

SMITHSONIAN MISCELLANEOUS COLLECTIONS

VOLUME 82, NUMBER 5

MAMMALS EATEN BY INDIANS, OWLS, AND
SPANIARDS IN THE COAST REGION OF
THE DOMINICAN REPUBLIC

(WITH TWO PLATES)

BY

GERRIT S. MILLER, JR.

Curator, Division of Mammals, U. S. National Museum



(PUBLICATION 3030)

CITY OF WASHINGTON
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(WITH TWO PLATES)

In February and March, 1928, I visited the Samaná Bay region, northeastern Dominican Republic with the special object of obtaining remains of mammals in the Indian deposits that had been previously examined by Gabb in 1869-1871 and Abbott in 1916-1923. I was accompanied by Mr. H. W. Krieger, who had charge of the strictly ethnological side of the work. Together or separately we obtained material from six localities: four on the south shore of Samaná Bay; one, Anadel, near Samaná town, on the north shore of the bay; and one, a large Indian site at the mouth of the Río San Juan, on the Atlantic coast, across the peninsula from Samaná.¹ Mr. Krieger returned alone the following winter and revisited the places that we had previously worked. He also made excavations in two village sites not far from Monte Cristi at the northeastern extremity of the Republic.

At all of these localities we obtained many bones of mammals from the heaps of Indian refuse. Only once, however, in a lateral recess about half way up the sloping floor of the cave that occupies most of the islet of San Gabriel, off the south shore of the bay, did we find an owl-made deposit of extinct mammals. Here, as at St. Michel, Haiti, the small living barn owl had plentifully bestrewn the surface with dejecta containing bones of bats, small birds, and the introduced European rats and mice. Immediately beneath its surface the cave floor material was intermingled with the bones of the larger native rodents that had been devoured by the great extinct owl. This deposit was not more than two feet deep, and, unlike the kitchenmidden lying in the lower level of the cave, it was considerably hardened

¹ A general account of this work was published in *Expl. and Field-Work Smithsonian Inst.*, 1928, Smithsonian Publ. No. 3011, pp. 43-54, March 22, 1929.

by infiltrated lime drip. Other owl deposits of the same kind may have once existed in the neighboring caves, but if so, they all appear to have been removed years ago by guano diggers. The specimens that we obtained in these caves and village sites form the subject matter of the present paper.

While no hitherto unknown species are represented in our collections the material proves to be of much interest. It throws additional light on the characters and distribution of the two species of *Plagiodontia* that I recognized in 1927 as occurring in the Dominican Republic (Proc. U. S. Nat. Mus., Vol. 72, Art. 16, pp. 1-8, Sept. 30, 1927); it furnishes the means to identify all four of the native mammals, the hutia, the quemi, the mohuy and the cori, that Oviedo said were habitually eaten by both natives and Spaniards during the early years of the sixteenth century; and finally it shows beyond the possibility of reasonable doubt that this recently extinct fauna included a ground sloth.

The identity of only two of the mammals that Oviedo ascribed to the island of Hispaniola remains to be determined—the “dumb dog” and the indigenous rat. The few dog bones collected appear to differ in no way from the corresponding parts of European dogs, and there is nothing to prove that they represent the native breed. Hence the status of the famous “perro mudo,” the dog that was unable to bark, is still as much of a mystery as ever. Equally obscure is the question as to whether or not there were rats on the island at the time of its discovery. Oviedo relates that on inquiring into this matter he found those who told him that “mures ó ratones” did in fact then exist; a circumstance that appeared to him quite believable because these animals were so well known to be generated, like flies, mosquitoes, wasps, and grubs, anywhere, out of any kind of putrifying matter, a not unnatural belief at the time when he wrote, more than 125 years before Francisco Redi had published his “*Esperienze Intorno Alla Generazione Degli Insetti.*” Nevertheless our search has failed to reveal a trace of rats or mice other than the European species that could have easily been brought by the Spaniards on their ships. After enumerating the specimens that we obtained I shall return to the subject of Oviedo’s mammals in greater detail.

DESCRIPTION OF COLLECTING STATIONS

1. *Railroad cave.*—A large cave situated about 15 minutes walk inland along the abandoned railroad on the south shore of San Lorenzo Bay. There is an extensive kitchenmidden at the entrance. I was not able to find any trace of a bone deposit made by the extinct owl,

though pellets of the living bird were abundant in one of the chambers.

This may be the "Cueva del Templo" of Rodriguez (Geografia fisica, politica e historica de la Isla de Santo Domingo o Haiti, p. 367, Santo Domingo City, 1915).

