogs. Det. C. W. Sabrosky. November 1939.
- 4 *Hippelates lutzi* Curran
Det. C. W. Sabrosky. On sores. October 1939.
- 5 *Hippelates currani* Aldrich
Det. C. W. Sabrosky. October 1939.
- 6 *Hippelates* sp. near *impressus* Becker
On sores. Det. D. G. Hall. October 1939.
- 7 *Pseudogaurax lancifer* Coquillett
Det. D. G. Hall. Reared from egg sacs of spider. August 1941.
- 8 *Conioscinella mars* Curran
Det. C. W. Sabrosky. October 1939.
- 9 *Oscinellinae* gen & sp.
Det. D. G. Hall. April 1936.
- 10 *Oscinella forbesi* Curran
Det. C. W. Sabrosky. April 1936.
- 11 *Oscinella sicatrix* Curran
Det. C. W. Sabrosky. April 1936.
- 12 *Oscinella* sp
Det. D. G. Hall. April 1936.

ASTEIIDAE

- 1 *Sigaloessa*
"Possibly this genus." Det. C. W. Sabrosky. November 1939.

DROSOPHILIDAE

- Determinations by C. T. Greene. Material swept from shrubbery.
- 1 *Drosophila melanogaster* Meigen
June 1941.
- 3 *Drosophila repleta* Wollaston
July 1935.
- 4 *Drosophila busckii* Coquillett
August 1936.

- 5 *Drosophila similis* Williston
September 1941.
- 6 *Drosophila* sp.
April 1936.
- 7 *Drosophila* sp.
March 1941.
- 8 *Cladochaeta nebulosa* Coquillett
July 1939.
- 9 *Leucophenga* sp. near *varia* Walker
September 1936.

AGROMYZIDAE

- 1 *Agromyza viridula* Coquillett
Det. C. T. Greene.
- 2 *Agromyza virens* Loew
Det. C. T. Greene.
- 3 *Agromyza longicauda* Curran
Det. C. T. Greene.
- 4 *Agromyza* sp.
Det. C. T. Greene. June 1941.

MILICHIIDAE

- 1 *Milichiella lacteipennis* Loew
Det. D. G. Hall. March 1939.
- 2 *Milichiella* sp.
Det. C. T. Greene. August 1939.
- 3 *Desmometopa M-nigrum* Zetterstedt
Det. C. T. Greene. March 1939.

HIPPOBOSCIDAE

- 1 *Ornithoetona erythrocephala* Leach
Taken off Red-tailed Hawk, *Buteo j. jamaicensis*. Det. J. Bequaert.
1937.
- 2 *Pseudolynchia maura* Bigot
Off Ground Dove, *Columbigallina passerina nigrirostris*. Det. A.
Stone. 1936.
- 3 *Microlynchia pusilla* Speiser
Off Ground Dove, *Columbigallina passerina nigrirostris*. Det. A.
Stone. 1936.
- 4 *Olfersia aenescens* Thompson
Off White-bellied Booby, *Sula leucogaster*. Det. J. Bequaert. 1936.

5 *Olfersia fossulata* Macquart

Taken by net from bush. Det. J. Bequaert. 1936.

6 *Olfersia spinifera* LeachOff Frigate-bird, *Fregata magnificens rothschildi*. Det. J. Bequaert. 1936.7 *Olfersia erythropsis* BigotOff Blue-faced Booby, *Sula d. dactylatra*. Det. A. Stone. 1936.8 *Olfersia sordida* Bigot

By net on shrubbery. Det. A. Stone. April 1936.

9 *Melophagus ovinus* Linn.

Off domestic sheep. 1936.

STREBLIDAE

Determinations by J. Bequaert.

1 *Trichobius truncatus* KesselOff fruit bat, *Brachyphylla cavernarum*. 1938.2 *Trichobius mixtus* CurranOff fruit bat, *Artibeus jamaicensis*. 1945.3 *Trichobius sparsus* KesselOff fruit bat, *Artibeus jamaicensis*. 1945.4 *Pterellipsis aranea* CoquillettOff fruit bat, *Artibia jamaicensis*. 1945.

SIPHONAPTERA

TUNGIDAE

1 *Tunga penetrans* Linn.

Taken from man.

2 *Echidnophaga gallinacea* WestwoodOff rat (*Rattus fatus alexandrinus*).

PULICIDAE

1 *Pulex irritans* Linn.

Taken off man.

2 *Xenopsylla cheopis* RothschildOff gray rat (*Rattus r. alexandrinus*).3 *Ctenocephalides canis* CurtisCommon on dogs, mongoose (*Herpestes birmanicus*), and occasionally on man.4 *Ctenocephalides felis* BouchéTaken off cats, dogs and mongoose (*Herpestes birmanicus*).

LEPIDOPTERA

The compiler made determinations in the Rhopalocera after Comstock, and a few species also in *Arctiidae*, *Sphingidae* and *Noctuidae*. However a collection of the microlepidoptera was examined by W. T. Forbes and he has identified the Lesser Antillean form of the monarch butterfly. The bulk of the material was worked over by W. D. Field, C. Heinrich, J. F. Gates Clarke and H. W. Capps and I am indebted to them all for their labors.

Suborder RHOPALOCERA

DANAIDAE

- 1 *Danaus plexippus leucogyne* Butler
November 1936.
- 2 *Danaus plexippus megalippe* Hubner
Det. W. T. Forbes. November 1944.

NYMPHALIDAE

- 1 *Heliconius c. charithonius* L.
February 1936.
- 2 *Heliconius charithonius punctatus* Hall
February 1936.
- 3 *Dione vanillae insularis* Maynard
November 1936.
- 4 *Junonia evarete zonalis* C. R. Felder
This is the common form. October 1936.
- 5 *Junonia evarete incarnata* C. R. Felder
This species is restricted to the coastal area where it is not uncommon in the salt marshes, but is extremely active and difficult to capture.
November 1936.
- 6 *Anartia jatrophae intermedia* Munroe
Common. November 1936.
- 7 *Metamorpha stelenes stelenes* L.
Common in woods. October 1936.
- 8 *Biblis hyperia hyperia* Cramer
Common in the woods. October 1936.
- 9 *Hypolimnas missippus* L.
Rare. Only six specimens have been taken and all of these were in the fall of the year. October 1936.
- 10 *Eunica tatila tatilista* Kaye
A rare fly. August 1937.

11 *Anaea troglodyta astina* Fabr.

A rare butterfly which has been taken only four times and in the fall of the year. August 1935.

LYCAENIDAE

1 *Thecla acis mars* Fabr.

December 1936.

2 *Thecla angelia boyeri* Comstock & Huntington

November 1936.

3 *Thecla simaethis simaethis* Drury

January 1936.

4 *Thecla bubastus ponce* Comstock & Huntington

October 1936.

5 *Thecla antiqua* Comstock & Huntington

November 1936.

6 *Leptotes cassius catilina* Fabr.

November 1936.

7 *Hemiargus ammon woodruffi* Comstock & Huntington

September 1936.

8 *Hemiargus hanno watsoni* Comstock & Huntington

September 1936.

