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Letters were read—
From the American Antiquarian Society, dated Worcester, Mass., 28th Dec., 1855, proposing an exchange of Publications.
From the Secretary of the Lyceum of Natural History, of Fort Des Moines, Iowa, also proposing exchanges.
On leave granted, the Committee on a paper by Mr. Thos. P. James, read at last meeting, and entitled "An enumeration of Mosses detected in the Northern United States, which are not comprised in Gray's Manual, a few of which are new species," reported in favor of publication in the No. of Proceedings for Nov. and Dec., 1855.

January 8th.
Vice President Bridges in the Chair.
A letter was read from Dr. Lewis H. Steiner, dated Baltimore, 7th Jan., 1856, acknowledging the receipt of his notice of election as a Correspondent.
Mr. Aubrey H. Smith remarked, in relation to the specimen of native Cinnabar, presented by him this evening, that it was procured by Capt. J. H. Smith, from the mouth of a drift, in the new Almaden Mine, California, at an elevation of two thousand feet above the level of the sea; and is stated by him, to contain 95 per cent. of real Cinnabar, and not to be richer than a great portion of the ordinary product of the mine.

January 15th.
Vice President Bridges in the Chair.
Dr. Hallowell presented for publication in the Proceedings, a paper entitled "On a new species of Ambystoma from Lake Superior." Referred to Dr. Leidy, Col. McCall and Dr. Le Conte.
Dr. Leidy exhibited the heart of a dog, in which the right auricle, right ventricle, and the pulmonary artery and its branches, were literally stuffed with worms. Minute worms have long been known circulating with the blood, and termed Haematozoa. About five years since, Dr. L. described in vol. 5 of the Proceedings, the worm exhibited this evening, as Filaria Canis cordis. The males measure five inches in length, the females ten inches.

Two hearts were brought to Dr. L. by Mr. Jos. Jones, of Georgia; one, that of a pointer, had in it five worms; the other, that of a cur, was the one exhibited. It is probable that both veins cave were also filled, as the portions of those vessels that remained, were blocked up. The animals did not die from the presence of the entozoa, but were killed in the course of some experiments. The cur was emaciated and voracious, restless when awake, and disturbed in its sleep.

January 29th.

Vice President BRIDGES in the Chair.

The Report of the Corresponding Secretary, for Dec., '55 and Jan., '56, was read.

The Recording Secretary read his Annual Report as follows:—

REPORT OF THE RECORDING SECRETARY FOR 1855.

During the year ending 30th November, 1855, there have been elected to the Academy, twenty-three Members and ten Correspondents. One Member has resigned.

There have been no deaths among the Members during that period.

The following papers have been read and ordered to be published in the Proceedings or Journal of the Academy.

By Samuel Ashmead. Catalogue of Marine Algae, from Bessley's Point, New Jersey, with some remarks.


By T. A. Conrad, six, to wit: Observations on the Eocene Deposits of Jackson, Miss., with descriptions of thirty-four new species of Shells and Corals; Descriptions of three new Cretaceous and one Tertiary Bivalve; Description of three new species of Unio; Descriptions of seventeen new Cretaceous and Tertiary Fossils; Descriptions of six new species of Cretaceous Shells from Texas, in the Collection of Major Emory; Description of a new species of Paludina.

By Julian Deby. Remarks on the Cryptogamic Flora of the State of Georgia. Published in the Journal.
By Elias Durand. Plantae Prattenianae Californiae; an enumeration of a collection of California Plants, made in the vicinity of Nevada, by Henry Pratten, Esq., of New Harmony, Ind., with critical notices of such as are new or yet unpublished in America. Published in the Journal.

By F. A. Genth, Ph. D., two, to wit: Herregite identical with Smithsonite; Analysis of the meteoric iron from Tucson, Province of Sonora, Mexico.

