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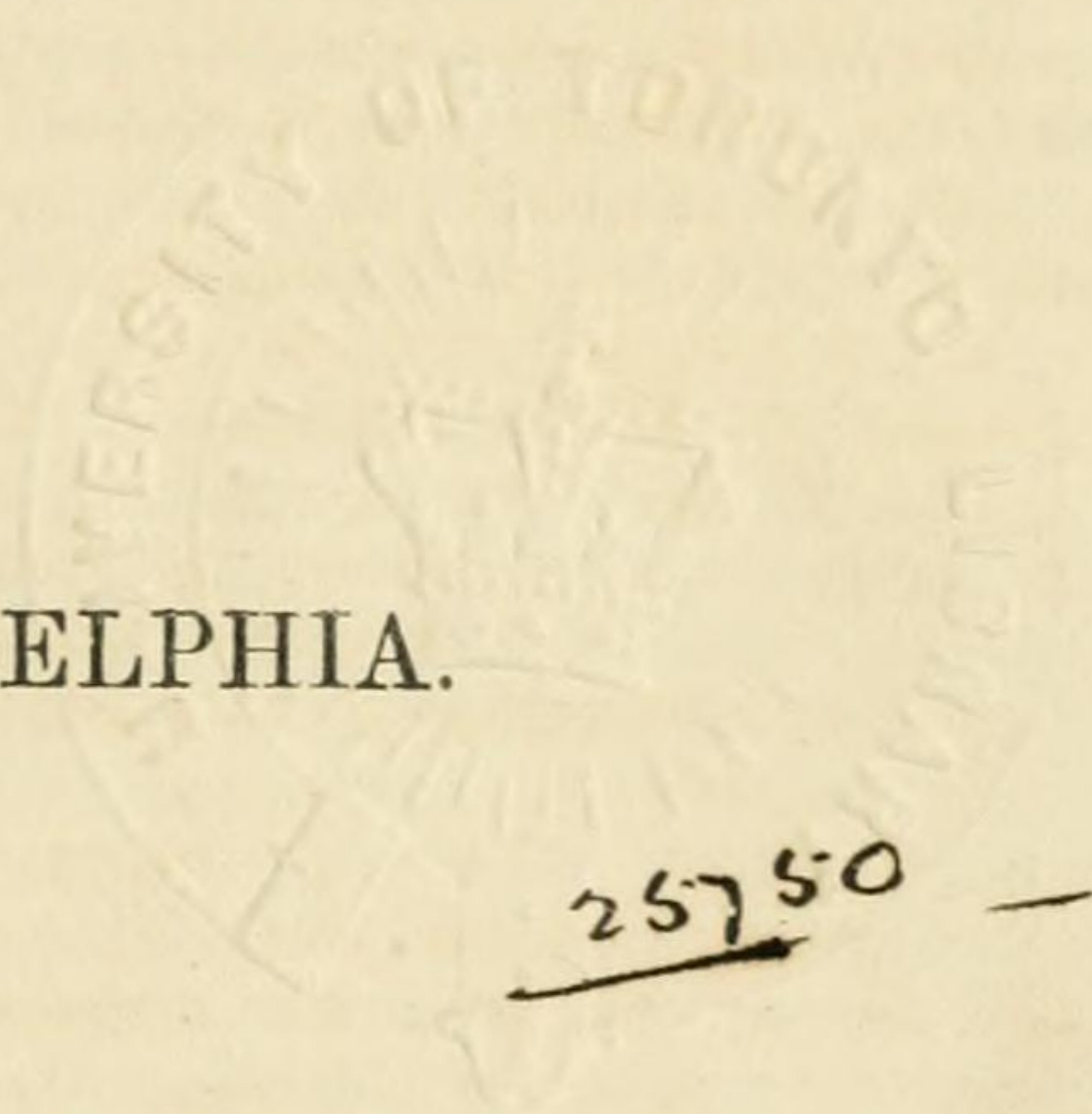
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List of Extinct VERTEBRATA, the remains of which have been discovered in the region of the Missouri river : with remarks on their Geological Age.

BY JOSEPH LEIDY, M. D.

I. MAMMALIA.

RUMINANTIA.

1. OREODON CULBERTSONII, Leidy : Ancient Fauna of Nebraska 45. Synonymes, *Merycoidodon Culbertsonii*, *Oreodon priscus*, *Cotylops speciosa*.
2. OREODON GRACILIS, L. : Ibid. 53. Syn. *Merycoidodon gracilis*.
3. OREODON MAJOR, L. : Ibid. 55 ; Proc. Acad. Nat. Sci. viii. 164. Syn. *Merycoidodon major*.
4. AGRIOCHOERUS ANTIQUUS, L. : Anc. Fauna Nebr. 24. Syn. ? *Eucrotaphus Jacksoni*.
5. AGRIOCHOERUS MAJOR, L. : Proc. Acad. Nat. Sci. viii. 164. Syn. ? *Eucrotaphus auritus*.
6. POEBROTHERIUM WILSONI, L. Anc. F. Nebr. 19.
7. LEPTOMERYX EVANSI, L. : Pr. A. N. S. vi. 394.
8. LEPTAUCHENIA DECORA, L. : Ibid. viii. 88.
9. LEPTAUCHENIA MAJOR, L. : Ibid, 163.
10. PROTOMERYX HALLI, L. : Ibid. 164.
11. MERYCODUS NECATUS, L. : Ibid, vii. 90.
12. CAMELOPS KANSANUS, L. : Jour. A. N. S. iii. 166.

