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The PLASTER JACKET is a newsletter about fossil vertebrate animals of Florida. Its purpose is to circulate authoritative material on vertebrate paleontology and to foster communication among the growing number of enthusiasts of this subject.

Questions, announcements and other communications are solicited from all readers. Information of general interest will be included in future issues.

It is our intent to produce this series at the rate of about one issue per quarter year. We hope to add as many genuinely interested paleontologists as possible to our mailing list. If you are interested please send your name and address to the PLASTER JACKET. These issues are distributed free of charge to all interested people.

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#17



THE PLASTER JACKET

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FOSSIL PECCARIES OF FLORIDA

by

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The even-toed ungulates, ARTIODACTYLA, are now the most diversified order of hoofed mammals. They include pigs, peccaries, hippos, camels, deer, giraffes, antelopes, sheep, goats, and cows. When they first appeared early in the Eocene, they were modest-sized creatures little different from members of the ancestral ungulate stock, the CONDYLARTHRA. Yet two features of the feet clearly distinguished these earliest artiodactyls and their descendants from all other ungulates. The most distinctive feature is the spool-like astragalus, or ankle bone. The development of a pulley surface at the lower end, as well as the usual one at the upper end, introduced great flexibility in the ankle joint, permitting freer running and springing. The second feature of the artiodactyl foot is implied by the name: the even-toed symmetry of the foot has the long axis passing between the third and fourth toes, rather than along the third toe. In many progressive artiodactyls the side toes are reduced, leaving the central two digits (third and fourth) to form the characteristic "cloven-hoof".

The first artiodactyls appear rather abruptly early in the Eocene epoch. By late Eocene time, they had radiated extensively into many different adaptive types. Before the Oligocene had passed they were the dominant hoofed mammals, and they have continued to diversify ever since.

The living Artiodactyla may be divided into two major suborders:

- 1) The SUINA, including pigs, peccaries, and hippos; and

- 2) The RUMINANTIA, including camels, deer, giraffes, antelopes, sheep, goats, and cows.

These basic groups separated during the Eocene but at that time the distinction was much less clear than is among living taxa.

The SUINA are less progressive and less diversified than the RUMINANTIA. Members of the SUINA have bunodont (low round cusped) cheek teeth; the canine teeth develop as tusks; the feet have four functional toes; and the stomach is simple. By contrast, members of the RUMINANTIA have selenodont cheek teeth (with sharp crescentic cusps); reduced canines and upper incisors (with some exceptions); two functional toes; and a complex (usually four-chambered) stomach.

This issue of the PLASTER JACKET will deal only with the SUINA. The only living SUINA native to the New World are peccaries. Pigs were introduced by European colonists, and now run wild in many parts of Florida. Several other groups of SUINA occurred in the New World as fossils, but to date only one of these groups, the entelodonts, is known to have occurred in Florida.

ENTELODONTS

An entelodont or "giant hog" attained a size about three times that of a large hog. The skull reached over a yard in length, and the body was over 10 feet long. The cheek teeth were square with four large rounded cusps (see Fig. 1).

In general the skeleton resembled that of a very large pig. In Florida, teeth from early Miocene deposits represent the genus Dinohyus, the largest and first of the entelodonts, best known from Agate Springs in Nebraska.

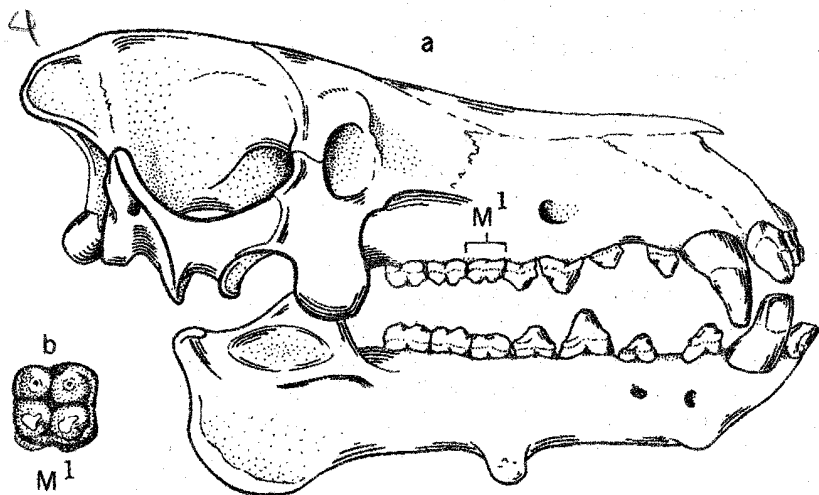


Figure 1.- A) Skull of *Dinohyus hollandi*, x 1/8;
 B) Right upper molar of *Dinohyus hollandi*, x 1/4.

