NOTES ON THE BATS COLLECTED BY WILLIAM PALMER IN CUBA.

By Gerrit S. Miller, Jr.,
Assistant Curator, Division of Mammals.

Two important collections of Cuban bats have recently been made by Mr. William Palmer, of the United States National Museum. The first, numbering 449 specimens, was brought together during February, March, April, May, June, and July, 1900, in the region south and west of Habana, and on the Isle of Pines. During this expedition Mr. Palmer was accompanied by Mr. J. H. Riley. The second collection, 184 specimens, was made in February, 1902, at the extreme eastern end of Cuba. Fifteen species were obtained in all, several of which prove to be of unusual interest. In the following account of this material the field observations made by Mr. Palmer are given in full, each note signed with its author’s name.

VESPERTILIO CUBENSIS (Gray).

1897. Vesperilolo fuscus cubensis Miller, North American Fauna, no. 13, p. 102, October 16, 1897.

A skin from Pinar del Rio and a specimen in alcohol, and one skin each from El Guama and El Cobre. The three skins show that the color of the Cuban animal is practically identical with that of the large Mexican Vesperilolo miradoirensis. It is therefore much darker than in V. fuscus. For measurement see table, page 338.

Field notes.—One of the few species seen flying at dusk. Besides the five specimens taken, three or four others were seen. One was captured in a net set at the eaves of a tile roof. Others were seen about tobacco houses and palm trees. One was netted in the center of a natural rock tunnel, which was the home of a barn owl, a bird that fed largely on bats.—W. Palmer.

\(^a\) The localities at which bats were taken are as follows: Cabañas, El Guama, Guanajay, Mariel, Pinar del Rio, and San Diego de los Baños on the mainland, and Nueva Gerona on the Isle of Pines.

\(^b\) Exact localities, Baracoa and El Cobre.

NYCTICEIUS CUBANUS (Gundlach).


1897. Nycticeius humeralis cubanus Miller, North America Fauna, no. 13, p. 120, October 16, 1897.

Twenty-six specimens (16 skins) from Pinar del Rio, and one skin from Cabanas. This series makes a satisfactory comparison of the Cuban Nycticeius with its mainland representative for the first time possible. The Cuban animal proves to be, as Gundlach's description indicates, considerably smaller than Nycticeius humeralis, but in color the two species are identical, and in external form the only difference that I can detect is the slightly less breadth of the ear and tragus in N. cubanus. The skull and teeth are conspicuously smaller in the Cuban bat, but in form there appears to be perfect agreement. For measurements see table below.

Field notes.—The specimens from Pinar del Rio were all taken from the eaves of a tiled roof where several species of bats of different genera spent the day. In the evening they usually began to fly when it was quite dark, so that one was seldom seen on the wing. The single specimen from Cabañas was captured in a ruined house.—W. Palmer.

Measurements of Vespertilio cubensis, Nycticeius cubanus, and N. humeralis.

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For additional measurements, please refer to the original text.
MOLOSSUS TROPIDORHYNCHUS Gray.


Fourteen skins and eleven alcoholic specimens from Pinar del Rio, and five (3 skins) from El Cobre. This is the Cuban representative of *MoIossus obscurus*. It is readily distinguishable from the South American species by its much smaller size. For measurements see table, page 340.

Field notes.—Probably the most abundant of the species living together under a tile roof at Pinar del Rio. Like the others they emerge suddenly from their roosting place very late in the dusk of evening, and after flitting a few times about the roof are gone. At El Cobre the specimens were likewise collected under the tiles of a roof.—W. Palmer.

PROMOPS GLAUCINUS (Wagner).


One specimen (in alcohol) was taken under a tile roof at Pinar del Rio, February 27, 1900. For measurements see table, page 340.

NYCTINOMUS MUSCULUS Gundlach.


Three in alcohol and five skins from El Guama, one skin from Cabañas, and one (in alcohol) from Pinar del Rio.