PIERIDAE

1 *Phoebis (Phoebis) sennae sennae* L.

September 1936.

2 *Eurema (Eurema) दौरा ebriola* Poey

October 1937.

3 *Eurema (Eurema) elathea* Cramer

September 1938.

4 *Eurema (Pyrisitia) lisa euterpe* Ménétries

February 1936.

5 *Appias (Glutophrissa) drusilla boydi* Comstock

A rare species. January 1936.

6 *Ascia monuste eubotea* Latreille

Common. October 1936.

7 *Ascia monuste virginia* Latreille

Common. September 1936.

PAPILIONIDAE

1 *Papilio polydamus thymus* Rothschild & Jordan

January 1936.

HESPERIIDAE

- 1 *Polygonus lividus* Hübner
August 1936.
- 2 *Urbanus proteus* L.
A common species, larvae parasitized by *Apanteles leucostigma*.
November 1936.
- 3 *Urbanus proteus cramptoni* Comstock
This species has not been collected here.
- 4 *Pyrgus syrichtus* Fabr.
Common. August 1935.
- 5 *Achlyodes papinianus minor* Comstock
January 1936.
- 6 *Ephyriades arcas* Drury
October 1936.
- 7 *Wallengrenia otho mutchleri* Watson
November 1937.
- 8 *Choranthus vitellius* Fabr.
September 1936.
- 9 *Lerodea tripuncta* Herrich-Schaffer
October 1936
- 10 *Calpodes ethlius* Cramer
November 1937.
- 11 *Panoquina nyctelia* Latreille
October 1936.
- 12 *Panoquina sylvicola woodruffi* Watson
December 1937.
- 13 *Panoquina p. panoquinoides* Skinner
September 1938.

Suborder HETEROCERA

AMATIDAE

- 1 *Mollodeta partheni* F.
Det. W. D. Field. February 1937.
- 2 *Cosmosoma achemon tyrrhene* Hübner
Det. W. D. Field. November 1937.
- 3 *Horama* sp.
Det. W. D. Field. February 1937.

ARCTIIDAE

- 1 *Ecpantheria icasia* Cramer
February 1936.

- 2 *Utetheisa ornatix ornatix* L.
November 1935.

NOCTUIDAE

- 1 *Heliothis obsoleta* F.
Det. L. O. Howard. Experiment Station collection.
- 2 *Heliothis virescens* F.
Det. C. Heinrich. December 1936.
- 3 *Xanthopastis timais* Cramer
December 1936.
- 4 *Leucania humidicola* Guenée
Det. C. Heinrich. December 1936.
- 5 *Leucania multilinea* Walker
Det. C. Heinrich. December 1936.
- 6 *Perigea cupentia* Cramer
Det. C. Heinrich. December 1936.
- 7 *Perigea concisa* Walker
Det. C. Heinrich. December 1936.
- 8 *Catabena vitrina* Walker
Det. C. Heinrich. December 1936.
- 9 *Prodenia ornithogalli* Guenée
Det. L. O. Howard. Exp. Station coll.
- 10 *Laphygma frugiperda* Smith & Abbot
Det. C. Heinrich. December 1936.
- 11 *Xylomiges sunia* Guenée
Det. L. O. Howard. Exper. Station collection.
- 12 *Micrathetis triplex* Walker
Det. C. Heinrich. December 1936.
- 13 *Atethmia subusta* Hübner
Det. C. Heinrich. December 1936.
- 14 *Atethmia oula* Dyar
Det. C. Heinrich. December 1936.
- 15 *Cobubatha quadrifera* Zeller
Det. C. Heinrich. December 1936.
- 16 *Paectes obrotunda* Guenee
Det. C. Heinrich. December 1936.
- 17 *Paectes* sp.
Det. C. Heinrich. December 1936.
- 18 *Pelamia repanda* F.
Det. J. F. Gates Clarke. September 1936.
- 19 *Phytometra ni* Hübner
Det. L. O. Howard. Exp. Station collection.

- 20 *Phytometra* oo Cramer
Det. L. O. Howard. Exp. Station collection.
- 21 *Melipotis contorta* Guenée
Det. C. Heinrich. December 1936.
- 22 *Erebus odora* Linn.
Det. C. Heinrich. November 1936.
- 23 *Concana disgrega* Möschler
Det. C. Heinrich. December 1936.
- 24 *Concana* sp.
new? Det. C. Heinrich. December 1936.
- 25 *Noropsis hieroglyphica* Cramer
Det. C. Heinrich. November 1936.
- 26 *Alabama argillacea* Hübner
Det. L. O. Howard. Exp. Station collection.
- 27 *Gonodonta nitidimacula* Guenée
Det. C. Heinrich. December 1936.
- 28 *Anticarsia gemmatalis* Hübner
Det. C. Heinrich. December 1936.
- 29 *Epidromia pannosa* Guenée
Det. L. O. Howard. Exp. Sta. collection.

SPHINGIDAE

- 1 *Herse cingulata* Fabr.
November 1936.
- 2 *Phlegethontius rusticus rusticus* Fabr.
November 1936.
- 3 *Phlegethontius sextus jamaicensis* Butler
November 1936.
- 4 *Erinnyis alope* Drury
November 1936.
- 5 *Erinnyis ello* Linn.
November 1936.
- 6 *Pholus vitis vitis* Linn.
November 1936.
- 7 *Xylophanes pluto* Fabr.
November 1936.
- 8 *Xylophanes tersa* Linn.
November 1936.
- 9 *Celerio lineata lineata* Fabr.
November 1936.

GEOMETRIDAE

- 1 *Semiothisa paleolata* Guenée
Det. H. W. Capps. January 1937.
- 2 *Racheospila* sp.
Det. H. W. Capps. January 1937.

PYRALIDAE

Pyraustinae

- 1 *Zinckenia fascialis* Cramer
Det. L. O. Howard. Exp. Sta. coll.
- 2 *Syngamia florella* Cramer
Det. C. Heinrich. November 1936.
- 3 *Pilocrocis tripunctata* F.
Det. C. Heinrich. November 1936.
- 4 *Mesocondyla concordalis* Hübner
Det. C. Heinrich. December 1936.
- 5 *Dichogramma fernaldi* Möschler
Det. C. Heinrich. November 1936.
- 6 *Sylepta onophasalis* Walker
Det. C. Heinrich. December 1936.
- 7 *Sylepta gordialis* Guenée
Det. L. O. Howard. Exp. Sta. Coll.
- 8 *Sylepta patagialis* Zeller
Det. L. O. Howard. Exp. Sta. coll.
- 9 *Lygropia flavofuscalis* Smellen
Det. L. O. Howard. Exp. Sta. coll.
- 10 *Margaronia phlegia* Cramer
Det. L. O. Howard. Exp. Sta. coll.
- 11 *Margaronia elegans* Möschler
Det. L. O. Howard. Exp. Sta. coll.
- 12 *Margaronia immaculalis* Guenée
Det. L. O. Howard. Exp. Sta. coll.
- 13 *Margaronia hyalinata* Linn.
Det. L. O. Howard. Exp. Sta. coll.
- 14 *Margaronia costata* F.
Det. C. Heinrich. November 1936.
- 15 *Ommatospila marcaeusalis* Walker
Det. L. O. Howard. Exp. Sta. coll.
- 16 *Sameodes mopsalis* Walker
Det. C. Heinrich. December 1936.