PECCARIES

The peccaries (family Tayassuidae) originated in North America early in the Oligocene epoch. Although a few genera reached Europe in the Oligocene and Miocene, the family diversified primarily in North America. They continued at full strength until the end of the Pleistocene. At that time, the characteristic genera of North America became extinct along with many other herbivores.

The Tayassuidae still live in North America, although only, as it were, "by the skin of their teeth". The collared peccary, *Dicotyles tajacu* Linnaeus, ranges into many habitats from the southern border of the United States (in Arizona, New Mexico and Texas) south into temperate South America (terminating in Patagonia). A second living species, the white-lipped peccary, *Tayassu pecari* Fischer, lives only in tropical forests from southern Mexico into Paraguay. (Some biologists combine both Recent species in the genus *Tayassu*). The ancestors of these living species had spread from North America into South America in the late Pliocene, when the land bridge that connects these continents emerged.

The peccaries bear a general resemblance to pigs, and separated from that family near the end of the Cene. A fundamental distinction that separates even the earliest members of the Tayassuidae from the Suidae is the arrangement of the canine tusks. In Tayassuidae the triangular canine teeth stand vertically, with the flat back side of each lower occluding against the flat front surface of the corresponding upper. They occlude tightly and wear heavily against one another, producing continuously sharpened points. Living peccaries gnash (and thus sharpen) their tusks as a threatening gesture before they attack. In Suidae, by contrast, the upper and lower tusks curve outward and upward together. They do not sharpen against one another (see Fig. 2).

The different arrangement of the tusks has led to other distinctions between pigs and peccaries. For example, the long vertical tusks of peccaries prevent them from moving the lower jaw sideways, although that is the chewing motion used in pigs, and most other ungulates. Peccaries chew with strictly vertical jaw motion. Corresponding specializations of the skull and the jaw muscles have followed.

Especially noticeable is the very low level of the jaw hinge (glenoid region) of the skull in peccaries. This low position permits a wide gape of the lower jaw for use of the long canines. The broadly expanded cheek bone (jugal) in peccaries provides the purchase for an enlarged masseter muscle, whose function is to pull the mandible strongly upward and slightly forward. These and many subtler features of the skull are related to the peculiar vertical jaw movements of peccaries.

Two genera of peccaries can be recognized in the Pleistocene of Florida. They are *Platygonus* and *Mylohyus*. They may be distinguished most readily by the structure of their cheek teeth. The molars of *Platygonus* are bilophodont (consisting of two transverse ridges or lophs); whereas those of *Mylohyus* are bunodont (each of the four cusps forming a separate rounded hill, much as in human molars) (see Fig. 3). The upper and lower molars can be recognized by these differences. The lower premolars of *Platygonus* have long, narrow proportions and "stairstepped"

6 cusps (the front cusp being higher than the the back). In Mylohyus, on the other hand, the lower premolars are nearly square and have low, flat crowns, so that they resemble the molars.