2. *Boca del Infierno*.—Two large caves, one in each of the projecting points at the locality marked Pta. de Boca del Infierno on the Hydrographic Office chart of Samaná Bay.

The larger cave is in the smaller, inner point. It has been extensively worked for guano, but some of the original floor material remains. Near the outer entrance there is a small kitchenmidden. A few leg bones of extinct rodents were found in this cave, but no skulls or jaws.

At the inner entrance to the other cave we found the remnant of a kitchenmidden left intact by the guano diggers. From this deposit we unearthed bones of both the "quemi" and the ground sloth, mammals whose remains have not been found elsewhere among the Indian refuse.

These caves appear to be, respectively, the "Boca del Infierno" and the "Cueva del Infierno" of Rodriguez. It is probable that in one or the other of them Gabb collected the bones of *Plagiodontia* that I recorded in 1916.

3. *San Gabriel*.—An islet about two miles west of Boca del Infierno. Most of its interior is occupied by a large cave, the floor of which slopes rather steeply upward from an opening on the south side facing the shore to another on the north side overlooking Samaná Bay. There is a large kitchenmidden near the lower entrance, and a deposit made by the extinct owl on the left side of the passage leading up to the north aperture.

4. *Rio Naranjo Abajo*.—A kitchenmidden was found on a nearly level rock ledge, perhaps one-fourth acre in extent, on a key lying about half a mile east of the stream mouth.

These four localities are all on the south shore of Samaná Bay in the region known as the Playa Honda coast. Rodriguez describes the caves under the general title: "Cuevas de los Haitís."

5. *Anadel*.—A large village site at a stream mouth on the north shore of Samaná Bay about $1\frac{1}{2}$ miles east of Santa Bárbara de Samaná.

6. *Rio San Juan*.—Another large village site on the Samaná Peninsula. It lies at the point where the Rio San Juan flows into the Atlantic Ocean, almost directly north of Santa Bárbara de Samaná.

7 and 8. *Kilometer 2 site and Kilometer 4 site*.—Two very extensive village sites in the foothills of the mountains southeast of Monte Cristi. Both of these localities differ from those in the Samaná Bay region in being situated in the semiarid portion of the island.

LIST OF MAMMALS COLLECTED

NESOPHONTES PARAMICRUS Miller

Railroad cave.—Humerus, 1.

San Gabriel (owl deposit).—Mandibles, 3; humeri, 4; femora, 6; innominate, 1.

It is impossible to determine whether or not the presence of the humerus in the Railroad cave kitchenmidden indicates that *Nesophontes* was eaten by the Indians. In this cave such a bone might as well have been dropped by an owl as by a man.

NESOPHONTES HYPOMICRUS Miller

San Gabriel (owl deposit).—Mandibles, 4; humerus, 1; femur, 1; innominate, 1.

The remains of both species of *Nesophontes* agree perfectly in size and other characters with topotypes from St. Michel, Haiti.

SOLENDON PARADOXUS Brandt

Railroad cave.—Perfect right humerus, 1.

Naranjo Abajo.—Mandible, 1; distal half of left humerus, 1.

Rio San Juan.—Mandible, 1.

Kilometer 2 site.—Distal half of humerus, 1.

These specimens do not differ in any way from the corresponding parts of the living animal. Their presence in three widely separated kitchenmiddens is sufficient indication that *Solenodon* was customarily eaten by the Indians.

EPTESICUS HISPANIOLAE Miller

MACROTUS WATERHOUSII WATERHOUSII Gray

ARTIBEUS JAMAICENSIS JAMAICENSIS Leach

A few remains of these common Dominican bats were found in the owl deposit in San Gabriel cave.

CANIS FAMILIARIS Linnaeus

Kilometer 2 site.—Right mandible, immature, 1; both mandibles of a very young individual, 1 pair; separate milk pm⁴, 1; adult m², 2 (not from same individual); adult canine, 1; adult incisor, 1; auditory bulla, 1; vertebrae, 8; ribs, 2; fragments of pelvis, 4 (representing at least 2 individuals); tibia, proximal end, 1; tibia, distal end (probably of another individual), 1; calcanea, 2 (opposites); astraga-

lus, 1 (apparently belongs with the calcanea); metapodials, 9; imperfect scapula, 1; ulna, 1; radius (perfect) 1; radius (proximal end only), 1.

The remains pertain to at least two adult dogs and two puppies. Taking the radius (total length 127.6 mm.) scapula, and teeth as guides, the animal must have been about the size of a Scotch terrier whose skeleton is now in the National Museum, No. 21997 (total length of radius 120.2 mm.).