- 17 *Psara phaeopteralis* Guenée
Det. L. O. Howard. Exp. Sta. coll.
- 18 *Psara bipunctalis* F.
Det. L. O. Howard. Exp. Sta. coll.
- 19 *Noctuelia thalialis* Walker
Det. L. O. Howard. Exp. Sta. coll.
- 20 *Leucinodes* sp.
Det. C. Heinrich. December 1936.
- 21 *Loxostege bifidalis* Fabr.
Det. L. O. Howard. Exp. Sta. coll.
- 22 *Hapalia vinotinctalis* Hampson
Det. L. O. Howard. Exp. Sta. coll.
- 23 *Pyrausta phoenicealis* Hübner
Det. L. O. Howard. Exp. Sta. coll.

Chrysauginae

- 1 *Pachymorphus subductellus* Möschler
Det. C. Heinrich. November 1937.

Crambinae

- 1 *Diatraea saccharalis* F.
Det. C. Heinrich. September 1936.
- 2 *Argyria diplomachalis* Dyar
Det. C. Heinrich. November 1936.

Phyctinae

- 1 *Hyalospila* sp.
Det. C. Heinrich. November 1937.
- 2 *Plodia interpunctella* Hübner
Det. L. O. Howard. Exp. Sta. coll.
- 3 *Ephestiodes* sp.
Det. C. Heinrich. October 1936...

HYBLAEIDAE

- 1 *Hyblaea puera* Cramer
Det. C. Heinrich. September 1936.

YPONMEUTIDAE

- 1 *Plutella maculipennis* Curtis
Det. L. O. Howard. Exp. Sta. coll.

COSMOPTERYGIDAE

- 1 *Pyroderces rileyi* Walsingham
Det. L. O. Howard. Exp. Sta. coll.

BLASTOBASIDAE

- 1 *Blastobasidae* gen & sp.
Det. C. Heinrich. November 1936.

APOSTEGIDAE

- 1 *Apostega* sp. probably *trinidadensis* Busck
Det. J. F. Gates Clarke. 1937.

GELECHIIDAE

- 1 *Sitotroga cerealella* Olivier
Det. L. O. Howard. Exp. Sta. coll.
- 2 *Aristotelia* sp.
Det. C. Heinrich. August 1936.
- 3 *Pectinophora gossypiella* Saunders
Det. L. O. Howard. Exp. Sta. coll.

HYMENOPTERA

Ichneumonidea

BRACONIDAE

- 1 *Opius* (*Utetes*) *anastrephae* Viereck
Det. F. W. Muesebeck. Reared from larvae of *Anastrepha mombin-praeoptans*. August 1939.
- 2 *Apanteles leucostigma* Ashmead
Det. F. W. Muesebeck. Reared from larvae of *Urbanus proteus*. September 1936.
- 3 *Apanteles* n. sp.
Det. F. W. Muesebeck. Reared from larvae of *Lepidoptera* in seed pod of mangle (*Rhizophora*). August 1936.
- 4 *Chelonus* sp.
Det. A. B. Gahan. January 1938.

EVANIIDAE

- 1 *Evania appendigaster* Linn.
Det. R. A. Cushman. Reared from egg-case of *Periplaneta americana*. October 1938.
- 2 *Hyptia* sp.
Det. R. A. Cushman. Swept from shrubbery. August 1937.

ICHNEUMONIDAE

Determinations by R. A. Cushman.

- 1 *Labena* sp.
Swept from grass. LaGrange. July 1936.
- 2 *Labena* n. sp.
Collected by light on coco leaves. Crique. July 1936.
- 3 *Labena* n. sp.
Swept from shrubbery. LaGrange. July 1936.
- 4 *Enicospilus concolor* Cresson
At light. August 1936.
- 5 *Enicospilus* sp.
August 1936.
- 6 *Ophion ancyloneura* Cameron
At light. August 1936.
- 7 *Ophion* sp.
At light. August 1936.
- 8 *Eiphosoma annulatum* Cresson
Swept from grass. September 1936.
- 9 *Carinodes phavanensis* Cameron
Swept from grass. August 1936.
- 10 *Pristomerus* sp.
Swept by net. September 1937.

Cynipoidea

CYNIPIDAE

- 1 *Hexacola* sp.
Det. L. H. Weld. Swept by net. July 1940.
- 2 *Pseudeucoila* sp.
Det. L. H. Weld. Swept by net. July 1940.

FIGITIDAE

Determinations by L. H. Weld.

- 1 *Dicerataspis* sp.
On rotting fruit. Fountain, July 1938.
- 2 *Eucoila* (*Hexamerocera*) *atriceps* Ashmead
Reared from larvae of *Anastrepha mombinpraeoptans*, LaGrange.
July 1938.

TETRASTICHIDAE

- 1 *Tetrastichus hagenowi* Ratzeburg
Det. A. B. Gahan. August 1937.
- 2 *Tetrastichus* sp.
Det. A. B. Gahan. Reared from a spider egg-case. October 1938.

ENTEDONTIDAE

- 1 *Horismenus* sp.
Det. A. B. Gahan. Reared from its pupae attached to a leaf of *Rhizophora* (mangle). Krause Lagoon. December 1938.

PTEROMALIDAE

- 1 *Neocatalaccus* sp.
Det. H. K. Townes. Reared from galls of *Cocoloba uvifera*. July 1938.

ENCYRTIDAE

- 1 *Hunterellus hookeri* Howard
Det. A. B. Gahan. Reared from female nymphs of *Rhipicephalus sanguineus*. October 1937.

EUPELMIDAE

- 1 *Eupelmus* sp.
Det. A. B. Gahan. Reared from seed pod of *Rhizophora*. June 1938.

CHALCIDIDAE

Determinations by A. B. Gahan.

- 1 *Chalcis robusta* Cresson
Swept from grass. July 1937.
- 2 *Brachymeria ovata* Say
Swept from grass. September 1937.
- 3 *Brachymeria robustella* Wolcott
Swept from grass. September 1937.
- 4 *Spilochalcis femorata* F.
Swept from shrubbery. September 1937.
- 5 *Spilochalcis* sp.
Swept from grass. December 1937. Reared from pupa attached to leaf of *Rhizophora*. Krause Lagoon. December 1938.

Formicoidea

Determinations by M. R. Smith. Specimens in the U.S.N.M.

*Ponerinae*1 *Platythyrea punctata* F. Smith

In decaying log. Foraging on tree trunk at night. Colony under scaling bark, 150 adults and some eggs, La Grange. March 1935.

2 *Ponera opaciceps* Mayr

A colony of 25 adults, eggs and pupae, under a large rock, Orange Grove. September 1938.

3 *Ponera ergatandria* Forel

Foraging. June 1938. Colony of 125 and 1 winged adult in decaying log, Prosperity. April 1938.

4 *Ponera* sp.

Adults taken foraging. December 1937.