This species is readily distinguishable from both *Nyctinomus basi- liensis* and *N. cynocephalus* by its small size, the character pointed out by Gundlach in the original description. A further peculiarity of the Cuban animal, apparently shared by all the West Indian members of the group, is the minute size and rudimentary structure of the first upper premolar. In the continental species this tooth is well developed and provided with a distinct cingulum, while in the insular forms it is a mere terete spicule. For measurements see table, page 340.

Field notes.—Occasionally seen about dark among the hard limestone hills of the mountainous districts. Here it spends the day in the smaller crevices of the caves, with *Artibeus parripes*. We could find none during the day, although the *Artibeus* was common and conspicuous, but by closing all but one of the entrances to a cave and hanging a fine net over this opening at night we usually obtained one or more of these little bats the next morning. The specimen from Cabañas was captured in a house.—W. Palmer.
Measurements of Cuban *molossus*.

| Name                  | Locality | Number | Sex | Total length | Tail | Ears | Forearm | First digit | Second digit | Third digit | Fourth digit | Fifth digit | Ear from manus | Ear from crown | Width of ear |
|-----------------------|----------|--------|-----|--------------|------|------|---------|-------------|--------------|-------------|-------------|-------------|-------------|---------------|--------------|-------------|
| *Molossus tropidochapus* | Pinar del Rio | 103760 | Male | 88.31 | 10.2 | 7.8 | 34.0 | 6.0 | 35 | 69 | 54 | 38 | 11.0 | 8.0 | 11.6 |
| Do                    | do       | 103763 | do   | 89.32 | 11.0 | 8.0 | 34.0 | 6.0 | 34 | 69 | 53 | 37 | 11.0 | 9.0 | 12.0 |
| Do                    | do       | 103762 | Female | 87.30 | 11.0 | 7.6 | 34.0 | 6.2 | 34 | 69 | 53 | 37 | 11.0 | 9.0 | 13.0 |
| Do                    | do       | 103764 | do   | 86.29 | 10.0 | 7.6 | 33.5 | 6.0 | 34 | 69 | 51 | 37 | 11.0 | 9.0 | 12.0 |
| Do                    | do       | 103756 | do   | 88.33 | 10.0 | 7.6 | 33.0 | 6.0 | 33 | 66 | 49 | 35 | 10.0 | 8.4 | 12.0 |
| Do                    | do       | 103766 | do   | 87.32 | 10.4 | 7.6 | 34.0 | 6.4 | 34 | 67 | 52 | 37 | 12.0 | 9.0 | 13.0 |
| Do                    | do       | 103767 | do   | 84.31 | 10.4 | 7.6 | 33.4 | 6.0 | 34 | 67 | 50 | 37 | 11.0 | 9.0 | 13.0 |
| Do                    | do       | 103768 | do   | 86.31 | 10.0 | 7.6 | 33.0 | 6.0 | 35 | 66 | 50 | 36 | 11.0 | 8.0 | 12.0 |
| Do                    | do       | 103769 | do   | 90.31 | 10.6 | 7.4 | 44.0 | 6.2 | 34 | 68 | 51 | 37 | 12.0 | 8.0 | 13.0 |
| *Plecotus graviorius*   | El Guama | 103827 | Male | 133.49 | 20.0 | 14.0 | 59.0 | 9.0 | 61 | 115 | 87 | 60 | 25.0 | 16.4 | 24.0 |
| Do                    | do       | 103775 | do   | 81.28 | 10.0 | 8.0 | 38.0 | 7.0 | 37 | 72 | 58 | 37 | 12.0 | 8.0 | 12.0 |
| Do                    | do       | 103776 | do   | 89.29 | 10.4 | 8.4 | 40.0 | 6.8 | 38 | 75 | 58 | 39 | 12.0 | 8.0 | 12.0 |
| Do                    | do       | 103777 | Female | 86.31 | 11.0 | 8.0 | 33.0 | 6.6 | 37 | 71 | 54 | 37 | 12.0 | 8.0 | 12.0 |
| Do                    | do       | 103778 | Female | 86.34 | 12.0 | 8.8 | 39.0 | 6.6 | 37 | 70 | 55 | 38 | 12.0 | 8.0 | 12.0 |
| Do                    | do       | 103779 | Female | 89.33 | 12.0 | 8.6 | 38.0 | 7.0 | 36 | 70 | 54 | 37 | 12.0 | 8.0 | 12.0 |
| Do                    | do       | 103772 | do   | 86.30 | 10.4 | 7.6 | 33.5 | 6.4 | 37 | 72 | 59 | 39 | 16.0 | 11.0 | 16.0 |
| Do                    | do       | 91.35 | do   | 87.66 | 11.0 | 7.6 | 35.0 | 6.8 | 36 | 73 | 60 | 39 | 17.0 | 12.0 | 17.0 |
| Do                    | do       | 103773 | Male | 83.30 | 11.0 | 7.6 | 35.0 | 6.8 | 37 | 71 | 58 | 40 | 16.4 | 12.4 | 16.4 |
| Do                    | do       | 103774 | do   | 87.31 | 12.0 | 7.6 | 35.0 | 6.0 | 35 | 73 | 60 | 39 | 16.0 | 12.0 | 16.0 |
| Do                    | do       | 103778 | do   | 83.30 | 11.0 | 7.6 | 35.0 | 6.8 | 37 | 71 | 58 | 40 | 16.4 | 12.4 | 16.4 |