By Charles Girard, two, to wit: Abstract of a Report to Lieut. James M. Gillis, U. S. Navy, upon the Reptiles collected during the U. S. Naval Astronomical Expedition to Chili; Observations upon the viviparous Fishes inhabiting the Pacific coast of North America, with an enumeration of the species observed.

By T. Charles Henry, M. D. Notes derived from observations made on the Birds of New Mexico, during the years 1853 and 1854.

By Isaac Lea, LL. D. Description of a new Mollusk from the Red Sandstone near Potts ville, Pa.

By Major John Le Conte, F. L. S., three, to wit: Description of new species of Astacus from Georgia; On a new species of Gelosimus; Remarks on two species of American Cimex.

By John L. Le Conte, M. D., eight, to wit: Descriptions of the species of Trox and Omorqus inhabiting the United States; Some corrections in the nomenclature of Coleoptera found in the United States; Description of new Coleoptera collected by Thomas H. Webb, M. D., in the years 1850, '51 and '52, while Secretary to the United States and Mexican Boundary Commission; Synopsis of Pyrochroides of the United States; Synopsis of the Latridiides of the United States; Analytical table of the species of Hydroporus found in the United States, with description of new species; Notes on the Amara of the United States; Synopsis of the Hydrophilide of the United States.

By Joseph Leidy, M. D., four, to wit: Remarks on the identity of Bothriurus cavifrons with Ovibos moschatus or O. maximus; Indications of twelve species of Fossil Fishes; Contributions to a knowledge of the Marine Invertebrate Fauna of the coasts of Rhode Island and New Jersey; published in the Journal. Indications of five species with two new genera of extinct Fishes.


By Joseph G. Norwood and Henry Pratten: Notice of Fossils from the Carboniferous Series of the Western States. Published in the Journal.

By James E. Powell. On the Habits of the Moose.

By Prof. A. Retzius of Copenhagen: On artificially formed Skulls from the Ancient World.

By William Stimpson, two, to wit: Descriptions of some new Invertebrata from the Chinese and Japanese Seas, &c., Part I.; Description of some new Marine Invertebrata, Part II.

By Philip R. Uhler: Descriptions of some Coleoptera supposed to be new.

By Charles M. Wetherill, M. D., Ph. D.: Chemical Notices.

In all forty-five.

All of which is respectfully submitted by,

B. Howard Rand, Recording Secretary.

The Society then proceeded to an election for Standing Committees for 1856, which resulted as follows:

Ethnology, John S. Phillips, Samuel S. Haldeman, J. Aitken Meigs; Comparative Anatomy and General Zoology, Joseph Leidy, Edward Hallowell, John H. Brinton; Mammalogy, John L. Le Conte, John Cassin, William Camac; Ornithology, John Cassin, Edward Harris, George A. McCall; Herpetology and Ichthyology, Edward Hallowell, J. L. Le Conte, Gavin Watson; Conchology. T. A. Conrad, T. B. Wilson, Charles E. Smith; Entomology and Crustacea, Wm. S. Zant-
zinger, Robert Bridges, John A. Guex; Botany, R. Bridges, Wm. S. Zantzinger, Elias Darand; Mineralogy, Wm. S. Vaux, Samuel Ashmead. F. A. Gent; Geology, Isaac Lea, Charles E. Smith, J. L. Le Conte; Paleontology, T. B. Wilson, Joseph Leidy, W. Frederick Rogers; Physics, B. Howard Rand, Fairman Rogers, E. A. Draper; Library, Robert Peasall, S. Weir Mitchell, H. Cooper Hanson; Proceedings, Wm. S. Zantzinger, Joseph Leidy, George A. McCall.

ELECTION OF MEMBERS AND CORRESPONDENTS.

William M. Uhler, M. D., of Falls of Schuykill, Joseph Wilson, M. D., U. S. Navy, Dr. Isaac J. Hayes, and Dr. Wm. Blackwood, of Philadelphia, Mr. Samuel Jeanes, of Philadelphia, and George Gibbs, Esq., of Stilacoon, Washington Territory, were elected Members;

And Dr. John H. Rith, of Burlington, Iowa, and Dr. John W. Green, of New York, were elected Correspondents.