MULTUNGULA.

13. CHOEROPOTAMUS (HYOPOTAMUS) AMERICANUS, L. : Pr. A. N. S. viii. 59.
14. ENTELODON MORTONI, L. : Anc. F. Nebr. 57. Syn. *Archæotherium Mortoni*, *A. robustum*, *Arctodon*.
15. ENTELODON INGENS, L. : Pr. A. N. S. viii. 164.
16. TITANOTHERIUM PROUTHI, L. : Anc. F. Nebr. 72 ; Pr. A. N. S. viii. 92. Syn. *Palæotherium Cuv. Prout* ; *P? Proutii*, Owen, Norwood, and Evans ; *Rhinoceros? americanus* ; *Eotherium americanum*, and *Palæotherium giganteum*, Leidy.
17. PALAEOCHOERUS PROBUS, L. : Pr. A. N. S. viii. 164.
18. LEPTOCHOERUS SPECTABILIS, L. : Ibid. 88.
19. RHINOCEROS OCCIDENTALIS, L. : Anc. F. Neb. 81. Syn. *Aceratherium..*
20. RHINOCEROS (HYRACODON) NEBRASCENSIS, L. : Pr. A. N. S. viii. 92. Syn. *Aceratherium nebrascense*.
21. MASTODON OHIOTICUM. *Small fragments of molar teeth.*

SOLIDUNGULA.

22. HIPPARION OCCIDENTALE, L. : Pr. A. N. S. vii. 59.
23. HIPPARION SPECIOSUM, L. : Ibid. viii. 311. Syn. ? *Hippodon speciosus*, Ibid. vi. 90.
24. ANCHITHERIUM BAIRDII, L. : Anc. F. Nebr. 67. Syn. *Palæotherium Bairdii*.
25. MERYCHIPPUS INSIGNIS, L. : Pr. A. N. S. viii. 311.

RODENTIA.

26. STENEOFIBER NEBRASCENSIS, L. : Pr. A. N. S. viii. 89.
27. ISCHYROMYS TYPUS, L. : Ibid.
28. PALAEOLAGUS HAYDENI, L. : Ibid.
29. EUMYS ELEGANS, L. : Ibid : 90.

## PINNIPEDIA.

30. ISCHYROTHERIUM ANTIQUUM, L.: Pr. A. N. S. viii. 89.

## CARNIVORA.

31. HYAENODON HORRIDUS, L.: Pr. A. N. S. vi. 393.  
 32. HYAENODON CRUENTUS, L.: Ibid.  
 33. HYAENODON CRUCIANS, L.: Ibid.  
 34. AMPHICYON VETUS, L.: Ibid. vii. 157. Syn. *Daphænus vetus*.  
 35. AMPHICYON GRACILIS, L.: Ibid. viii. 90.  
 36. MACHAIRODUS PRIMAÆVUS, L. and Owen: Anc. F. Neb. 95.  
 37. DEINICTIS FELINA, L.: Pr. A. N. S. vii. 127.; viii. 91.  
 38. LEPTARCTUS PRIMUS, L.: Ibid. viii. 311.

## II. REPTILIA.

## CHELONIA.

39. TESTUDO NEBRASCENSIS, L.: Anc. F. Neb. 103. Syn. *Stylemys nebrascensis*,  
*?Emys seu Testudo hemispherica, Oweni, Culbertsonii, et lata*.  
 40. TRIONYX FOVEATUS, L.: Pr. A. N. S. viii. 73, 312.  
 41. COMPSEMYS VICTUS, L.: Ibid, 312.  
 42. EMYS OBSCURUS, L.: Ibid.

## SAURIA.

43. MOSOSAURUS MISSOURIENSIS, Leidy. Syn. *Ichthyosaurus missouriensis*, Harlan;  
*Mososaurus Maximiliani*, Goldfuss; etc.  
 44. MEGALOSAURUS? (DEINODON) HORRIDUS, L.: Pr. A. N. S. viii. 72.  
 45. PALAEOSCINCUS COSTATUS, L.: Ibid.  
 46. TRACHODON MIRABILIS, L.: Ibid.  
 47. TROODON FORMOSUS, L.: Ibid.  
 48. ?CROCODILUS HUMILIS, L.: Ibid. 73.  
 49. THESPESIUS OCCIDENTALIS, L.: Ibid. 311.