5 *Anochetus mayri* Emery

Adults inside a dead palm trunk, Crique. 1938. Under a decaying log, Caledonia. November 1938. Foraging, Jealousy streamway. July. In moist pith of rotting log, Prosperity. April 1938.

6 *Odontomachus haematodes* Linn.

Colony of 50 adults and 20 winged forms, eggs and pupae, in a mass of rotting vegetable matter accumulated in a tree hole. When held between the fingers the adult would audibly snap its mandibles viciously. Mt. Victory. April 1935. Foraging on tree trunk at night. August 1935.

7 *Odontomachus haematodes insularis* Guérin

Colony of 4 winged adults, 50 workers and brown pupae beneath a board resting on the ground, Coakley Bay (semi-arid region). May 1938. A colony in a mound nest in the fork of two large branches, Collins. July 1938. Foraging at night. July 1938. A colony of 50 and 15 winged adults, pupae and eggs, under loose bark, Mt. Victory. November 1943.

8 *Odontomachus* sp.

Winged adults taken at light. Annas Hope. August 1937.

*Myrmicinae*1 *Monomorium carbonarium ebeninum* Forel

Adults foraging on decaying lily bulbs, Oxford. 1935. Winged adults at light. December 1937. Colony of 15 winged adults, 150 workers, pupae and eggs, under the scaling bark of a tree stump, Jealousy streamway. January 1937. Colony of 500 adults, eggs and pupae in a decaying stump. September 1938. A colony of approximately 2000 adults, eggs and pupae, in a dry length of *Cecropia*. October 1938.

2 Monomorium destructor Jerdon

Attracted to food, Coakley Bay (semi-arid). At light, winged adults. December 1937.

3 Monomorium floricola Jerdon

Among rotting debris, Caledonia. March 1938. Adults were observed carrying off the eggs of *Aedes aegypti* from a tub. July 1935. A colony of 300 adults, eggs, and pupae, in the dry branch of avocado tree, Kingshill. July 1935.

4 Cardiocondyla emeryi Forel

Adults foraging, Prosperity. June 1935. Adults beneath dry cattle dung, Butler's Bay. March 1937. On flowers of cactus, *Opuntia* sp., Sight. May 1938.

5 Cardiocondyla venustula Wheeler

July 1936.

6 Solenopsis corticalis Forel

A small colony beneath a large rock, Prosperity. 1938.

7 Solenopsis geminata Fabr.

Tunnels in sandy soil, Krause Lagoon. April 1935. Winged adults at light. August-December, 1937. Under a log on the sea shore. A ground nest of approximately 2000 workers and 100 winged adults, besides eggs and pupae, Oxford. March 1938.

8 Solenopsis globularia borinquensis Wheeler

Foraging on gravelly soil Oxford. April 1935. Winged adults swarming at dusk, Lower Love. January 1941.

9 Solenopsis sp.

Adults foraging, Christiansted cemetery. June 1935. Winged adults at light. June 1935. Winged male and female were taken in copula in flight at dusk, Sight. November 1935. Winged adults at light, Mary's Fancy. February 1936. Colony in decaying stump, eggs. September 1938. Winged adults swarming at dusk, La Grange. June 1941.

10 Pheidole fallax jelskii var. *antillensis* Forel

A colony of approximately 700 workers and 26 winged forms in a ground nest. They have a predominantly fecal odor. Prosperity. April 1938.

11 Pheidole flavens sculptor Forel

Colony of 150 adults, pupae and eggs, in pith of rotting log, Prosperity. April 1938. Foraging on moss, Caledonia. December 1940.

12 Pheidole flavens thomensis Emery

Colony beneath a large rock, Crique. May 1937. Winged adults at light. December 1937.

13 *Pheidole moerens* Wheeler

Adults under dry cattle dung, Butler's Bay. March 1937. Colony in gravelly soil beneath a large rock, Concordia. May 1938.

14 *Pheidole megacephala* Fabr.

Colony in a hole in wall, several queens were noted. These ants emit an audible squeak while actively foraging. At dusk swarms were flying against a light breeze and were being captured and eaten by Kingbirds, *Tyrannus dominicensis*, and Anis, *Crotophaga ani*. Beeston Hill. February 1936. Winged adults at light. December 1937.

15 *Pheidole* sp. *flavens* group

Adults foraging, Prosperity. June 1935. Male and female in copula taken in flight, Constitution Hill. December 1935. Winged adults taken in flight. February 1936.

16 *Crematogaster steinheili* Forel

Colony of 200 adults, pupae and eggs, in dry tree branch, and when disturbed they ran around with the gaster held erect, Oxford. April 1935. Winged adults at light, Mary's Fancy. February 1936. Colony in rotting branch, Annaly. February 1935.

17 *Tetramorium guineense* Fabr.

Adults were foraging on water-hyacinth plants in Annas Hope stream. July 1935.

18 *Tetramorium lucayanum* Wheeler

Adults taken foraging, Caledonia. December 1937 and December 1940.

19 *Tetramorium simillimum* Nylander

Foraging. December 1937. Adults in rotting stump, Oxford. April 1937.

20 *Wasmannia auropunctata* Roger

Colony in cavity of dry branch, Mt. Eagle. June 1935. Colony of 200 adults, pupae and eggs, under scaling bark, La Grange. March 1936. Adults, Caledonia. December 1940.

21 *Leptogenys puncticeps vincentensis* Forel

Adults were taken foraging at night, Morning Star pump. July 1938.

22 *Strumigenys eggersi* Emery

Winged adults were taken in a house in Christiansted. June 1935.

23 *Strumigenys rogeri* Emery

Adults taken foraging on moss, Caledonia. December 1940.

24 *Mycocepurus smithi borinquensis* Wheeler25 *Epitritus emmae* Emery26 *Cyphomyrmex rimosus minutus* Mayr

Colony of 200 adults, pupae and eggs, in moist soil near a water

hole, Lower Love. February 1936. Colony beneath a large rock, 150 and 15 winged adults, pupae and eggs. March 1937. Colony of 50 adults, pupae and eggs, in moist soil beneath a large stone. When disturbed the adults play possum and remain quiet for several minutes. April 1938.

Dolichoderinae

1 *Tapinoma melanocephalum* Fabr.

Pests in insectory stealing everything. However, it is not widely distributed. July 1935.

2 *Iridomyrmex melleus* Wheeler

A small colony taken from a dry branch, Mt. Eagle. June 1935.

3 *Dorymyrmex pyramicus niger* Pergande

A colony of 600 adults, pupae and eggs. Very active when disturbed, tunneling in soil. Several mounds that were five feet apart were connected by overland trails and the ants were seen moving from one to the other. Slob Bay (semi arid area). May 1935. Colony in the cavity of a dry branch. March 1938.

Formicinae

1 *Brachymyrmex heeri* Forel

A colony of 3 winged adults and 35 workers in a root-node cavity, Christiansted, September 1935. Adults foraging, Oxford. April 1935. Small colony beneath a rock, Grange streamway. A small colony beneath scaling bark, Collins. July 1938.

2 *Brachymyrmex* sp.

Swarming winged adults in flight at dawn, Blessing. February 1936. Adults foraging, LaGrange. June 1943.

