

Article XVI.—PSITTACOTHERIUM, A MEMBER OF A
NEW AND PRIMITIVE SUBORDER OF THE
EDENTATA.

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The explorations of the Museum palæontological party in the Basin of the San Juan of New Mexico, during the past summer, secured, among other important materials, the larger part of an anterior limb of *Psittacotherium multifragum* Cope, associated with the lower jaws and a number of the upper teeth. The exact locality in which the specimen was found is near the head of the Cañon Escavada, in the upper horizon of the Puerco formation. The specimen in question was found by the writer, and, with the exception of a few unimportant weathered fragments, was bedded in its original matrix, a soft, friable, reddish-colored clay. The jaws and limb were not more than a foot or eighteen inches apart, so there can be very little doubt that they belong to one and the same individual. It may be further added that no other remains were found within several hundred feet of them.

Since the specimen in question presents characters of such unusual interest and importance, I have thought it advisable to give this brief preliminary account, which will be followed by a more exhaustive description, together with a critical review of the allied forms, copiously illustrated.

It has been the custom of palæontologists to place the genus *Psittacotherium*, after Cope, in the Tillodontia, but I will endeavor to show that it not only has no relationship with that group, but that with the genera *Hemiganus*, *Ectoganus* and *Stylinodon* it forms a closely connected and consecutive series ancestral to and leading directly to the Gravigrada or Ground Sloths. A second series, composed of *Onychodectes* and *Conoryctes* is clearly an allied group which probably led to the Armadillos.

These two series I herewith arrange under a new suborder, for which I propose the name GANODONTA, constituting a primitive division of the Edentata. It may be defined according to our

present knowledge as follows : Primitive Edentates, characterized in the earlier forms by rooted teeth with divided fangs having a more or less complete enamel investment, in the later forms by the teeth becoming hypsodont, rootless, of persistent growth, and by limitation of the enamel to vertical bands in progressive decrease. They are further characterized by the presence of incisors in both jaws, by a typical molar and premolar dentition, by a trituberculate molar crown, which disappears early in life through wear, leaving the dentine exposed.

Of this suborder there are two families, viz. : Conoryctidæ, including *Conoryctes* and *Onychodectes*, and Stylinodontidæ, including *Hemiganus*, *Psittacotherium*, *Ectoganus* and *Stylinodon*. The lower Puerco representatives of these two families approach one another closely, the tooth structure of *Hemiganus*, *Onychodectes* and *Conoryctes* being very similar. *Hemiganus*, however, displays a type of lower jaw which, together with the foot structure, clearly foreshadows *Psittacotherium*, which in turn is undoubtedly the forerunner of *Ectoganus* and *Stylinodon*. This family would then be characterized by having a remarkably short, deep, and heavy lower jaw with an enormously developed coronoid process reaching even with, or in advance of, the posterior termination of the tooth-line. The fore foot is short, with remarkably abbreviated, deeply excavated first and second phalanges (unknown in *Hemiganus*), together with a powerful, highly compressed, deep claw ; to this should be added a highly characteristic shortening of the facial portion of the skull. The Conoryctidæ, on the other hand, have more lengthened and slender lower jaws without special enlargement of the coronoid, elongated facial region of the skull, with much smaller and more rounded claws.

Family STYLINODONTIDÆ *Marsh.*

The genera of this family, with their definitions, are as follows :

Crowns of upper canines encased in enamel ; canines not growing from persistent pulps ; lower incisors faced with enamel ; lower molars and premolars rooted with divided fangs and enamel-covered crown.....*Hemiganus* Cope. Lower Puerco.

- Crowns of upper canines with enamel confined to anterior face ; canines not growing from persistent pulps ; lower incisors faced with enamel ; lower molars and premolars rooted with fangs connate, and enamel-covered crowns. *Psittacotherium* Cope. Upper Puerco.
- Crowns of superior canines with enamel confined to anterior face ; canines growing from persistent pulps ; lower incisors without enamel ; lower molars and premolars with connate fangs ; enamel confined to vertical bands on inferior premolars.
Ectoganus Cope. Wahsatch.
- Crowns of canines unknown, growing from persistent pulps ; all lower teeth rootless, growing from persistent pulps ; enamel of all lower molars and premolars confined to vertical narrow bands.
Stylinodon Marsh. Bridger.

Of the limb of *Psittacotherium*, there are preserved the ulna and radius, the lunar, unciform, the greater part of the magnum, together with the third and fourth metapodials bearing their respective phalanges. The median and proximal phalanges of the second digit, with a part of the claw, are also preserved. On comparison of these bones with the corresponding parts of *Myiodon robustus*, the likeness is seen to be so striking that one would have scarcely any hesitancy in referring them to the same family. The metapodials are unusually short, which, with the two proximal phalanges, hardly exceed the claw in length. The proximal and median phalanges are short, robust, and deeply excavated at their articular extremities ; the claws are enormously developed, somewhat compressed from side to side, with a marked curvature upon their dorsal surface. The third and fourth metapodials exhibit the same relations to each other and the carpal bones as do those of *Myiodon*, with a few unimportant exceptions. The ulna and radius are also strikingly megatheroid.

The evidence of the Edentate affinities of this suborder may be briefly summed up as follows : In the Stylinodontidæ the facial part of the skull is short, the incisors have undergone gradual diminution, the canines were enlarged as in *Megalonyx*, all the teeth finally came to be rootless and grew from persistent pulps, and what is yet most significant, the enamel came to be limited to narrow vertical bands with strong tendency to progressive disappearance, as is seen in the tusks of the earlier Proboscidea. The structure of the fore limb, so far as we know it, is almost identical with that of the large Ground Sloths ; the distal end of the femur shows marked flattening, and the head of the humerus

displays that peculiar pyriform pattern so highly characteristic of the South American Edentata.

In the Conoryctidæ there is the same evidence of the weak development of the enamel, accompanied by loss of incisors. The skeleton, so far as known, shows many striking similarities to that of the Armadillos, of which this family is in all probability ancestral. It would appear, therefore, and I think the proposition is now susceptible of demonstration, that the South American Edentata originated in this country, that they migrated from North America before the close of the Eocene period, and did not appear in South America until late in the Eocene or early in the Miocene time. Collateral evidence of this migration to the southward in the Eocene is seen in the disappearance of *Meniscotherium* of the New Mexico Wahsatch and the appearance of its allies, the Proterotheriidæ, later in South America.