February 5th.

Vice-President Bridges in the Chair.

Letters were read—

From the Linnean Society of London, dated 12th December, 1855, acknowledging receipt of Proceedings and Journal of the Academy, and desiring missing numbers.

From Dr. I. J. Hayes, dated Philadelphia, 31st January, 1856, acknowledging receipt of his notice of election as a Member.

From Mr. W. W. Wood, dated Manilla, 4th Oct., 1855, transmitting specimens of Natural History for the Museum.

Dr. Leidy read a paper intended for publication in the Proceedings, entitled, "Notices of two new Ichthyodorulites." Referred to Prof. Haldeman, Mr. Isaac Lea, and Mr. A. H. Smith.

On motion of Prof. Haldeman, it was Resolved, That the privilege of endorsing tickets of admission to the Museum on public days, be granted to the Misses Malvina and Mary Lawson, of this city, and that they be invited to visit the Institution at all times.

February 12th.

Vice-President Bridges in the Chair.

Letters were read—

From Dr. Joseph Wilson, U. S. N., dated Philadelphia, Feb. 6th, 1856, acknowledging receipt of his notice of election as a Member.

From Mr. Samuel Ashmead, dated Key West, 23d Jan., 1856, transmitting a collection of objects of Natural History for the Museum.

From the American Philosophical Society, dated Feb. 6, 1856, acknowledging receipt of last No. of the Proceedings.

From the Smithsonian Institution, dated Washington, July 20th.
1855, and Dec. 7th, 1855, acknowledging receipt of late Nos. of the Proceedings and Journal and desiring missing Nos.

From the Boston Society of Natural History, dated 30th Jan., 1856, acknowledging receipt of late Nos. of the Proceedings.

February 19th.

Vice-President Bridges in the Chair.

Letters were read—

From the Lyceum of Natural History of New York, dated 18th Feb., 1856, acknowledging receipt of the Proceedings, Vol. 7, No. 12.

From the Smithsonian Institution, dated Washington, Jan. 7th, 1856, of the same tenor.

Dr. Le Conte presented for publication in the Proceedings, the following papers:—1. "Synopsis of the Mycetophagidae of the United States;" 2. "Synopsis of the Phalaeridae of the United States;" 3. "Note on the genus Lithodus of Schoenheer;" 4. "Notice of three genera of Scarabaeidae found in the United States;" 5. "Analytical table of the species of Chlaenius found in the United States," all of which were referred to a Committee consisting of Mr. W. F. Rogers, Mr. Guex, and Dr. Zantzinger.

Mr. W. F. Rogers presented a paper for publication in the Proceedings, entitled, "Synopsis of species of Chrysomela and allied genera inhabiting the United States." Referred to Dr. Le Conte, Mr. Guex, and Dr. Zantzinger.

Mr. Cassin presented a paper for publication in the Proceedings, entitled, "Notes on North American Birds in the Collection of the Academy of Natural Sciences of Philadelphia;" which was referred to Dr. Wilson, Dr. Henderson, and Dr. Woodhouse.

Dr. Leidy presented a paper for publication in the Proceedings, entitled, "A Synopsis of Entozoa and some of their Ecto-congeners observed by the Author." Referred to Mr. J. P. Lesley, Dr. Le Conte, and Dr. Carson.

Also, a paper by the same, entitled, Notices of some remains of extinct Mammalia recently discovered by F. V. Hayden, in the ‘Mauvaises Terres’ of Nebraska. Referred to Dr. Henderson, Mr. Isaac Lea, and Dr. Wilson.

February 26th.

Vice-President Bridges in the Chair.