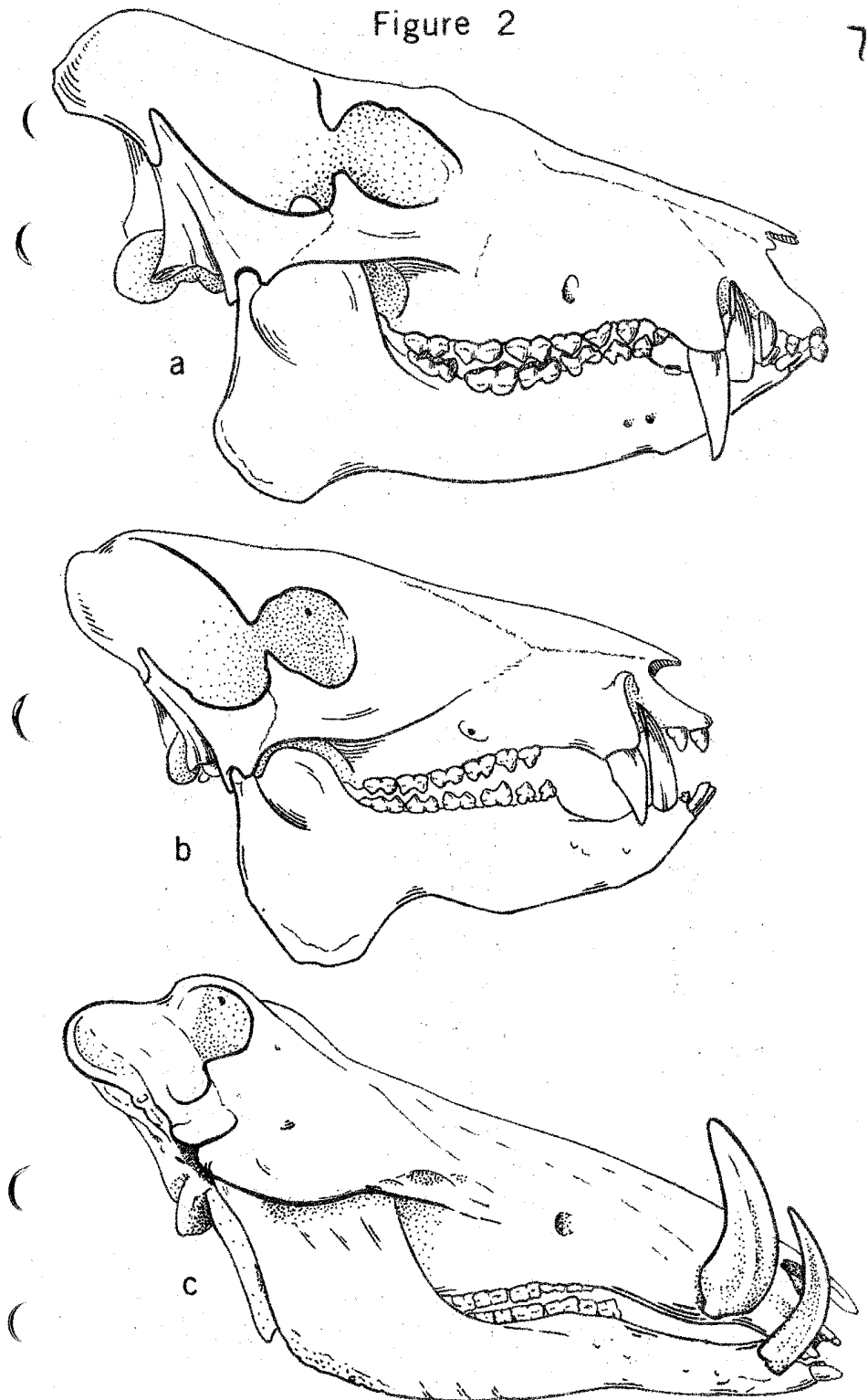
The upper premolars of Platygonus are premolariform (that is, with fewer cusps than the molars); while all the premolars of Mylohyus are molariform (that is, each premolar has four cusps and looks like a smaller version of a molar). Each upper premolar of Platygonus has only two high cusps, and in front of and behind these cusps, a wide cingulum (or shelf). These wide cingula provide space between the cusps of the upper premolars for the high cusps of the lower premolars to occlude (see Fig. 3).

Platygonus and Mylohyus also show important differences in the skull. The snout and braincase are proportionally longer and narrower in Mylohyus than in Platygonus. The bony buttress above and behind the upper canine teeth are much stronger in Platygonus than in Mylohyus, and the jugal bones flare down and out much more widely in Platygonus than in Mylohyus. The canine buttress and jugal flare are especially well developed in old boars of Platygonus.