3 *Prenolepis (Nylanderia) fulva* Mayr

Foraging adults were taken about the edge of a small pool, Blessing, July 1935. Feeding on fruit of *Cactus intortus*, Sight. July 1936.

4 *Prenolepis (Nylanderia) vividula* Nylander

Foraging adults. July 1935.

5 *Prenolepis (Nylanderia) longicornis* Latreille

Colony of 50 winged adults and 500 workers beneath a log on the sandy beach, Watch Ho. September 1938.

6 *Prenolepis (Nylanderia)* sp.

Adults taken foraging, La Grange. December 1937.

7 *Camponotus sexguttatus* Fabr

Colony of 300 adults, eggs and pupae, in the cavity of a dry branch, Constitution Hill. April 1935. Colony of pupae and eggs, 75 workers and 18 winged adults, beneath scaling bark. September 1938.

8 *Camponotus* sp.

Colony of 300 in a hollow stump, Green Cay Islat. January 1936.
Colony in decaying log, Prosperity. May 1937. A colony of pupae
and eggs, 200 workers and 18 winged adults, beneath a rotting log
resting in sand, Coakley Bay (semi-arid). May 1938.

9 *Myrmelachista ramulorum* Wheeler

Adults taken foraging on mangroves, Krause Lagoon. May 1935.

10 *Rhizomyrma* sp.

Winged adult captured in flight at dusk, Constitution Hill, October
1937.

Sphecoidea

BEMBECIDAE

Determinations by G. A. Sandhouse.

1 *Bembex muscicapa* Handlirsch

Taken at tunnels in sandy soil. August 1936.

2 *Stictia signata* Linn.

Predaceous on *Hermetica illucens*, *Trichopoda* sp, *Lucilia* sp. Tunnels
in sandy soil. September 1936.

SPHECIDAE

1 *Notogonidea trifasciata* Smith

Det. K. V. Krombein. September 1936.

2 *Notogonidea vinulenta* Cresson

Det. K. V. Krombein. September 1939.

3 *Notogonidea* sp.

Det. K. V. Krombein. September 1939.

4 *Tachytes argentipes* Smith

Det. K. V. Krombein. July 1937.

5 *Prionyx thomae* Fabr.

Det. K. V. Krombein. August 1936.

6 *Tachysphex* sp.

Det. G. A. Sandhouse. August 1937.

7 *Ammobia singularis* F. Smith

Det. G. A. Sandhouse. Males and females taken from tunnels in
soil, Adventure. August 1936.

Vespoidea

SCOLIIDAE

1 *Myzine ephippium* Fabr.

Det. G. A. Sandhouse. August 1937.

2 *Campsomeris dorsata* Fabr.

Det. G. A. Sandhouse. September 1937.

PSAMMOCHARIDAE

1 *Pepsis rubra* Drury

Det. J. Bequaert. Tunnels in limestone cliffs. August 1935.

2 *Batazonus mundiformis* Rohwer

Det. K. V. Krombein. July 1936.

3 *Planiceps* sp.

"Probably new." Det. K. V. Krombein. September 1937.

VESPIDAE

1 *Polistes crinitus insulicola* Beq. & Sal.

Det. J. Bequaert. Predaceous on small lepidopterous larvae. Nesting in October 1935.

2 *Mischocyttarus phthisicus* Fabr.

Det. J. Bequaert. Nests October 1935.

EUMENIDAE

1 *Pachodyneurus (Monobiella) cinerascens* Fabr.

Det. J. Bequaert. Tunnels in limestone cliffs, July 1935. Predaceous on lepidopterous larvae.

2 *Odyneurus* sp.

Det. K. V. Krombein. July 1935.

Apoidea

HALICTIDAE

1 *Halictus busckii* Cockerell

Det. K. V. Krombein. June 1936.

2 *Halictus* sp.

Det. K. V. Krombein. July 1936

3 *Halictus* sp.

Det. K. V. Krombein. July 1936.

ANTHOPHORIDAE

1 *Centris poecila* Lepelletier

Det. G. A. Sandhouse. October 1937.

2 *Centris versicolor* Fabr.

Det. K. V. Krombein. October 1937.

3 *Exomalopsis globosa* Fabr.

Det. K. V. Krombein. September 1936.

4 *Anthophora krugii* Cresson

Det. K. V. Krombein. August 1936.

EUCERIDAE

1 *Melissodes trifasciata* Cresson

Det. K. V. Krombein. June 1935.

MEGACHILIDAE

Determinations by G. A. Sandhouse.

1 *Coelioxys abdominalis* Guérin

July 1936.

2 *Megachile binotata* Guérin

On flowers. August 1936.

3 *Megachile flavifarsata* Smith

On flowers. August 1936.

XYLOCOPIDAE

1 *Xylocopa brasilianorum* Linn.Det. K. V. Krombein. Tunnels in dry stump of *Hippomane
mancinella*. September 1935.

BRACHYURAN CRABS OF ST. CROIX, V. I.

By HARRY A. BEATTY

In a paper on the brachyuran crabs, "Scientific Survey of Porto Rico and the Virgin Islands," Vol. XV, part 1, 1933, Rathbun recorded 47 species from St. Croix. The Beatty collection was brought together during 1933 to 1938. It catalogs 53 species, of which 37 are new records, and raises the number of crabs reported from the island to 68 species, distributed among 50 genera and 13 families. The collection was donated to the National Museum, and the author is indebted to Waldo L. Schmitt for making the determinations.

It is quite well known that the transference of living organisms from a salt-water environment to another of purely fresh water will produce fatal functional results. Yet, here we are confronted with an adaptation by organisms to suit their caprices, we concede this since there are no other compelling forces in evidence, the Fairplain complex presents a field of such unreasonable surprises.

Let us voyage up the streamway, beginning at the seacoast, picking up such things as *Callinectes sapidus acutidens*, *Panopeus herbstii forma crassa*, *Pachygrapsus transversus* in the mossy shallows. The waters around us is teeming with fish, including such forms as the mullet, cramo, snook, heddo, yellowtail and tarpon. As we travel along upstream, preferably in a batteau, we notice that the water is rapidly changing, and throughout the transition from salt to fresh we find *Panopeus* clinging to clumps of moss enveloping the roots of the mangrove (*Avicenia* sp.); *Callinectes* can be coaxed up from the deep to the water's edge by a mash prepared from crushed land crabs (*Cardisoma guanhumi*). We are now half of the way to the bridge, which is six hundred yards from the sea, the stream at this point is six feet deep, the dark brown liquid is about twenty-five per cent salt water. Beyond this point the stream bed is ascending, the water freshens rapidly, and is from one to three feet in depth. It is impossible to send the batteau against the current, so from here we must wade, by-passing many sizable pools between banks fringed with black mangroves (*Rhizophora*); until the bridge forms a barrier, where the stream cascades over a high pavement. Here, in contrast, the water is fresh and clear. We are more than ever eager to explore; so overboard another generous offering of mash and up comes *Callinectes sapidus acutidens*, *C. bocourti*, to be tricked into a net. In the evening we can surprise *Callinectes* at the water's edge, audibly snapping its chela at passing shrimps, and making occasional captures. Now, wading in along the pools and turning up the larger rocks there, again you see *Panopeus herbstii forma crassa*, *Pachy-*

grapsus transversus and *P. gracilis* hurriedly shifting themselves to hide in the gravelly bed. From the pools, frightened mullet, cramo, snook and tarpons dart downstream. In the becalmed back-wash of the flow small heddo and yellowtails are poised motionless in readiness to pounce upon unwary victims. Here, also, roams the delicate little pipefish *Doryrhamphus lineatus* (E. Reid).