I am unable to find characters in any of these specimens that suggest specific or racial peculiarities as compared with domestic dogs of European origin or with pre-Columbian dogs from either North or South America. Furthermore, as the middens near Monte Cristi yielded bones of both pig and cow, there is no reason to suppose that the dog had any other than European origin. The apparent absence of dog bones from all the other deposits of Indian refuse is a clear indication that the natives did not habitually use these animals as food.

CERCOPITHECUS ? sp. ?

Plate 2, fig. 4

Naranjo Abajo.—Distal end of tibia, 1.

The well preserved distal end (42 mm.) of a monkey's tibia was found among the miscellaneous long bones dug from the kitchen-midden on the Naranjo Abajo key. The exact level at which it lay was not determined. In state of preservation the bone is essentially like the rodent leg bones from the same deposit.

I cannot identify this fragment with the corresponding part of any American primate, chiefly because the shaft of the bone, immediately above the articular enlargement is too robust. By this character the fragment (pl. 2, fig. 4) can at once be distinguished from specimens of *Cebus* (pl. 2, fig. 6) *Ateles*, and *Alouatta*, the only common genera containing species large enough to approach it in size. When compared with *Cercopithecus* (pl. 2, fig. 5), however, the discrepancy is less obvious, though I have not been able to find an African tibia that I should regard as certainly pertaining to the same species. As members of this genus were early introduced into the Lesser Antilles I am inclined to believe that the monkey of the Naranjo Abajo key had been brought over alive before the Indians abandoned the coast of Samaná Bay.

BROTOMYS VORATUS Miller

Plate 1, fig. 3

Railroad cave.—Skull, lacking braincase and all teeth except pm⁴, 1; fragments from interorbital region, 2; mandibles, 7.

Boca del Infierno.—Humerus, 1.

San Gabriel (owl deposit).—Lower incisor, 1; humeri, 3.

San Gabriel (culture deposit).—Mandible, 1.

Naranjo Abajo.—Right side of palate with pm^4 and m^1 in place, 1; mandibles, 3.

Anadel.—Mandibles, 14.

Rio San Juan.—Right side of palate with all four teeth in place, 1; fragment of premaxilla with incisor in place, 2; mandibles, 43.

Kilometer 2 site.—Right premaxilla and anterior portion of palate with pm^4 in place, 1; palate with all the alveoli and pm^4 left and pm^4 and m^1 right in place, 1. Left side of palate with alveoli of all four teeth, 1; mandibles, 61.

Kilometer 4 site.—Mandibles, 16.

The frequency with which the bones of this animal occur in the Indian deposits indicates that *Brotomys* must have been abundant and generally distributed in pre-Columbian days. It was probably much like the living South American spiny-rats in size and general form, but with heavier, less elongated head. I have little doubt that this animal was the mohuy described by Oviedo as the most eagerly sought for of the native edible quadrupeds (see p. 13).

This material agrees in all essential features with the original specimens from San Pedro de Macoris and with those that have been collected in the Haitian cave deposits. Except for individual peculiarities that appear to be due to age the jaws are very constant in all their characters. I can detect no differences between those collected in the humid Samaná Bay region and those from the semiarid country near Monte Cristi.

In one jaw from Kilometer 2 site, the premolar is in a stage of wear to show that the small enamel "lake" usually present in the anterior lobe of the crown is the remnant of a reentrant fold penetrating from the outer side of the tooth.¹ In two others from Rio San Juan, the lake has been joined to the tip of the anterior inner reentrant fold, while in one specimen from the same locality, the crown, though not excessively worn, shows no trace of the anterior "lake," its pattern thus resembling that of the molars.

ISOLOBODON PORTORICENSIS Allen

Plate 1, fig. 6

Railroad cave.—Imperfect skulls, 4; left half of rostrum, 1; right premaxillary with incisor, 1. Left half of palate, without teeth, 1; right half of palate, m^1 in place, 1; mandibles, 20.

¹ An even better specimen in the same stage was collected by Arthur J. Poole in the small cave near St. Michel, Haiti.

Boca del Infierno.—Imperfect palate with left m^2 in place, 1; mandibles, 7.

San Gabriel (culture deposit).—Palate, 1; fragment of left premaxilla with incisor, 1; mandibles, 3.

Naranjo Abajo.—Palate with right m^2 in place, 1; upper molar of a larger individual, 1; mandibles, 3.

Anadel.—Palate with all teeth, 1; fragments of rostrum with incisor, 5; occipitals, 1; mandibles, 41. Numerous odd teeth.

Rio San Juan.—Broken skull, 1; complete palate with all teeth, 1; palate lacking left m^3 , 1; fragments of palate, 9; fragments of rostrum with incisor, 10; mandibles, 184.