The Committees on Dr. Hallowell’s paper, read 15th January; Dr. Leidy’s paper, read 5th Feb.; on Dr. Le Conte’s papers, read 19th Feb.; on Mr. W. F. Rogers’ paper, read same date; on Mr. Cassin’s paper, read same date; and on Dr. Leidy’s papers, read same date, severally reported in favor of publication in the Proceedings.
Description of several species of Urodela, with remarks on the geographical distribution of the Caducibranchiate division of these animals and their classification.

By Edward Hallowell, M. D.

Class REPTILIA.

Fourth order, Batrachia, Brogn.
Sub. class. Amphibiens Ichthyioïdes ou Nudipelliferes, Blainv.
Class Amphibia, Bonap.
Second order, Salamandreæ, Bonap.
Second order, Dipnoæ, Leuckart, Fitzinger.
First tribe, Diaphon mutabilia.
Fifth family, Salamandroidea, Fitz.
Order, Ranæ. Second division, Ranidæ candidæ, Wagler.
Second sub order, Batrachia gradiercia, Merrem and Gray.
Batrachia. Third sub order, Urodèles, Dum.
First family, Atræ oléæ on salamandrides.
Sub family, Ambystomina, Gray.
Genus, Ambystoma, Tschudi.

Ambystoma laterale, nob.

This animal is smaller than any of the species of Ambystoma with which we are acquainted, with the exception of A. macrodactylum, being about the size of Salamandra nigra, Green.

Color just black above, black below, with a tinge of brown especially upon the throat; the sides of the body and tail are marked with numerous white spots about the size of a pin's head, and even larger, thickly agglomerated; they are also observed of greater dimer ions upon the sides of the neck; the chin and throat present numerous white spots, smaller than those upon the sides; they occur, also, sparsely upon the abdomen; extremities spotted with white, both above and below; fingers and toes banded with the same; a gular fold; palatine teeth in a transverse, undulating, interrupted series, as in Ambystoma fasciatum, (See Dum. and Bib., pl. 101, fig. C.) passing behind the internal nares; no longitudinal rows of teeth; tongue attached in front and behind, free at its lateral edges; tail compressed, longer than the body; extremities slender, middle fingers of nearly equal length; first and fourth idem; first toe shorter than fifth; second than third, fourth than fifth; fingers and toes free, slender, depressed; ten distinct costal folds.

Dimensions.—Length of head 4 lines, breadth 2 1/2; of body from gular fold to vent, 1 inch 2 1/2 lines, (Fr.) of tail 1 inch 5 lines; length of anterior extremities 6 lines, of posterior 7.

Habitus.—Marquette, south-east border of Lake Superior, specimen in Mus. of Acad. N. S., presented by Dr. John L. Le Conte, who found it in that region, with a fine specimen of Ablabes punctatus, Dum. and Bib. No mention is made of any species of Urodèles in the work on Lake Superior, by Professor Agassiz, with the exception of Plethodon erythronomus. The reptiles enumerated in it are Trophonius sirtalis and Tropidonotus erythrogaster, a species allied to Tropidonotus rigidus, an undetermined species of Crotaulorhophus, probably tergeminus; Rana nigricans, Rana bucephala, Rana sylvatica, Hylades maculatus, Bufo americanus. Plethodon erythronomus and Menobranchus maculatus.* I have since found another specimen much older, and having a general brownish tint, (altered by alcohol) but with the lateral spots quite distinct, among the reptiles of the Green collection presented to the Academy by Dr. Franklin Bache, with no indication of locality.

General Remarks.—The Ambystoma above described resembles none other of our well known species, and will, therefore, be readily recognized. Amb. punctu-