And there is another picture of nature at her best.

MAJIDAE

- 1 *Stenorynchus sagittarius* Fabr.
On moss covered coastal rocks. Christiansted harbor.
- 2 *Anomalothir furcillatus* Stimpson
115 fathoms.
- 3 *Euprognatha gracilipes* A. M. Edwards
Frederiksted harbor.
- 4 *Acanthonyx petiverii* H. M. Edwards
Frederiksted harbor, in moss.
- 5 *Espialtus bituberculatus* H. M. Edwards
Shallows, in moss. Salt River.
- 6 *Menaethiops portoricensis* Rathbun
Frederiksted harbor, shallows, moss.
- 7 *Trachymaia cornuta* A. M. Edwards
82 fathoms.
- 8 *Chorinus heros* Herbst
In moss, Salt River.
- 9 *Pitho Iherminieri* Schramm
- 10 *Mithrax (Mithrax) acuticornis* Stimpson
12-45 fathoms.
- 11 *Mithrax (Mithrax) holderi* Stimpson
- 12 *Mithrax (Mithrax) pilosus* Rathbun
4 fathoms, in fish traps.
- 13 *Mithrax (Mithrax) hispidus* Herbst
4 fathoms, in fish traps.
- 14 *Mithrax (Mithrax) caribbaeus* Rathbun
Frederiksted harbor.
- 15 *Mithrax (Mithrax) pleuracanthus* Stimpson
15 fathoms, off Coakley Bay.
- 16 *Mithrax (Mithraculus) sculptus* Lamarck
Coastal rocks, Judith Fancy Bay.
- 17 *Mithrax (Mithraculus) coryphe* Herbst
Shallows, moss, Frederiksted harbor.

- 18 *Mithrax* (*Mithraculus*) *forceps* A. M. Edwards
15 fathoms, Coakley Bay.
- 19 *Teleophrys ornatus* Rathbun
4 fathoms.
- 20 *Macrocoeloma diplacanthum* Stimpson
- 21 *Macrocoeloma eutheca* Stimpson
37 fathoms.
- 22 *Microphys bicornutus* Latreille
Shallows, moss, Judith Fancy Bay.

PARTHENOPIDAE

- 1 *Solenolambrus tenellus* Stimpson
35 fathoms.
- 2 *Heterocrypta* sp.
Moss, Frederiksted harbor.

PORTUNIDAE

- 1 *Portunus* (*Achelous*) *sebae* H. M. Edwards
2 fathoms, Christiansted harbor.
- 2 *Callinectes sapidus acutidens* Rathbun
At bridge, Fairplain stream.
- 3 *Callinectes ornatus* Ordway
Shallows, Salt River Bay.
- 4 *Callinectes marginatus* A. M. Edwards
Shallows, Salt River Bay.
- 5 *Callinectes bocourti* A. M. Edwards
At bridge, Fairplain stream.
- 6 *Callinectes exasperatus* Gerstaecker
4 fathoms, Christiansted harbor.

POTAMONIDAE

- 1 *Epilobocera sinuatifrons* A. M. Edwards
Caledonia stream.

If *sinuatifrons* communicate among themselves by subterranean signals then there is a measure of eager anticipation awaiting the patient student who would decipher the code. The crab may shelter beneath rocks and within cracks by day, and often prepares its own hole in loose soil, but, always, it is found in shaded mountain streams. Comes nightfall, and the patient listener is suddenly thrilled to a muffled drumming: tat tat tat, tat. Tat, tat, tat, tat, and so continuing for many long minutes. Presently a reply comes from across the way and thereafter the signals come drifting in from numerous points. The manner by

which the sound is produced remains unknown but apparently it is made before coming into the open, although roaming crabs might be expected to carry on. Any attempt on the part of the listener to draw closer conveys a warning as, also, a beam of light and instantly the signals fade into the tranquility of the jungle's shadows.

XANTHIDAE

- 1 *Carpilius corallinus* Herbst
5 fathoms, off the north coast.
- 2 *Actaea setigera* H. M. Edwards
Shallows, moss, Frederiksted Harbor.
- 3 *Actaea rufopunctata nodosa* Stimpson
70 fathoms.
- 4 *Actaea acantha* H. M. Edwards
Shallows, moss, Frederiksted harbor.
- 5 *Leptodius floridanus* Gibbs
Shallows, under rocks, Salt River Bay.
- 6 *Xantho* sp.
Near nudipes. Shallows, Green Cay Islet.
- 7 *Panopeus herbstii* H. M. Edwards
Shallows, Salt River Bay.
- 8 *Panopeus herbstii forma crassa* A. M. Edwards
In moss and beneath rocks, Fairplain stream below bridge.
- 9 *Panopeus herbstii forma simpsoni* Rathbun
Moss, Frederiksted harbor.
- 10 *Panopeus occidentalis* Saussure
- 11 *Panopeus bermudensis* Benedict & Rathbun
3 fath. Christiansted harbor.
- 12 *Eurypanopeus abbreviatus* Stimpson
- 13 *Micropanope sculptipes* Stimpson
15 fathoms.
- 14 *Micropanope lobifrons* A. M. Edwards
80 fathoms.
- 15 *Micropanope pusilla* A. M. Edwards
17 fathoms.
- 16 *Micropanope urinator* A. M. Edwards
245 fathoms.
- 17 *Micropanope barbadensis* Rathbun
Shallows, moss, Frederiksted harbor.
- 18 *Chlorodiella longimana* H. M. Edwards
- 19 *Pilumnus marshi* Rathbun
- 20 *Pilumnus reticulatus forma fragosa* A. M. Edwards

21 *Ozius reticulatus* Desbonne & Schramm

Shallows, Judith Fancy Bay:

22 *Eriphia gonagra* Fabr

CYMOPOLIIDAE

1 *Cymopolia affinis* A. M. Edwards

115 fathoms.

2 *Cymopolia sica* A. M. Edwards

20 fathoms.

3 *Cymopolia angusta* Rathbun

117 fathoms.

4 *Cymopolia depressa* Rathbun

117 fathoms.

GRAPSIDAE

1 *Grapsus grapsus* Linn

Shallows, under rocks, Green Cay.

2 *Geograpsus lividus* H. M. Edwards

Shallows, under rocks; Green Cay.

3 *Goniopsis cruentata* Latreille

Green Cay.

4 *Pachygrapsus transversus* Gibbs

Shallows, Salt River Bay. Under rocks, Fairplain stream below bridge.

5 *Pachygrapsus gracilis* Saussure

Under rocks, Fairplain stream, bridge.

6 *Pachygrapsus corrugatus* Von Martens

Shallows, Judith Fancy Bay.