Kilometer 2 site.—Imperfect skull, 1; fragments of palate, 3; mandibles, 10.

ISOLOBODON LEVIR (Miller)

Plate 1, fig. 5

San Gabriel (owl deposit).—Imperfect skulls, 2; palate with right molars in place, 1; separate maxillary teeth, 2; mandibles, 13.

Kilometer 2 site.—Palates and fragments, 21; mandibles, 281.

These specimens agree with the original series from caves near St. Michel, Haiti, and differ obviously from the remains of *Isolobodon portoricensis* recovered from the kitchenmiddens in the Samaná region. Among 15 jaws selected for large size, the length of mandible from articular process ranges from 44.6 to 48 mm., height of ascending ramus through articular process from 20.6 to 23 mm., and alveolar length of toothrow from 16 to 17.6 mm. In 11 jaws of *I. portoricensis* from the San Juan River, also selected for large size, the extremes of the same measurements are respectively 50 to 52.6 mm., 24 to 26.6 mm. and 19 to 20.8 mm.

After examining the entire series of Santo Domingan *Isolobodon* remains I am still as unable to distinguish the large form from the Porto Rican *I. portoricensis* as I was in 1918 on the basis of the very few specimens then collected. It seems improbable that such a distribution could exist without human intervention. No other species of rodent has been found to be common to the two islands and no species could be expected to remain constant in two areas that have been separated as long as these two land masses. Finally, Porto Rico and the eastern part of the Dominican Republic, together with the Virgin Islands, where the same large *Isolobodon* also occurred, are in a region known to have been freely traded over by pre-Columbian man in his sea-going canoes. It must be admitted, however, that the hypothesis of human transportation meets with a difficulty

not easy to dispose of, namely, the fact that no *Plagiodontia* or *Brotomys* seems to have been carried in the opposite direction to Porto Rico or the Virgin Islands.

At only two localities have the large and small forms of *Isolobodon* thus far been found together, in the kitchenmidden at the Kilometer 2 site near Monte Cristi and in San Gabriel cave. In the kitchenmidden the remains of the two were mingled together—ten jaws of the large animal among a total of 290. In the cave they occurred separately—the large animal in the culture deposit at the main (south) opening, the small one in the owl deposit near the middle of the long, ascending passage that leads up to the aperture facing north. All the bones in the owl deposit have the appearance of much greater age than those in the midden. The material in which they were found is heavily and uniformly impregnated with lime, while that in the midden, like that in the human deposits in all the neighboring caves, shows no such infiltration except at spots where actual drip from the ceiling is now taking place. The presence of *Aphætreus montanus* among the owl refuse may also be an indication of greater age, as this rodent has not yet been found in any midden, though it is the second most common species in the owl-made cave deposits near St. Michel, Haiti.

On the assumption that *Isolobodon portoricensis* was introduced by man in the Samaná Bay region, these facts would be explained by supposing that the San Gabriel owl deposits were formed before the importation of this larger species and the subsequent extermination of the smaller indigenous form. The process of replacement of the smaller animal by the larger would have afterward become so complete throughout the Samaná region that no remains of the native species have been found in the deposits left by the Indians. Extending its range westward, *Isolobodon portoricensis* would have just begun to establish itself near Monte Cristi when both it and the Indians became extinct.

APHÆTREUS MONTANUS Miller

San Gabriel (owl deposit).—Mandibles, 3.

These specimens show no peculiarities as compared with jaws from the type locality, near St. Michel, Haiti.

No bones of *Aphætreus* have yet been found in any culture deposit.

PLAGIODONTIA ÆDIUM F. Cuvier

Plate I, fig. 2

Anadel.—Imperfect skulls, 2; fragments of palate, 2; mandibles, 20; odd teeth, 9.

Rio San Juan.—Rostrum with incisors and first two cheekteeth, 1; fragments of premaxilla with incisor, 1; mandibles, 30; odd teeth, 25.

Kilometer 2 site.—Fragments of palate, 2; complete mandible, 1; fragments of mandibles, 2; odd teeth, 3.

Kilometer 4 site.—Fragment of palate, 1; mandibles, 6; odd teeth, 5.

PLAGIODONTIA HYLÆUM Miller

Plate I, fig. 1

Railroad cave.—Imperfect skulls, 2; right side of rostrum with incisor, 1; palate lacking m^3 of both sides, 1; mandibles, 4.

San Gabriel (owl deposit).—Mandible, 1 young; left lower incisor, adult, 1.

The specimens now at hand enable me to confirm the original diagnosis of *Plagiodontia hylæum* and also to add two important characters.