**CHILONATALUS MICROPUS** (Dobson).


A single specimen (in alcohol) was taken at Baracoa. It is in bad condition, but there is no question as to its generic identity. For measurements see table, page 343.

**Field notes.**—This little bat, the only one of the kind that I found in Cuba, was captured in a butterfly net after dark on the evening of February 6, 1902, as it emerged from a cave in company with many other bats of other species. Its identity was not noticed at the time, and it was hurriedly placed, while yet alive, in a bag with other bats. Later it was found that one of the others, probably an *Artibeus*, had bitten its body in two. None of the people to whom I showed it had ever seen so small a bat.—W. PALMER.

**NYCTIELLUS LEPIDUS** (Gervais).


An adult female (skin and skull) was taken at Nueva Gerona, Isle of Pines, on July 11, 1900. For measurements, see table, page 343.
This specimen shows that the genus *Nycticellus*, founded by Gervais for the reception of his *Vespertilia lepidus*, is distinct from *Natalus*, with which it is commonly united. *Nycticellus lepidus* is a small bat about equal to *Pipistrellus hesperus* or *Thyroptera discifera* in size, though of more slender, delicate form than either of these. The legs are proportioned to the body about as in the two animals just mentioned, and therefore show none of the elongation characteristic of the posterior extremities in *Natalus*. The ear is small in size and simple in structure, closely resembling that of *Pipistrellus hesperus* in general outline, though somewhat shorter and broader. The anterior border of the ear conch arises directly over the eye, therefore slightly farther forward than in *Natalus*, and the posterior border terminates behind base of tragus instead of noticeably in front. As a result the ear opens outward with scarcely a trace of the peculiar funnel form noticeable in the other members of the family *Natalidae*. The tragus, however, appears to be much like that of *Natalus*. So far as can be determined from the dried specimen the lips are simple and there is no glandular outgrowth on forehead. Color, light raw-sienna throughout, the dorsal surface distinctly clouded with sepia.

Skull (Plate IX, fig. 2) essentially as in *Natalus*, but with brain case reduced in size and rostrum so greatly broadened that the lachrymal width is nearly equal to the width of brain case above roots of zygomatica. A suggestion of this broadening of the rostrum is found in *Natalus tumidirostris*, though in this animal the general proportions of the *Natalus* skull are not departed from. Dentition as in *Natalus*, but anterior premolar, both above and below, smaller than in any species of the genus with which I am acquainted. In the upper jaw this tooth is distinctly smaller than the outer incisor.