*To these may be added Coluber occipito-maculatus Storcr. (Col. venustus, Hallowell, Proceedings Acad. N. S., vol. iii., p. 260, pl. 1.)
latum, Gray, (Cat. Br. Mus. Amphib. p. 37, No. 5,) is represented as lead colored, and white beneath with distant scattered white dots upon the cheek and upper part of sides. Its habitat is Monterey, California. It is unknown to us. Ambystoma laterale is somewhat similar in coloring to Sal. niger, Green, but that is a Plethodon, having a head and tail, and an arrangement of teeth altogether different; viz., two small arched rows behind the internal nares, the convexity presenting forward, converging toward each other, and separated by an interval, with two rows of thickly set, longitudinal sphenoidal teeth, closely approximated, arranged somewhat like a brush, and separated from the vomerine by an interspace without teeth. The Ambystoma nigrum of Dum. and Bib., is also a Plethodon, and is, no doubt, identical with Plethodon fuscum as the synonymes show; (Sal. niger, Green, Desmognathus niger, Baird,) and Plethodon fuscum being the same, they not having seen the animal. Salam. erythronota, Green is erroneously placed by Gray, (Cat. Br. Mus. Amphib. Grad, p. 37. No. 9,) among the Ambystomatæ. It is a Plethodon as Dumeril and Bibron have it. Ambystoma quadriraculatum and Ambystoma salmonæum, Dum. & Bib. belong to other genera. The first is a Plethodon, the latter has the transverse and longitudinal rows of teeth in a continuous series, in this respect resembling none other of our Urodeles with the exception of Sal. rubra, Green, (Bohtoglossa rubra, D. & B.) Pseudotriton rubra, Tschudi. Dum. & Bib. have also put glutinosum and auriculatum in the genus Cylindrostoma. They are both Plethodonts.†

The genus Salamandra does not exist, so far as is known, on the American Continent. On the other hand, Ambystoma is an exclusively American genus, and has a wide range. Its most northern limit at present, is Lake Superior; its southern, New Mexico. It is found in Maine, Pennsylvania and South Carolina, (punctatum or venenosum Bart.) Massachusetts, Ohio, Maryland, Virginia, Georgia, Mississippi, (opacum Grad. or fuscum Gray.) New York and New Jersey, (tigrinum.) Oregon, (macroactylum, Bd.) Michigan, Wisconsin and Illinois, (luridum) ingens (Xiphonura Tsch.) New Orleans.

It is a remarkable fact that none of the animals belonging to the sub-order Batrachia gradientia of Merrem and Gray, (Batrachia urodela, Dum. and Bib.) and especially the Urodeles arémodéres or Salamandræ, have been discovered in America south of Mexico, although so numerous in the northern part of that great continent. Nor are any of the caducibranchiate-tailed batracians known to exist in the East Indies, Persia, China, Australia, Borneo, Sumatra, Java, New Zealand, the Philippines, New Holland, New Guinea, West or Southern Africa, or, so far as is known, with the exception of Japan and the Choo, in any of the numerous islands of the Atlantic and Pacific Oceans. They are found in the south of Spain and northern part of Africa, (Pleurodeles,) the islands of the Mediterranean, various parts of England, France, Germany and Italy, (Salamandra, Triton, Geotriton, Euproctus,) the north of Africa, Syria, (Triton?) and Japan, (Cynops, Oneychactylus, Ellipsoglossa,) but appear to be more abundant in North America, and comprise genera not yet observed in other parts of the world, viz., Ambystoma, Tsch., which contains many species, Plethodon, Tsch., Desmognathus, Bd., Speierpes, Raf., Taricha, Gray, Pseudotriton, Tsch., Hemidactylus, Tsch., Batrachoeps, Bonap., Ensatina, Gray, and Dietmyctylus, Raf.

There is not only not any true Salamandra in the United States, but no Triton,

*As universally yellowish brown or black," Eights, Dekay, Nat. Hist. of New York, Reptiles, p. 85; the brown specimens, the young according to Dr. Holbrook.

†The Salamandra Jeffersoniana of Prof. Holbrook is no doubt a Plethodon, perhaps identical as well as S. Jeffersoniana, Green, with Plethodon glutinosus, Tschudi represents the teeth as transverse in his Xiphonura Jeffersoniana. Is X. Jeffersoniana, Tsch. identical with Ambystoma ingens? 