That the living animal is decidedly smaller than *Plagiodontia ædium* is abundantly shown by comparison of the skulls and jaws from Guarabo and the south shore of Samaná Bay with the remains of the larger animal collected on the Samaná peninsula and near Monte Cristi. The 12 jaws of *P. hylæum* whose measurements are given in the original description range from 51 to 55.2 mm. in length. An additional specimen from the Railroad cave is slightly imperfect but its length must have been about 51 mm. One mandible of *P. ædium* from San Pedro de Macoris was recorded as slightly more than 62 mm. long. Unfortunately most of the jaws from the Samaná Peninsula are injured at one end or the other, so that their length cannot be determined, but two from Anadel give measurements of approximately 61 and 62 mm. A measurement that is more useful, because mandibles are seldom so badly broken that it cannot be taken, is the depth from the alveolar margin to the protuberance made by the root of pm_4 . In 10 jaws of *Plagiodontia ædium* this depth averages 16.3 mm. with extremes of 15.4 and 17.4 mm. In an equal number of jaws of the smaller animal the average depth is 13.2 mm., the extremes 12.2 and 14.0 mm. Similarly obvious and constant is the difference between the alveolar length of mandibular tooththrow in the two species. Ten specimens of each give the following averages and extremes: *P. hylæum*, 19.8 mm. (18.6 to 20.6 mm.); *P. ædium*, 24.2 mm. (23.2 to 25.4 mm.).

The most important character brought to light by the new material is, however, the difference in relative length of the first and second maxillary cheekteeth. In *Plagiodontia hylæum* the crown length in-

creases gradually and rather uniformly from the fourth tooth to the first; in *P. ædium* there is the same gradual increase from fourth to second, and then an obviously and abruptly greater increase from second to first (see pl. 1, figs. 1 and 2). The relative lengths of the first and second teeth, measured along the median line of the grinding surface is as follows in seven specimens of each species: *P. hylæum*, pm⁴, average 6.1; m¹, average 5.1; ratio of premolar to molar 119.8; *P. ædium*, pm⁴, average 7.6; m¹, average 5.6; ratio of premolar to molar 135.7.

CAPROMYS PILORIDES Desmarest

Plate 1, fig. 4

San Gabriel (culture deposit).—Complete nasals and turbinates, 1; right mandibles (all toothless), 5; upper incisors, 2.

These specimens were found near together in the San Gabriel kitchenmidden at a depth of about three feet. They do not differ from the corresponding parts of Cuban skulls of *Capromys pilorides* in any way that I can discover. Consequently I have no doubt that the animals to which they pertained were brought to the cave as food, either by the Indians or by early European sailors.

QUEMISIA GRAVIS Miller

Plate 2, fig. 3

Boca del Infierno.—Distal half of right femur, 1; proximal extremity of left ulna, 1.

Both fragments (pl. 2, fig. 3) were found at a depth of about four feet in the kitchenmidden near the south entrance to the outermost of the two caves.

As compared with the corresponding part in the Porto Rican *Elasmodontomys* the distal extremity of the femur has a reduced antero-posterior diameter (ratio to lateral diameter about 78 instead of 92.5 and 93.6 in two *Elasmodontomys*); the shaft is more flattened on its anterior aspect and less flattened on its posterior aspect; and the antero-posterior diameter at middle of shaft is less in proportion to the transverse diameter.

As compared with the femurs of *Isolobodon* and *Plagiodontia* from the Samaná region this fragment is at once distinguishable by its strikingly greater size. It appears to correspond perfectly with the opposite end of the femur of *Quemisia* that I found in one of the caves near the Atalaye Plantation, St. Michel, Haiti; and its presence

in a kitchenmidden confirms my belief that this large rodent is Oviedo's "quemí."

CAVIA sp.

Anadel.—Mandibles, 2 (opposites but not from one individual).

I cannot distinguish these jaws from specimens of *Cavia porcellus*. They present every appearance of having been buried as long as the remains of *Brotomys voratus* and *Plagiodontia ædium* with which they were associated.

ACRATOCNUS COMES Miller ?

Plate 2, fig. 2

Boca del Inferno.—Penultimate phalangeal bone, probably of second or fourth pedal digit, 1.