**Field notes.**—About a dozen were seen, late in the evenings, along the shore of the river at Nueva Gerona, Isle of Pines. This bat flies very low, about bushes, and close to buildings. Therefore, it is rarely seen for more than an instant as it rises against a light background. All efforts to shoot one were unsuccessful, but one was finally captured in a butterfly net as it was traversing the length of a porch.—W. Palmer.

**CHILONYCTERIS BOOTHI** Gundlach.


Four specimens (2 skins) from Baracoa. These, as I have recently pointed out, differ from the Jamaican *Chilonycteris parvelli* in the noticeably less crowding of the lower premolars. In the Jamaican animal the first lower premolar is in contact with the third and the
second is crowded quite out of the tooth row on lingual side. In C. boothi the first premolar is separated from the third by a distinct interval, in which lies the slightly displaced second. Otherwise the two species appear to be closely similar. For measurements see table, page 343.

Field notes.—Four specimens were obtained at the mouth of the cave near Baracoa, described under the next species. They did not emerge until well after dark, and none were captured while any trace of daylight remained.—W. Palmer.

CHILONYCTERIS MACLEAYII Gray.


Eight (6 skins) from Guanajay and fifty (6 skins) from Baracoa.

In both series, as shown by the table of measurements (page 343), a larger and smaller form may be distinguished, the differences between which are fairly constant and quite independent of age and sex. Mr. Oldfield Thomas, who kindly compared some of Mr. Palmer's skins with the type in the British Museum, writes me that the name was originally based on a large specimen.

Field notes.—At Guanajay this was evidently a rare species. We found it in only one locality, a deep, damp cave in Guanajay Mountain, where it lived in company with thousands of Phyllonycteris poeyi. The white bat was somewhat readily captured with a dip net, and occasionally, but rarely, we secured a specimen of the smaller animal.

A few miles east of Baracoa, on a broad, well-wooded hill, is a hole in the porous limestone some 8 feet in diameter and 20 in depth. At the bottom, on one side, is the opening to a cave which extends an unknown distance, as I could find no one who had ever explored it. At the time of my visits, late on two afternoons, a slight column of mist was rising from the openings, showing that it was a damp cave similar to the one visited at Guanajay. Leading to the mouth of the cave is an irregular trough in the surface of the rock. This extends some distance back into the woods, and shows that the cave furnishes the natural drainage for the immediate region. The people living near knew of the existence of three kinds of bats in great abundance in this cave. Armed with an ordinary butterfly net, during two evenings I was able to secure no less than 142 bats, representing six species (Chilonatalus micropus, Mormoops cinnamomea, Chilonycteris boothi, C. macleayii, Monophyllus cubanus, and Phyllonycteris poeyi), as they emerged from the perpendicular opening. Before dark, while there was still light enough to see distinctly, the small Chilonycteris began to come out, at first singly or a few at a time, often hesitating and returning below again for another effort, then in greater num-
bers, and finally, as it became darker, in an almost continuous stream, so that with a few quick sweeps of the net it was possible to secure several specimens. At first no other species occurred with them, but as the gloom thickened and it became impossible to see the bats other kinds emerged and were captured by random strokes of the net.—W. Palmer.

Measurements of *Chilonatalus*, *Nyctiellus*, *Chilomastix*, and *Mormoops*.