7 *Sesarma (Holometopus) ricordi* H. M. Edwards

Along the coast.

8 *Sesarma (Holometopus) angustipes* Dana

Along the coast.

9 *Cyclograpsus integer* H. M. Edwards

Shallows, Judith Fancy Bay.

10 *Plagusia depressa* Fabr

About mangroves near swamps.

11 *Percnon gibbesi* H. M. Edwards

GECARCINIDAE

1 *Cardisoma guanhumi* Latreille

Common land crab.

THE FRESH WATER FISHES OF ST. CROIX, V. I.

By HARRY A. BEATTY

Of the numerous small streams which seam the island from the highlands to the seacoast only a few of them, under normal conditions, maintain running water throughout the year. Nevertheless, the finny tribes inhabiting them survive the drought in some miraculous way and with the rains they again reappear in the form of larval fishes to populate the streams. This is particularly true of *Sicydium plumieri* which can be seen hovering near her eggs which are attached to the sheltered side of a rock in swift running water. This beautiful little fish, of steel-blue with white fins, will desert her spawn with the greatest reluctance when disturbed but will return immediately to stand guard. The determinations in the paper were made by Earl D. Reid and a few by the writer. The specimens are deposited in the U. S. National Museum.

GINGLYMOSTOMIDAE

1 *Ginglymostoma cirratum* Gmelin

Nurse-shark frequently seen in the slightly brackish waters of Fairplain stream a quarter mile from its entrance into the sea.

MYLIOBATIDAE

2 *Aetobatus narinari* Euphrasen

Small specimens are often seen in the slightly brackish waters of Fairplain stream.

ANGUILLIDAE

3 *Anguilla bostonensis*

Det. E. D. Reid. During the winter months the larval eel, which is about two inches in length, can be seen migrating upstream in Fairplain, Concordia and Caledonia streams.

ELOPIDAE

4 *Tarpon atlanticus* Cuvier & Valen

Large specimens enter the slightly brackish waters of Fairplain stream a quarter mile from the sea.

ALBULIDAE

5 *Albula vulpes* Everman & Marsh

In South Gate Pond; water brackish.

POECILIIDAE

6 *Lebistes reticulatus*

Common in all streams and reservoirs. Omnivorous in feeding habits.

SYNGNATHIDAE

7 *Doryrhamphus lineatus*

Det. E. D. Reid. Taken in Fairplain stream, below bridge. Feed on minute aquatic creatures. Rare.

MUGILIDAE

8 *Mugil brasiliensis* Everman & Marsh

Enters fresh-water streams.

9 *Mugil curema* Everman & Marsh

Enters fresh-water streams.

10 *Agonostomus monticola* Everman & Marsh

Det. E. D. Reid. A species that is never abundant but has an extremely interesting life cycle which requires investigation. It would be of interest to explain how streams that have become dust beds and may remain in that condition for as many as three successive years can become populated with minute larval fish about three months after inundation by heavy rainfall. This species subsists entirely on animal matter.

CENTROPOMIDAE

11 *Centropomus undecimalis* Everman & Marsh

Common in the waters of Fairplain stream. Feeds on animal matter.

GOBIIDAE

Det. E. D. Reid

12 *Philypnus dormitor* Everman & Marsh

Taken in Altona, Concordia and Fairplain streams.

13 *Dormitator maculatus* Bloch

Shoys Marsh, Fairplain stream. Feeds on animal matter.

14 *Sicydium plumieri* Bloch

Caledonia stream. Feeds on moss.

15 *Evorthodus lyricus*

Caledonia and Fairplain streams. Feeds on moss.

16 *Awaous taiasica* Everman & Marsh

Fairplain and Concordia streams.

2 *Ucides cordatus* Linn

Rare, Morningstar swamp.

3 *Gecarcinus lateralis* Freminville

Along the coast.

4 *Gecarcinus ruricola* Linn.

Green Cay Islet.

OCYPODIDAE

1 *Ocupode albicans* Bosc

Common along the beach.

2 *Uca mordax* Smith

At Tagus Pond, Krause Lagoon, Longpoint pond.

3 *Uca pugnax rapax* Smith

Is found near fresh and brackish water generally, Fairplain stream, Rust-op-twist pond, and at Salt pond close to a spring.

LEUCOSIIDAE

1 *Lithadia granulosa* A. M. Edwards

115 fathoms.

CALAPPIDAE

1 *Calappa flammea* Herbst

Fish traps at 3 fathoms, Christiansted harbor

2 *Calappa angusta* A. M. Edwards

Fish trap, 3 fathoms, Christiansted harbor.

3 *Calappa gallus* Herbst

Fish traps, 3 fathoms, Christiansted harbor.

4 *Osachila antillensis* Rathbun

67 fathoms.

DORIPPIDAE

1 *Cymonomus quadratus* A. M. Edwards

100 fathoms.

DROMIIDAE

1 *Dromia erythropus* G. Edwards

30 fathoms off Buck Island.

2 *Dromidia antillensis* Stimpson

Frederiksted harbor.

HOMOLIDAE

1 *Homologenus rostratus* A. M. Edwards

580 fathoms.

THE MAMMALS OF ST. CROIX, V. I.

By HARRY A. BEATTY

The mammalian fauna was very poorly represented on St. Croix. Of 8 recorded species, 3 of them, *Capromys*, *Isolobodon* and *Dasyprocta*, became exterminated during historic times, and probably were influenced directly by the destruction of the original forests. The dispersal over the island of the three extinct species and their importance in the Carib economy is borne out by the abundance of remains found in kitchen middens. Later, followed the introduction of 4 species of exotic animals. The arrival of *Rattus* is unrecorded. The mongoose was thought to be the answer to the sugar cane planter's prayer for an efficient enemy of the rats which had overrun the plantations, becoming an important pest and doing considerable damage to the crops annually. Amid much ceremony and well wishing 3 pairs of mongoose were liberated on the island in 1867. There is evidence that the rats have been considerably reduced but they are yet here and still a serious pest, along with the mongoose. The deer was brought in from the continent by the captain of a trading schooner about the year 1790.

I am indebted to Alexander Wetmore for determinations of the fossil material and to Geret S. Miller, Jr., for the identifications of bats. Remington Kellogg very kindly arranged the orderly presentation of the nomenclature and identified the mongoose and the deer. The *Muridae* was determined by the writer.

Class MAMMALIA

Subclass Eutheria

Order CHIROPTERA (Bats)

Family NOCTILIONIDAE

1 *Noctilio leporinus mastivus* Dahl

I think this is one of the most highly odorous of the bats and a keen olfactory can detect the pungent musk as the animal passes by even though it may be fifty feet away. It would be unusual to find *Noctilio* in the woods but a trip to the nearest body of water, whether it is a pool, a large dam or in a quiet bay, will reveal the aptness with which it can pick up insects and small fish on the surface. For the purpose it has developed a skin pouch controlled by the hind limbs and whatsoever is scooped up is quickly transferred to the mouth and as the creature continues in graceful flight a distinct crunching sound can be heard as the food is chewed in powerful jaws. This bat is rare.