This bone was found in the kitchenmidden at the south entrance to the outermost of the two caves. It was unearthed at a depth of not more than four feet, near the femur of *Quemisia*, with which it agrees in its perfect and seemingly unmodified condition of preservation. Both bones, in fact, seem to be, so far as it is possible to determine from superficial inspection, in essentially the same state as bones of the living species of *Plagiodontia* with which they were associated. There appears to be no longer the slightest reason to doubt that a ground sloth was a member of the recently man-exterminated fauna of Hispaniola.¹

This bone (pl. 2, fig. 2) is similar in general form to the second right pedal phalanx of the Patagonian *Hapalops elongatus* as figured by Scott (Rep. Princeton Univ. Exped. Patagonia, Vol. 5, Palaeont, 2, pl. 41, fig. 2), but it is about 2 mm. longer and its proximal extremity appears to be deeper. It also resembles in a general way an isolated phalangeal bone of *Acratocnus* from Porto Rico figured by Anthony (Mem. Amer. Mus. Nat. Hist., n. s. Vol. 2, Pt. 2, fig. 53 f, p. 425, 1918). From an imperfect specimen that may represent the corresponding bone in *Acratocnus comes* it differs rather noticeably in the less diameter of the distal articular region (compare pl. 2, figs. 1 and 2) and the more abrupt deepening toward the proximal end.

TRICHECHUS MANATUS Linnaeus

Rio San Juan.—Fragments of palate, 2 (large and small); imperfect ribs, 2.

¹ I have already discussed the evidence to this effect furnished by the conditions existing in the caves near St. Michel, Haiti (Smithsonian Misc. Coll., Vol. 81, No. 9, pp. 25-26, March 30, 1929).

Kilometer 2 site.—Palate, 1; odd teeth, 8; vertebrae, 2.

Kilometer 4 site.—Fragments of occipital region, 2; fragments of mandible, 2; broken ribs, 13; humerus, 1; distal end of humerus, 1; fragment of scapula, 1; fragment of femur, 1.

These specimens do not differ appreciably from Florida material, except that the alveoli in the palate found at the Kilometer 2 village site appear to be exceptionally large.

THE MAMMALS DESCRIBED BY OVIEDO

Gonzalo Fernandez de Oviedo y Valdés (1478-1557), the first European chronicler of things West Indian, was alcalde of Santo Domingo City from January, 1536, to August, 1546. In his *HISTORIA GENERAL Y NATURAL DE LAS INDIAS*, Book 12, Chapters 1 to 6 (pp. 389-392 of the edition issued by the Royal Academy of History, Madrid, 1851) he described the following mammals as known or believed by him to inhabit the island of Hispaniola: the hutia, the quemi, the mohuy, the cori, the dumb dog ("perro mudo") and the mice ("mures ó ratones").

Hitherto there has been much doubt as to the exact identification of these animals, for the reason that *Plagiodontia ædium* and *Solenodon paradoxus* were, up to a few years ago, the only indigenous mammals known, other than bats and sea-cows. It now seems possible, however, to allocate all of Oviedo's names, with the exception of the "dumb dog." I shall take them up in order.

THE HUTIA

Oviedo writes that there occur in this island of Hispaniola, and in others lying in the seas near it, animals called hutia, four-footed, and resembling a rabbit, but smaller sized, smaller eared and rat-tailed. The natives, he says, kill them with small dogs that they have in domestication, dumb and not knowing how to bark; and the Christians do this much better with the dogs they brought from Spain. "These animals are grizzled gray (pardo gris) in color according to the evidence of many who have seen and eaten them and who praise them as food; and there are now many persons in this city of Santo Domingo and in this island who say so. But at present these animals are no longer found except very rarely."

This account would apply so well to the species of *Plagiodontia*, and presumably also to the *Isolobodons*, that there seems to be no reason to doubt that these were the animals that Oviedo had in mind. By the present day Dominicans the name seems to have been trans-

ferred to *Solenodon*; at least, such persons whom I met as knew of an animal called hutia expatiated on the great length and pointedness of the creature's snout. The very few who were acquainted with *Plagiodontia hylæum* happened to be English speaking descendants of negroes from the United States. They always spoke of the animal as the "muskrat," and they told me that many of these creatures had been killed by the workmen who cleared the narrow San Lorenzo Peninsula for cocoanut planting 20 or more years ago.

THE QUEMI

The quemi resembled the hutia in color and general appearance, but was much larger, its size equaling that of a medium-sized hound. Oviedo did not see it himself, and he believed it to be extinct. However, he assures his readers that: "There are many persons in this island and in this city who have seen and eaten these animals and who declare that they were good food; but in truth, according to what has been said and known about the hardships and deprivations that the first colonists endured in this island it can be presumed that everything that could be eaten must have then appeared to them very good and delicious, even when it was not."

The qualifications of an animal resembling the hutia, good to eat, and as big as an ordinary hound seemed to me to be fulfilled by the large rodent whose remains I found in the caves near St. Michel, Haiti, in 1925. Consequently I proposed for it the generic name *Quemisia*. The presence of the same creature in the Boca del Infierno kitchenmidden appears to confirm my guess.