‡Prof. Schlegel states that a species approaching S. longicauda was brought from Martinique by Mr. Père, Fauna Japonica, Reptiles, p. 119.
properly so called, for the Triton dorsalis and symmetricus of authors is anatomically quite different from the Tritons of Europe. The tongue in the genera Spelerpes, Pseudotriton (Mycetoglossus, Bib., Bolitoglossa, D. and B.) and Batrachocephus, Bonap., is bolitoglossal or mushroom-shaped, being quite free and supported upon a central pedicel; but the arrangement of the teeth is not the same, the transverse and longitudinal rows being separated by an interval in Spelerpes and Batrachocephus, but, as before stated, are in a continuous series in Pseudotriton. The only European genus which agrees with the first named genera in the form of tongue and arrangement of teeth, is Geotriton, the tongue in the Tritons proper being attached both in front and posteriorly, and having no transverse teeth whatever;* but in Geotriton the toes are very distinctly palmed, which is not the case in either Batrachocephus or Spelerpes, so that not only the species of Urodèles, now under consideration, are different, but the genera also, no two being identical in both continents; further, if we restrict the families more fully than has hitherto been done, we might say that the only sub-families of this group of reptiles common to both Europe and America are the Bolitoglossidæ, or the mushroom-tongued Urodèles, comprising in the former several genera, in the latter but one, and the Tritonidæ. It is also worthy of remark that, although these animals are known, (instead of having the power to remain unharmed amidst the flames, according to the opinion of the vulgar, or of "inhabiting the rivers of hell,"†) to be capable of enduring extreme cold, (the Salamandra atra existing near the region of snow in the Alps,) they have not yet been discovered very far north. None of the American species have been found north of Lake Superior except Pethodon erythynotus, and that at no great distance. In Europe the most northern limit is Sweden. None of these reptiles, we believe, were observed in the recent expedition of Dr. Kane to the Arctic regions.‡

In making out a synopsis of the Urodèle Batrachians in the collection of the Academy, I had laid aside for future examination the Triton porphyriticus, of which we have but a single specimen and which is really an Ambystoma. The true position of this animal appears to have been quite doubtful. Prof. Green describes it as a Salamandra, Prof. Holbrook, a Triton, Mr. Gray, a Spelerpes, with a note of interrogation, and Prof. Baird, in his valuable synopsis of the group of reptiles to which it belongs, states that its place probably is among the Ambystomata, but previously remarks that Pseudotriton salmoneus and the Salamandra porphyritic a of Green will very probably turn out to be identical. Should this be the case, Pseudotriton salmoneus becomes P. porphyriticus, and the species now described will require a new name.

**AMBYSTOMA PORPHYRITICUM.**


* Dr. Holbrook is in error in stating that Triton dorsalis has transverse teeth.† In allusion to the Tartarean *habitat* of these creatures, a writer in the London Quarterly Review remarks, that Scott's conversation "was rich in case, sense and humor, while theirs (certain smart and perverse, but unwholesome disputants) was like the breakfasts in military novels, which seem to consist chiefly of devilled kidneys, grilled bones, and other fierce and *salamandrine* elements."
The Salamanders are covered with numerous pores, which exude an acrid and glutinous fluid, so that if thrown upon live coals they become blackened, but of course the animal is soon destroyed.‡ The most northern limit of reptile life observed by Sir J. Richardson, (see boat voyage in search of Sir John Franklin,) was the north bend of Porcupine River, within the Arctic circle, where a snake was found. The tortoises disappear beyond the 51st degree, at the south end of Lake Winnepig, (Radys geographic a and probably the snapper,) the frogs at 68°, (Bufo americanus and Hyla versicolor)
Char. General form more slender than that of most of the Ambystomata. Head small, convex above, rounded in front; eyes latero-superior, prominent; tongue ovoid, firmly attached in front and posteriorly, more free at the sides; internal openings of the nares moderately large; teeth in a transverse uninterrupted row, arched in front, concave posteriorly; no longitudinal rows of teeth; a gular fold; no parotids; skin perfectly smooth to the touch, presenting innumerable small pores when observed with a glass; of a uniform brownish color above, lighter below; no line of lateral pores between the axilla and groin; fingers and toes free, rather slender, depressed, fourth toe longer than the third; tail much compressed, shorter than head, neck and body.