| Name                | Locality    | Number   | Sex   | Total length | Tail | Ears | Wing | Foot | Forearm | First digit | Second digit | Third digit | Fourth digit | Fifth digit | Ears from mouth | Ears from crown | Width of ear |
|---------------------|-------------|----------|-------|--------------|------|------|------|------|---------|-------------|--------------|-------------|--------------|-------------|-------------|---------------|----------------|-------------|
| *Chilonatalus*      | Baracoa    | 113724   | Female|               | 20.0 | 8.0  | 32.0 | 4.0 | 33      |             |              |             |              |              |              |               |               |             |
| micropus            | Baracoa    | 113764   | Male  |              |      |      |      |      |         |              |              |             |              |              |              |               |               |             |
| *Nyctiellus*        | Nueva Gerona | 103898  | do    |              | 66.27 | 13.0 | 6.0  | 29.6| 4.0    | 25.47       | 35           | 35          | 10.0         | 9.0          |              |               |               |             |
| *Chilomastix*       | Baracoa    | 113767   | Male  |              | 83.22 | 20.0 | 10.0 | 52.4| 7.0    | 43.87       | 68           | 66          | 23.0         | 18.0         | 14.0         |              |               |             |
| bechlii             | Baracoa    | 113768   | do    |              | 83.21 | 20.0 | 10.0 | 52.0| 7.0    | 43.90       | 68           | 67          | 24.0         | 18.0         | 13.0         |              |               |             |
| *Chilomastix*       | Guanajay   | 108913   | do    |              | 66.21 | 16.1 | 8.0  | 42.2| 5.4    | 38.76       | 54           | 51          | 17.4         | 15.0         | 10.0         |              |               |             |
| macroglossi         | Guanajay   | 108914   | do    |              | 70.22 | 16.0 | 9.0  | 41.6| 6.0    | 38.74       | 55           | 52          | 18.0         | 15.0         | 10.0         |              |               |             |
| *Mormoops*          | Baracoa    | 113777   | Female|              | 65.19 | 15.0 | 8.0  | 36.4| 5.8    | 33.64       | 46           | 43          | 16.0         | 12.0         | 9.0          |              |               |             |
| cinnamomea          | Guanajay   | 108912   | do    |              | 67.20 | 15.6 | 8.0  | 40.6| 6.4    | 37.74       | 54           | 50          | 16.0         | 12.0         | 9.0          |              |               |             |
| *Chilotis*          | Guanajay   | 108913   | do    |              | 65.19 | 15.0 | 8.0  | 36.4| 5.8    | 33.64       | 46           | 43          | 16.0         | 12.0         | 9.0          |              |               |             |
| *Chilomastix*       | Baracoa    | 113778   | Female|              | 60.20 | 14.8 | 8.0  | 37.5| 5.1    | 35.66       | 48           | 44          | 16.0         | 12.0         | 9.0          |              |               |             |
| *Mormoops*          | Baracoa    | 113776   | Male  |              | 65.19 | 16.0 | 8.0  | 38.3| 5.6    | 34.63       | 46           | 43          | 16.0         | 12.0         | 9.0          |              |               |             |
| cinnamomea          | Baracoa    | 113785   | do    |              | 63.23 | 16.0 | 7.0  | 36.4| 5.8    | 33.64       | 46           | 43          | 16.0         | 12.0         | 9.0          |              |               |             |
| *Mormoops*          | Baracoa    | 113786   | do    |              | 64.19 | 15.0 | 8.0  | 36.7| 6.0    | 32.65       | 46           | 46          | 16.0         | 13.0         | 9.0          |              |               |             |
| *Mormoops*          | Baracoa    | 113787   | do    |              | 61.20 | 16.0 | 7.0  | 35.7| 6.0    | 32.65       | 46           | 46          | 16.0         | 13.0         | 9.0          |              |               |             |
| cinnamomea          | Baracoa    | 113788   | do    |              | 64.19 | 15.0 | 7.8  | 36.7| 6.0    | 32.65       | 46           | 46          | 16.0         | 13.0         | 9.0          |              |               |             |
| *Mormoops*          | Baracoa    | 113789   | do    |              | 60.20 | 17.4 | 7.0  | 42.4| 6.0    | 41.77       | 55           | 58          | 18.0         | 14.0         | 9.0          |              |               |             |
| cinnamomea          | Baracoa    | 113790   | do    |              | 68.21 | 16.0 | 8.0  | 42.4| 5.0    | 39.76       | 52           | 51          | 19.0         | 14.0         | 9.0          |              |               |             |
| *Mormoops*          | Baracoa    | 113791   | do    |              | 69.20 | 17.4 | 8.0  | 42.2| 6.0    | 40.74       | 53           | 51          | 18.0         | 14.0         | 9.0          |              |               |             |
| cinnamomea          | Baracoa    | 113792   | do    |              | 68.20 | 17.0 | 9.0  | 42.4| 6.0    | 39.71       | 52           | 50          | 18.0         | 15.0         | 10.0         |              |               |             |
| *Mormoops*          | Baracoa    | 113762   | do    |              | 78.30 | 19.0 | 8.0  | 45.0| 6.4    | 41.84       | 61           | 55          | 21.0         | 16.0         | 10.0         |              |               |             |
| cinnamomea          | Baracoa    | 113763   | Female|              | 75.27 | 19.0 | 9.0  | 41.0| 6.0    | 43.86       | 61           | 54          |             |              |              |              |               |               |             |
| *Mormoops*          | Baracoa    | 113764   | do    |              | 78.26 | 19.0 | 8.0  | 45.0| 7.0    | 42.82       | 62           | 55          | 21.0         | 16.0         | 10.0         |              |               |             |
| cinnamomea          | Baracoa    | 113765   | do    |              | 82.32 | 19.0 | 9.0  | 44.0| 6.0    | 43.86       | 63           | 58          | 10.0         | 8.0           | 11.0         |              |               |             |
| *Mormoops*          | Baracoa    | 113766   | do    |              | 81.29 | 19.0 | 8.0  | 44.0| 6.0    | 42.92       | 60           | 55          | 21.0         | 15.0         | 10.0         |              |               |             |