Family PHYLLOSTOMIDAE

1 *Brachyphylla cavernarum* Gray

Small colonies seek shelter in old buildings in disuse or cluster together in dense tree tops. Common.

2 *Artibeus jamaicensis jamaicensis* Leach

This bat is often found in sizable colonies sheltering in old buildings side by side with *Brachyphylla* but the two species do not intermingle. Little bunches of five or ten can be seen hanging from the fronds of the coconut palm or in trees with heavy foliage. The female is often seen flying at dusk with her young clutching to the fur on her abdomen. A common species.

Family MOLOSSIDAE

1 *Molossus major* Kerr

This the most common bat on the island can be seen at dusk high in the air, pursuing flying insects. During daylight it secretes itself in crevices and more often in the dark ceilings in houses. Both sexes have a musk gland beneath the chin and its strong pungent odor pervades its haunts.

Order CARNIVORA

Family VIVERRIDAE (Mongoose)

1 *Herpestes javanicus auropunctatus* Hodgson

The impact of this vicious little predator upon the avian fauna is reflected in the rapid numerical decrease of ground-nesting birds, notably the Bobwhite (*Colinus virginianus*), after its introduction into the island from India, via Jamaica, in 1867. It has become well dispersed; its habits are very simple and my recent studies have shown that it can be eradicated from the island. That it is an exceedingly healthy little beast is shown in an intensive search for diseased material which, so far, has been unsuccessful but it is pestered by fleas (*Ctenocephalides felis*) and an insatiable appetite. It begins its day hunting for lizards on the dew-laden grasses at dawn and may climax it with a bird or two at setting of the sun. As an omnivorous feeder it is notorious and is fond of live reptiles, snails, insects and small animals as well as decomposing tissue and ripe fruits. During the mating season a den is prepared in a hollow log or other natural cavity and there a pair of kittens is born in July-August. The mongoose rarely climbs into trees and will haunt the borders of a pond in its search for crabs and dead fish. Erik Lawaetz tells a story

of how his attention was attracted to a tall tree by the squeaking of a rat. He saw a mongoose rummaging in the bulky leaf nest of a rat when suddenly the rat ran out and quickly reentered. This was followed by agonizing squeaks after which the rat lurched from the nest and fell to the ground twenty-five feet below. It had been injured by the mongoose, but dragged itself into the dense underbrush and was lost. The mongoose presently emerged from the rat's nest and, as Erik says, "was licking his chops." From the behavior of both the rat and the mongoose it is probable that young rats in the nest were the victims. But the mongoose has its trials too for one day I saw a hawk (*Buteo jamaicensis jamaicensis*) pick up a half-grown young from atop a rock pile. Similar occurrences have been related by the hill folks.

Order RODENTIA

Family MURIDAE

1 *Mus musculus musculus* Linnaeus

Common in the fields and woods, and about dwellings. No parasites have been recorded from this mouse.

2 *Rattus rattus alexandrinus* Geoffroy

Tree rat. The nest of the tree rat is a familiar sight in the woods. It is constructed of green leaves that are loosely held together by the small branches clustered at the end of a limb; saplings and vines offer the best sites. But this rat is at home equally in the lagoons where the large bulky nest is placed in the small mangrove clumps often growing in isolated spots and the rat must swim to and fro on foraging expeditions. This nest is usually three feet in diameter and while the outside is quite dry, the core is always being replenished, almost nightly, with fresh green leaves. A test has shown that considerable humidity and a marked thermal increase are released by bacterial action on the green vegetable matter, creating an environment that must be essential to the physical comfort of the animal. When a nest is disturbed the rats flee instantly, plunging into the water and swimming below for twenty feet before surfacing.

3 *Rattus norvegicus* Berkenhout

House rat. The common rat about buildings. It is notorious for the destruction of chickens and small mammals, as well as doing wide-spread damage to stored produce. The nest is constructed of any thing available and the preferred location is in a tree hole, in boxes in the cellar or in burrows in the ground.

Family ECHIMYIDAE (Spiny Rats)

1 *Capromys* sp.

Skeletal material has been recovered from the kitchen middens in Carib settlements located in the western two thirds of the island which was heavily forested at the time.

2 *Isolobodon* sp.

Kitchen middens also yielded the only evidence known of the occurrence of the animal in the island.

Family DASYPROCTIDAE (Agoutis)

1 *Dasyprocta aguti* Linnaeus

There are no recent records of the agouti in St. Croix but it is yet found in the forests on some neighboring islands. Kitchen midden material indicates that it was abundant during the Carib era, and the wide extent to which it was used as food. The passing of the agouti from the island is, probably, simultaneous with the destruction of the heavy forests during historic times and it became an easy prey of hunting dogs.

Order ARTIODACTYLUS

1 *Odocoileus virginianus* subsp.

This form of the North American white-tailed deer has become happily adjusted to its environment on St. Croix, following its introduction in 1790. There is abundant evidence of its physical stamina and the examination of carcasses for internal parasites have yielded only the adult worms of *Cysticercus tenuicollis* which were attached to the mesenteries. This worm also has been reported from sheep in the island.

The deer is subjected to infestations with the cattle tick, *Boophilus annulatus microplus*. During a campaign devised for the extermination of this tick from the island the deer, it was agreed, was host to the tick and therefore a potential menace to the cleanup program and so was destined for a vigorous campaign of slaughter. In the course of the first twelve month period approximately one thousand two hundred deer were killed and many of them were carefully examined. All domestic animals, meanwhile, were subjected to dipping in arsenical solutions. At the close of the twelve month period I checked my field notes and observed that deer killed six months after dipping had begun were entirely tick-free and this record was maintained unmarred up until such time as the project was discontinued. Later, by a careful analysis of all the accumulated data, I was able to arrive at conclusions as following. It is wholly unnecessary to eradicate the deer on St. Croix in any attempt to make the island tick-free. The

only expedient suggested is an effort aimed at reducing the deer first to a numerical low level by increased hunting pressure and thereafter to maintain a continual movement of the deer in every section of the island. This could best be accomplished by a crew of beaters with dogs. By this method, the deer is not allowed to bed down in a favorite haunt which would be naturally infested with seed ticks. By frustrating the instinct of the seed tick to attach itself to a warm blooded host it will perish from the lack of nourishment within thirty days. Other stray ticks picked up by domestic animals were killed by dipping.

The rutting season for deer begins in June and is persistent until about September. The length of the gestation period is undetermined and it may be 120 days. The fawning season is from November to February when twins are born to the matured does and a single fawn is dropped by the young doe. The sex ratio of fawns is predominantly female and it is uncertain whether a set of twins will be of mixed or similar sexes. There is some evidence to bear out the belief that similar sexes, rather than the exception, is nearer the rule. The buck sheds his antlers during September-November and it is nothing unusual to see several of them ranging together at that time. The new antlers reach maturity about six months later. The yearling buck sprouts his spike horns at 7-8 months of age at a time when the fur is assuming the brown spotless coat of the adult. The exceptions at variance with this data are the records of fawns born in every month of the year. The post-seasonal fawning rate appears to be quite low, and is in itself a biological phenomena already observed among members of this family in the tropics. However, it is suspected that yearling does are principal offenders in these instances.