Both Mylohyus and Platygonus have longer limbs than the modern peccaries, with the lower elements much longer than the upper elements. In the lower part of each limb the two major bones (metapodials) are fused together to form a cannon bone, except in the front foot of Mylohyus. There, as in living peccaries, the two bones are only flattened against each other. In Platygonus the side toes are absent; and in Mylohyus they are reduced in front and absent behind. In pigs the side toes are fully functional, but in living peccaries they are of moderate size, forming useless dew claws. These and other features

Figure 2.- A) Skull of an ancestral peccary, Perchoerus probus, family TAYASSUIDAE; B) Skull of a modern peccary, Dicotyles tajacu, family TAYASSUIDAE; C) Skull of the wart hog, Phacochoerus aethiopicus, family SUIDAE.

Figure 2



of the skeleton indicate that Platygonus and Mylohyus were swifter, more efficient runners than either species of living peccaries (see Fig. 4).

Both Platygonus and Mylohyus underwent considerable change in the course of the Pleistocene. The Early Pleistocene (Blancan) species of Platygonus was P. bicalcaratus, followed in the Middle Pleistocene (Irvingtonian) by P. cumberlandensis, and finally in the Late Pleistocene (Rancholabrean) by P. compressus. The most obvious species differences were decreasing size, and reduction in the number of lower incisors from six to four. Mylohyus has generally been found only in the Late Pleistocene. However, in Florida rare finds of an Early Pleistocene species have been discovered, and their description will soon appear in a new book on Pleistocene Mammals of Florida.

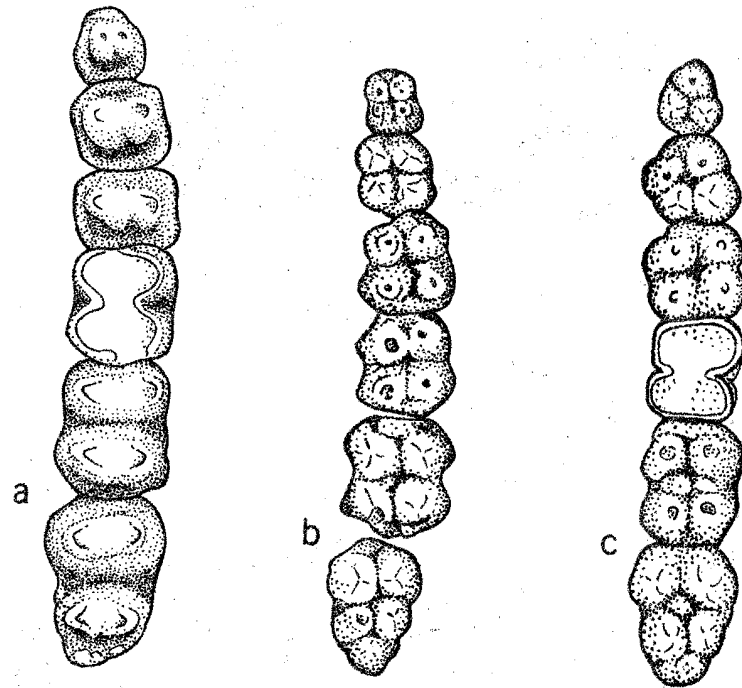


Figure 3.- Upper left cheek teeth of A) Platygonus cumberlandensis x 1; B) Mylohyus nasutus x 1; C) Prosthennops niobrarenensis x 1.

In many parts of North America the common Pleistocene peccary is Platygonus. Dozens of skeletons may occur in a single site, especially, it seems, in caves. In many sites in Florida, however, Mylohyus predominates, for example, at Vero, Seminole Field, Reddick I and Arredondo II. The only sites in which Platygonus really abounds are Middle and Early Pleistocene sites, most notably Coleman IIA. Platygonus with its higher, bilophodont teeth probably ate grass and other coarse vegetation. Mylohyus, with its low-crowned bunodont cheek teeth presumably ate fruits and more succulent vegetation. In keeping with these features, Platygonus is associated with prairies and other open-country habitats, whereas Mylohyus is typically a forest species. The great abundance of Mylohyus and the relative rarity of Platygonus in Late Pleistocene deposits in Florida suggest that wet, well-forested conditions prevailed over much of the state, at least during the times when fossils accumulated. Earlier, however, drier phases with extensive prairies were represented, at least most of the time. The peccaries provide a helpful indication of the true complexity of such climatic cycles during the Pleistocene in Florida.