## III. PISCES.

50. CLUPEA HUMILIS, L.: Pr. A. N. S. viii. 256.  
 51. CLADOCYCLUS OCCIDENTALIS, L.: Ibid.  
 52. ENCHODUS SHUMARDI, L.: Ibid.  
 53. SAUROCEPHALUS LANCIFORMIS, Harlan: Jour. Ac. Nat. Sc. iii. 337; Med. &  
 Phys. Res. 362.  
 54. LEPIDOTUS OCCIDENTALIS, L.: Pr. A. N. S. viii. 73.  
 55. LEPIDOTUS HAYDENI, L.: Ibid.  
 56. MYLOGNATHUS PRISCUS, L.: Ibid. 312.

Of the above list of vertebrate remains those of *Mososaurus*, *Cladocyclus*, *Enchodus*, and *Saurocephalus* were obtained from deposits of the cretaceous period.

The remains of *Deinodon*, *Palæoscincus*, *Trachodon*, *Troodon*, ?*Crocodilus*, and *Lepidotus*, were discovered by Dr. F. V. Hayden, in a deposit, on the Judith River, which I have suspected to be of equivalent age with the Wealden formation of Europe.

The remains of *Compsemys*, *Emys*, and *Mylognathus*, were found at Long Lake, Nebraska, together with those of *Trionyx*, the same species of which appears also to be common to the deposit just mentioned of the Judith River.

*Oreodon*, *Agriochærus*, *Pæbrotherium*, *Leptomeryx*, *Leptauchenia*, *Protomeryx*,  
 [March,

*Merycodus*, *Titanotherium*, *Leptochærus*, *Hyracodon*, *Merychippus*, *Ischyromys*, *Palæolagus*, *Eumys*, *Deinictis*, and *Leptarctus* are peculiar, extinct, mammalian genera, from the tertiary formations of Nebraska, which have heretofore been generally viewed as belonging to the eocene period, but which from their affinities, from the associated genera, and the absence of others so common in the eocene deposits of Europe, I suspect rather to belong to the miocene period. The first seven genera, above mentioned, are true ruminants, with the teeth constructed upon the same type as those of living ruminants;—a type which is not found in the tertiary deposits of Europe and Asia earlier than the miocene period.

*Entelodon*, *Palæochærus*, *Rhinoceros*, *Hipparion*, *Steneofiber*, *Amphicyon*, and *Machairodus*, are common to the Nebraska tertiary deposits and to the miocene and later tertiary deposits of Europe; and they have not been found in the eocene formations of the latter continent.

Of the genera *Anchitherium*, *Hyopotamus*, and *Hycenodon*, species are found common to the Nebraska tertiary deposits and the European eocene and miocene deposits.

Remains of *Palæotherium*, *Anoplotherium*, and *Lophiodon*, so common in the eocene formations of Europe, are entirely absent from the Nebraska tertiary formations.

*Titanotherium* of Nebraska most nearly approaches the miocene *Chalicotherium* of Europe and Asia.

The Nebraska rodents *Ischyromys*, *Palæolagus*, and *Eumys* most closely approach the *Arctomys*, *Lepus*, and *Mus* of European miocene and later deposits.

Very numerous remains of *Testudo* are found in association with the Nebraska tertiary mammals; and extinct species of the same genus belong generally to the miocene and later deposits of Europe.

The remains of *Mastodon* and *Camelops* mentioned in the the list, I suspect to belong to the post pliocene age of the upper Missouri country.

*Ischyrotherium* appears to be an animal allied to the *Manatus*. Its remains are stated by Dr. Hayden to have been obtained from a lignite bed (miocene\*) near Moreau and Grand rivers; but I must leave it to this indefatigable explorer to determine whether it belongs to the same age as the numerous extinct terrestrial mammals of Nebraska.

*Thespesius* I suspect to be a huge dinosaurian. Its remains are stated to belong to the lowest member of the lignite formations (miocene) of Grand River.

The species of *Clupea* was discovered by Dr. John Evans, in a tertiary deposit on Green River, Missouri; but the exact age of this formation I have no means of determining.

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### Investigation on the Rock Guano from the Islands of the Caribbean Sea.

BY WM. J. TAYLOR.

Though much has been written and published on the Columbian Guano of the Caribbean Sea, which is also termed Phosphatic Guano, native Super-Phosphate of Lime, &c., I have considered the subject not entirely exhausted, and have for some time past been paying especial attention to its composition, and have also endeavored to gather all possible information regarding its occurrence. To Dr. D. Luther, President of the Philadelphia Guano Company, I am particularly indebted, for his kindness in furnishing me with material for the investigation from the various groups of islands, and for information regarding

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\* Proc. Acad. Nat. Sci. viii. 268.