MORMOOPS CINNAMOMEA (Gundlach).


Five specimens (3 skins) from Baracoa. These have been recorded by Mr. Rehn in his recent revision of the genus *Mormoops*. I can see no necessity, however, for applying to this well marked form a trinomial name. For measurements see table above.
Field notes.—Among the 142 bats captured in two evenings at the mouth of the cave described in my account of *Chilonycteris macleayi* were five of this species. They were among the last to leave the cave as none were taken while it was light enough to see the orifice.—W. Palmer.

**MACROTUS WATERHOUSII** Gray.


Eight specimens from the following localities: Guanajay, 3 (1 skin); El Cobre, 2 (1 skin); Nueva Gerona, Isle of Pines, 3 (2 skins).

In the absence of the material required for a revision of the West Indian forms of *Macrotus* the Cuban species may stand as *M. waterhousii*. The reasons for rejecting the generic name *Otopterus* have been given by Dr. F. W. True in Harrison Allen's Monograph of the Bats of North America (p. 33, March 14, 1894).

Field notes.—Two were driven out of a large cave, inhabited principally by *Artibeus*, on Guanajay Mountain, April 27, 1900, and captured in a dip net. While in the net one of these gave birth to a single young.

On the Isle of Pines a large cave was visited on the mountain side near Nueva Gerona, July 5, 1900. We were told that an abundance of bats had often been seen there, but all our efforts could frighten out only five, three of which were this species.

The only ones seen in eastern Cuba were captured in an old runway of a copper mine at El Cobre. They were with many individuals of *Artibeus*, and in the dim light of our lamps it was difficult to detect and capture the smaller species.—W. Palmer.

**MONOPHYLLUS CUBANUS** Miller.


Fifty-six specimens were taken at Baracoa. For measurements see table, page 346.

Field notes.—This bat was abundant in the damp cave described under *Chilonycteris macleayi*. It was the second species to leave the cave, and in numbers was probably about equal to the *Chilonycteris*. It is a strong, muscular bat, and very hard to kill, especially when one is in a great hurry, as we were during our visits to the cave.—W. Palmer.