THE MOHUY

"The mohuy is an animal somewhat smaller than the hutia: its color is paler and likewise gray. This was the food most valued and esteemed by the caciques and chiefs of this island; and the character of the animal was much like the hutia except that the hair was denser and coarser (or more stiff), and very pointed and standing erect or straight above. I have not seen this animal, but there are many who declared it to be as aforesaid; and in this island there are many persons who have seen it and eaten it, and who praise this meat as better than all the others we have spoken about."

There can be little, if any doubt that the animal Oviedo thus described was *Brotomys voratus*. This rodent was smaller than either *Plagiodontia hylæum* or *Isolobodon levir*, and its remains have been found in every kitchenmidden that has been examined in the Domini-

can Republic (the type specimen came from San Pedro de Macoris), a fact that shows how universally it was liked as food. Finally the account of stiff, pointed, erect-standing hairs of the back seems especially applicable to a relative of the South American spiny-rats.

THE CORI

Oviedo had first-hand knowledge of the cori. Consequently his description of it is more detailed and accurate than in the case of the three preceding animals. He writes: "The cori is a small quadruped, the size of a half grown young rabbit. These coris appear to be a species of the rabbit kind although they have a muzzle like a rat but not so pointed. They have very small ears which they hold so close that it appears as if they lacked them or did not have any. They have no tail whatever; they are very slender as to feet and hands from the joints or hams downward; they have three fingers and another smaller, and very slender. They are wholly white, and others everywhere black, and the most of them spotted with both colors. Also some are wholly reddish and some spotted with reddish and white." Continuing his account he says that the coris are kept in the house and fed on grass, with some cassava to fatten them. He has eaten them and found them to taste like young rabbit. When he wrote they were plentiful in Santo Domingo City. They were also to be found on other islands and on the mainland.

It is not difficult to recognize the guineapig in this account of the cori; but if any doubts might have existed, in the absence of more tangible evidence, they are disposed of by Mr. Krieger's discovery of the two *Cavia* jaws in the kitchenmidden at Anadel. It remains an open question whether the guineapig was introduced by the Spaniards or by native trade with South America. I incline to the first alternative, chiefly because remains of the animal have been found in only one midden. Bones of cow, horse, and pig, as well as artifacts of European origin occasionally occur in the Indian deposits, showing that the native village sites continued to be used for some time after the Spanish conquest began, and that material brought in by the newcomers found its way to the aboriginal refuse heaps. Such might easily have been the history of the guineapig jaws at Anadel.

THE DUMB DOG

In his account of the hutia we found Oviedo alluding to a native dog that could not bark, but which was, nevertheless, very useful as a game getter. On pages 390-391 of the 1851 edition of his book

he gives an extended account of the dogs formerly and at the time of his residence (1536-1546) occurring on the island of Hispaniola. Parts of this account I translate as follows: "Domestic cur dogs were found in this island of Hispaniola and in all the other islands of these seas (inhabited by Christians). They were bred by the Indians in their houses. At present there are none; but when they had them the Indians used them to capture all the other animals [that is, the hutia, the quemi, the mohuy and the cori] that have been spoken of in the preceding sections. These dogs were of all the colors that dogs have in Spain; some of a single color and others spotted with white and blackish or reddish or ruddy or any color that the coat is accustomed to have in Castile. Some woolly, others silky, others short-haired; but the most of them between silky and short-haired, and the hair of all of them more harsh than our dogs have, and the ears lively and alert like those of wolves. All of these dogs, here in this island and the other islands, were mute, and even though they might be beaten and killed they did not know how to bark: some of them yelped or whined when they were hurt."

Continuing, he tells us that he has seen dogs of the same kind on the mainland in the province of Santa Marta as well as in Nicaragua, and that in the latter country the natives regularly used them as food. He makes no mention of the eating of dogs by the natives of Hispaniola, and the complete absence of bones of this animal from the collections made by us in the Samaná region and by Theodoor de Booy at San Pedro de Macoris makes it seem probably that this habit did not exist, or at least that it was not very general. If the dumb dog was anything else than a special breed of *Canis familiaris* we have as yet no evidence of the fact.

The five animals thus described are, Oviedo insists (p. 391), the only furred terrestrial quadrupeds, other than rats or mice, native to Hispaniola. It therefore seems evident that he knew nothing about *Solenodon* or the ground sloth.

With regard to the mice, which he believed to be indigenous, there is no reason to suppose that they were not brought over by the Spaniards themselves. No native mammal the size of a mouse, except *Nesophontes*, has been found in any owl deposit or kitchenmidden on the island, and it seems improbable to the highest degree that this small insectivore could have been the animal known to Oviedo and supposed by him to have been spontaneously generated from some kind of corruption in this remote part of the world.