In the Pliocene, Florida also supported two kinds of peccaries. They are Desmathyus and Prosthennops. In a general way Desmathyus resembles Platygonus and Prosthennops resembles Mylohyus (see Fig. 3). The upper premolars of Desmathyus are not molariform, whereas in Prosthennops they tend to be molariform. Similarly the lower premolars of Desmathyus are not as narrow transversely as in advanced Platygonus, but they are narrow and have high anterior cusps. In the molars Prosthennops shows very close resemblances to Mylohyus, although the skull structure is considerably different, and the molars of Desmathyus approach the simple lophodont pattern of Platygonus. Both genera of Pliocene peccaries occur in the Bone Valley phosphate deposits.

In the Miocene at the Thomas Farm site a more primitive species of Desmathyus has been discovered. And, a peccary of uncertain identity occurred in the Oligocene, as represented at the I-75 site. The peccaries of the pre-Pleistocene epochs (Tertiary Period) in Florida have not yet been well described or understood, mainly because adequate fossil material is just beginning to be discovered.

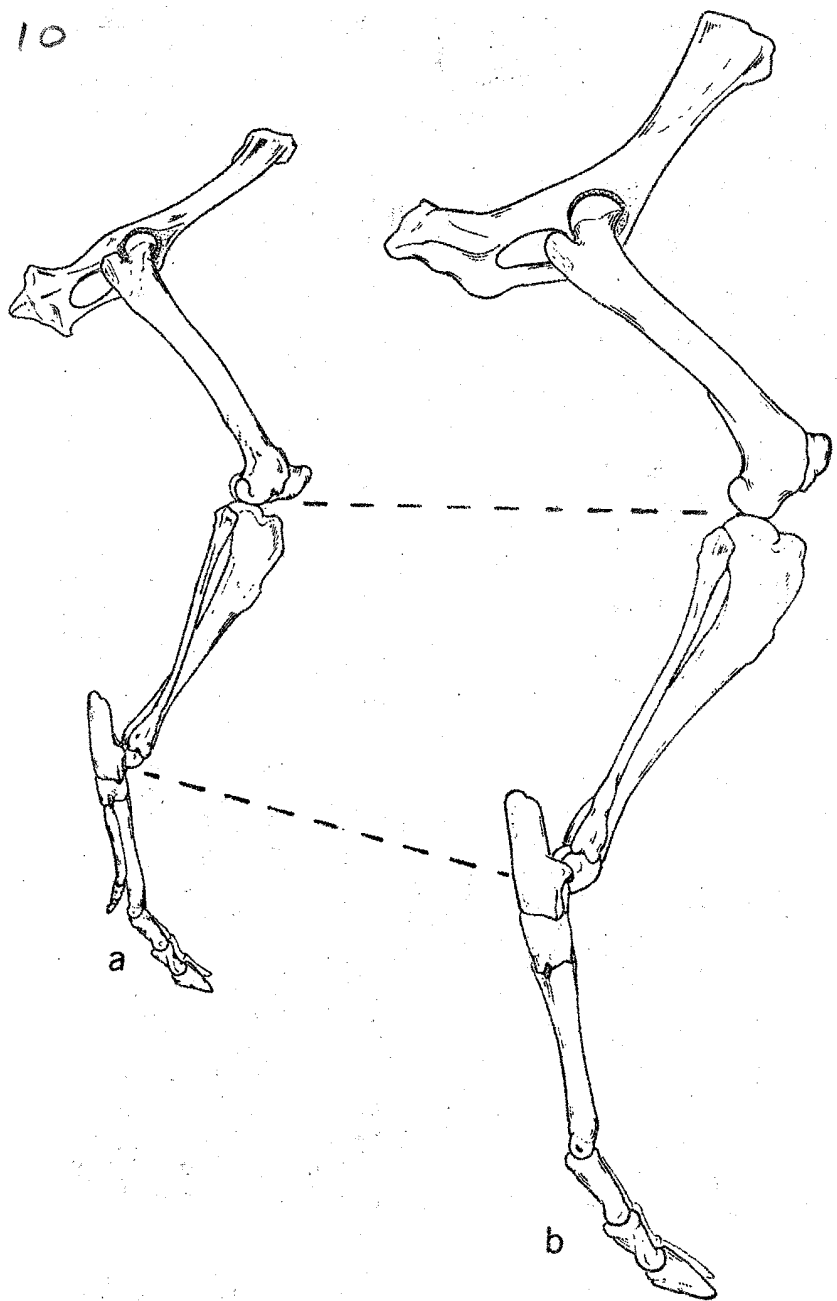
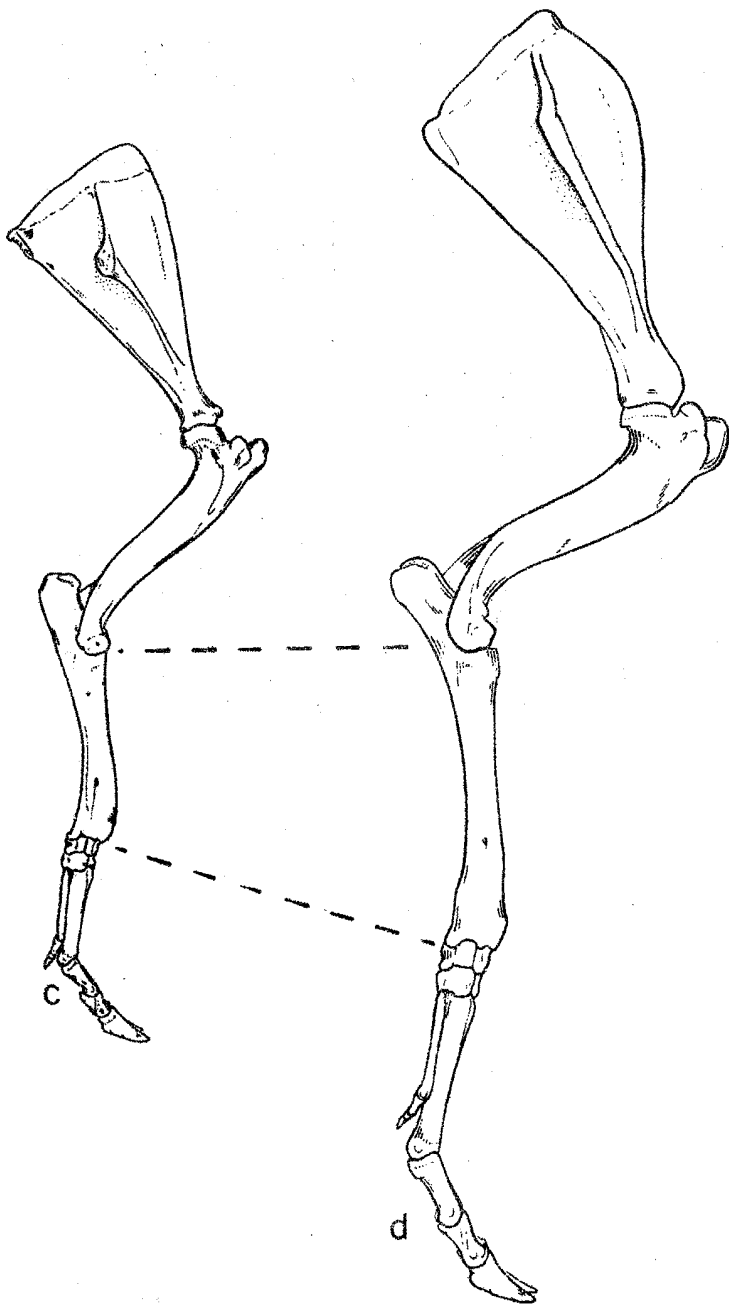


Figure 4.- Articated limb bones of the modern peccary *Dicotyles* compared with those of the swifter Pleistocene *Mylohyus*.



Right hind limb of A) *Dicotyles* and B) *Mylohyus* x 1/4;
right fore limb of C) *Dicotyles* and D) *Mylohyus* x 1/4.