**PHYLLONYCTERIS POEYI** Gundlach.


Two hundred and twenty-six (74 skins) from a cave near Guanajay, four skulls found in owl pellets at El Guama, and twenty-six specimens (7 skins) from Baracoa. For measurements see table, page 346.
As may be seen from the figure (Plate IX) Gundlach's description of
of the noseleaf and canear of this bat was correct. Dobson's suggestion
that the type was mutilated is therefore quite unwarranted. Unfortu-
nately P. sekelorni is still unrepresented in recent collections, though
related forms are known from the Bahamas, Jamaica, Santo Domingo,
and Porto Rico. No representative of P. poeyi has been taken outside
of Cuba.

In color the skins are so uniform that the description of one will
answer for the entire series. Fur everywhere grayish white, the
hairs of crown and back distinctly washed with clay color at tip, those
of the shoulders very slightly so; on under parts the wash is pale
cream-buff, with a suggestion of ecru-drab. Ears and membranes
light brown, the outermost phalanges and neighboring portion of
membrane whitish. Throughout the pelage, but more particularly
on the back, the hairs have a silky texture which produces silvery
reflections in certain lights.

Field notes.—Very abundant in a wet, ill-ventilated cavern on Guan-
ajay Mountain. On entering this cave, the vertical opening of
which, about 12 feet across, was concealed by bushes, we descended
about 25 feet, and were then standing some 20 feet above the lowest
level. The slight noise which we made disturbed the bats in the inner
chambers, and we could distinctly hear the rumbling made by their
wings. As we proceeded this sound increased, until, when we reached
the inner and thickly populated chambers, it became a grand, rushing,
roar of thousands on thousands of wildly flying animals. To reach the
inner chamber it was necessary for us to descend from the first landing
to the real floor of the cavern, and there light our candles, for not a
ray of light and very little fresh air penetrated so far. From the
floor we worked our way over many guano-covered, damp bowlers
and through arches and narrow passages up to a sloping shelf, where,
owing to the low roof, a man could not stand upright. By this time the
bad air and excessive warmth was telling on us, and we were in a most
profuse perspiration. The bats were now thoroughly aroused, and the
noise of their wings was astounding. Many were darting out through
the passage by which we had entered. Placing our candles where they
would be somewhat protected and partially blocking some of the open-
ings with nets, we began swinging a dip net in every direction, trusting
to chance to secure specimens. About fifteen minutes of such work
usually resulted in the capture of 20 to 30 bats, nearly all of this species,
and also in our complete exhaustion, our clothing soaked with per-
spiration and filth and our lungs scarcely able to breath in the foul air.
By this time the bats would have passed into inner chambers and inac-
cessible recesses where very few could be followed and taken. Before
June 7, all the females were big with a single young, but after this


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date we found the pink, almost hairless little ones of different sizes hanging to the roof and scattered over much of its surface. On our last visit, late in June, the cave was so hot as to be unbearable. This bat was not seen at Pinar del Río, but from pellets of the Cuban barn owl we procured several skulls.

Among the specimens captured at the mouth of the damp cave near Baracoa (described under *Chilonycteris macleayi*) were many of this species. It was among the last to leave the cave, and we were quite unable to see them as they emerged, depending on chance and rapid movements of the net to secure them. On one side of the vertical opening of this cave grew a large tree whose roots descended like a stream into the cavity. The people of the neighborhood assured me that the majas (the Cuban boa, *Epicrates angulifer*) coil themselves among these roots and grab at the bats as they fly out. I was told that a snake frequently secures a bat in this manner.—W. PALMER.

Measurements of *Monophyllus* and *Phyllostomus*.

| Name | Locality | Number | Sex | Total length | Tail | Ears | Forearm | First digit | Second digit | Third digit | Fourth digit | Fifth digit | Ear from crown | Ear from base | Width of ear |
|------|----------|--------|-----|--------------|------|------|---------|------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|------------|
| *Monophyllus cubensis* Baracoa... 113674 Male... | 67 | 8.16 | 11.0 | 11.0 | 11.1 | 10.4 | 35 | 80 | 57 | 50.13 | 11.4 | 7.6 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 34 | 81 | 60 | 55.13 | 11.0 | 8.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 30 | 79 | 60 | 51.14 | 11.0 | 9.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 10.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 11.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 12.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 13.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 14.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 15.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 16.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 17.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 18.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 19.0 |
| Do... | 67 | 9.0 | 17.0 | 11.0 | 11.0 | 11.1 | 36 | 80 | 57 | 51.14 | 11.0 | 20.0 |