EXPLANATION OF PLATES

PLATE I

All figures natural size

- FIG. 1. *Plagiodontia hylaum* Miller. Adult male. No. 239891, U. S. Nat. Mus. The largest specimen of the living animal collected by Dr. W. L. Abbott. Guarabo, Dominican Republic, Nov. 24, 1923.
- FIG. 1a. *Plagiodontia hylaum* Miller. Adult female. No. 239888, U. S. Nat. Mus. Guarabo, Nov. 23, 1923.
- FIG. 2. *Plagiodontia adium* Desmarest. Adult. No. 254376, U. S. Nat. Mus. Anadel, Dominican Republic.
- FIGS. 3 and 3a. *Brotomys voratus* Miller. Nos. 254683 and 254684, U. S. Nat. Mus. Railroad cave, San Lorenzo Bay, Dominican Republic.
- FIG. 4. *Capromys pilorides* Desmarest. Adult. No. 254449, U. S. Nat. Mus. San Gabriel cave, Samaná Bay, Dominican Republic. (Observe spacing of ridges in alveoli as compared with that of the ridges in alveoli of *Isolobodon*, fig. 6.)
- FIG. 5. *Isolobodon levir* (Miller). Adult. No. 254686, U. S. Nat. Mus. Near Monte Cristi, Dominican Republic.
- FIG. 6. *Isolobodon portoricensis* Allen. Adult. Railroad cave, San Lorenzo Bay, Dominican Republic.

PLATE 2

All figures natural size

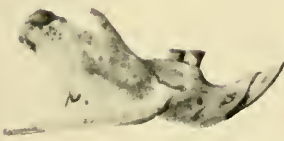
- FIG. 1. *Acratocnus comes* Miller. Phalangeal bone from cave near St. Michel, Haiti. No. 253210, U. S. Nat. Mus.
- FIG. 2. *Acratocnus comes* Miller? Phalangeal bone from kitchenmidden in Boca del Infierno cave, Samaná Bay, Dominican Republic. No. 254680, U. S. Nat. Mus.
- FIG. 3. *Quemisia gravis* Miller. Parts of femur and ulna from kitchenmidden in Boca del Infierno cave, Samaná Bay, Dominican Republic. No. 254681, U. S. Nat. Mus.
- FIG. 4. Monkey. Lower end of tibia from kitchenmidden on Naranjo Abajo Key, Samaná Bay, Dominican Republic. No. 254682, U. S. Nat. Mus.
- FIG. 5. *Cercopithecus pygerythrus*. Lower end of tibia. Changamwe, British East Africa. No. 163327, U. S. Nat. Mus.
- FIG. 6. *Cebus capucinus*. Lower end of tibia. North Ecuador. No. 113418, U. S. Nat. Mus.



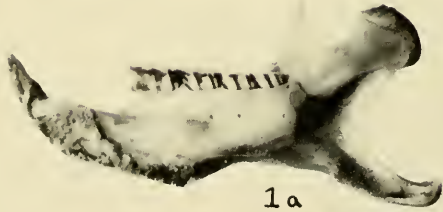
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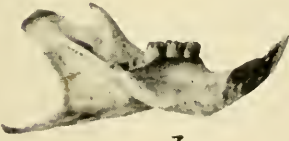
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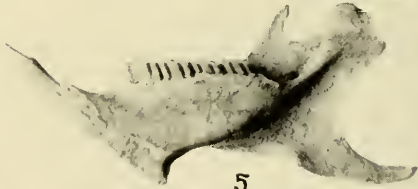
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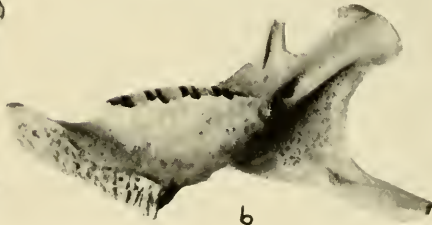
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4

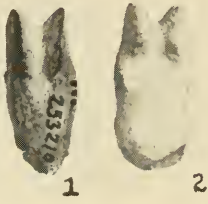


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- 1. *Plagiodontia hyleum*.
- 2. *Plagiodontia aedium*.
- 3. *Brotomys voratus*.

- 4. *Capromys pilorides*.
- 5. *Isolobodon levir*.
- 6. *Isolobodon portoricensis*.

(All figures natural size.)



1. *Acratocnus comes*.
 2. *Acratocnus comes*?
 3. *Quemisia gravis*.

4. Monkey (not identified).
 5. *Cercopithecus pygerythrus*.
 6. *Cebus capucinus*.

(All figures natural size.)