*Phyllostomus acutus* Guanayajuy. 106358 Male... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 10.0 |
| Do... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 11.0 |
| Do... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 12.0 |
| Do... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 13.0 |
| Do... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 14.0 |
| Do... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 15.0 |
| Do... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 16.0 |
| Do... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 17.0 |
| Do... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 18.0 |
| Do... | 82 | 9.0 | 16.0 | 11.0 | 11.0 | 11.1 | 31 | 74 | 56 | 49.14 | 11.0 | 19.0 |
NOTES ON CUBAN BATS—MILLER.

BRACHYPHYLLA NANA Miller.


A single imperfect skull was found in an owl pellet procured at El Guama.

*Field notes.*—In a little valley at El Guama, among the mountains north of Pinar del Rio, is a rocky mass through which the waters of the valley once flowed, leaving now a large opening through which a man can readily walk. It is a favorite custom of the bats to fly through this opening, and a net placed there often entangled a specimen or two, though it failed to secure this species. A Cuban barn owl had its roosting place on a small shelf of rock, and on the ground beneath were many disgorged pellets. These contained the bones of several species of birds, numerous rats (*Mus alexandrinus*), and a few bats, among them a single skull of this species.—W. Palmer.

ARTIBEUS PARVIPES Rehn.


One hundred and seventy specimens from the following localities: El Guama, 26 (14 skins); Pinar del Rio, 1; San Diego de los Baños, 17 (7 skins); Guanajay, 83 (32 skins); Mariel, 8 (4 skins); Nueva Gerona, Isle of Pines, 1; Baracoa, 11 (4 skins); El Cobre, 23 (3 skins).

The Jamaican material at hand is not sufficiently extensive to furnish a satisfactory basis for comparison of the Cuban specimens with true *Artibeus jamaicensis*, but I see no reason to question Mr. Rehn's conclusions. For measurements see table, page 348.

*Field notes.*—In western Cuba this is the commonest bat; found everywhere in the limestone caves of the mountains, where they can be seen hanging from the roof singly or in bunches. One was caught in a net placed over the edge of a tile roof at Pinar del Rio, where it had spent the day with many individuals of other species. These bats are also common in places remote from caves, as in the dilapidated warehouses at Mariel and Calona, on the north and south coasts, respectively. Two were found in a cave on a mountain side on the Isle of Pines. We saw none of these bats roosting in trees, but they evidently capture much of their food among flowering trees, as their fur often contains pollen and parts of flowers. These are also found abundantly on the floors of caves where the bats roost.

In eastern Cuba *Artibeus parvipes* is common in all the arder rock openings about Baracoa, but it does not occur in the damp cave.
described under *Chilomycteris macleayii*. At El Cobre it is a common inhabitant of the old runways and shafts of the copper workings. It rarely emerges until after dark, but several were one evening seen to leave a cave on a hillside and return after a short trip abroad. Their flight is strong, and one often hears the rush of their wings as they swiftly curve by in the darkness.—W. Palmer.

Measurements of *Artibens pareipes*.

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<th>Fourth digit</th>
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<th>Ear from crown</th>
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EXPLANATION OF PLATE.

Fig. 1. *Phyllomycteris poei* Gundlach. Adult male, No. 103527, collected at Guanajay, Cuba.


2. Skull of *Nycetilus lepidus* (Gervais). Adult female, No. 103898, collected at Nueva Gerona, Isle of Pines.

3. Skull of *Natalus mexicanus* Miller. Adult female, No. 102509, collected at Morelos, Mexico.
SOME CUBAN BATS.

FOR EXPLANATION OF PLATE SEE PAGE 348.