Habitat.—Wabash. One specimen in Mus. Acad. Nat. Sc., presented by Dr. McMurrrie. Prof. Green's specimens were found in French Creek, near Meadville, Crawford County, Pennsylvania.

Dimensions.—Length of head 4 lines; breadth 3½; length of neck and body to vent 1 inch 7 lines; (Fr.) of tail 1 inch 9 lines.

Gen. remarks.—The whitish spots mentioned by Prof. Holbrook, arranged in a linear longitudinal series along the flanks, and also by Dr. Green, are not visible in the specimens above described, probably from long immersion in alcohol. It is a larger animal than Ambystoma laterale, and differs from it much in the arrangement of the transverse teeth and in the coloration. A good figure and excellent description of it will be found in Prof. Holbrook's work on the North American Reptiles.† The Triton porphyriticus of Dr. Dekay (Nat. Hist. of New York, Reptiles, p. 85) is Plethodon glutinosus, judging from the description,‡ no mention being made of the teeth. The arrangement of the teeth in the species of Ambystoma varies considerably, and with the size of the internal nares, appears to form very good specific characters. Dr. Green's description corresponds in almost every important particular with the animal above described, except the head, which, instead of being "rather large," is on the contrary small. He states that "the color on the back varies very much in different specimens, some being dark chocolate, others of a much lighter color, and others again of a pale brown; the young is nearly white, with a middle line on the sides extending from the anterior to the posterior extremities." (MacL. Lyc. p. 3.) Prof. Holbrook's specimen was 4 inch. 5 lines in length; Dr. Green's between 5 and 6 inches. Prof. Holbrook's drawing is much more accurate than that of Prof. Green, which, although more highly finished, does not correspond very closely with the specimens in the collection of the Academy, the head resembling more that of Pseudotriton salmoneus, (Sal. salmoneus, Storer,)‡ Prof. Holbrook observes that he had never seen the animal alive, but the coloring was taken from the original of Dr. Green.

Some years ago I described in the Proceedings of the Academy, a new Salamander from California, under the name lugubris. Mr. Gray, in the Catalogue of the British Museum, places it along side of Taricha, with a note of interrogation. It is however very different from Taricha. The species was subsequently made the type of a new genus by Prof. Baird, with the name Aneides.

* In glutinosus this is not the case; the vomerine teeth are separated by a wide interval and take another course; sphenoidal teeth in glutinosus, none in Ambystoma; the fingers and toes are also different.

† The palate, he observes, "is armed with a row of transverse teeth."

‡ He says, tail cylindrical, scarcely compressed. In porphyriticus the tail is much compressed; in P. glutinosus cylindrical; the shape of the tail and the teeth distinguish it at once from glutinosus.

‡ The small eyes and irregular whitish spots in the description do not apply to Salmoneus; the snout is described as obtuse, which it is in porphyriticus; in the drawing it is truncate.
The following notes are somewhat more precise than those of the former description.

Sub. fam. PLETHODONTIDÆ.

Gen. Aneides, Baird.

Char. — Head large, swollen at the temples, snout angular, eyes very prominent; tongue obcordate, more or less truncate posteriorly, attached in front, and along the middle, sides quite free, quite free posteriorly, but less so than at the sides; maxillary teeth greatly developed, especially those of the lower jaw, which are spear-shaped, sharp-pointed, more or less convex anteriorly, concave posteriorly, with a ridge in the middle, about \( \frac{3}{4} \) of a line in length; vomerine teeth in two convergent rows, behind the internal nares meeting posteriorly, their convex surfaces presenting inward*; sphenoidal teeth very numerous, sharp pointed, thickly set like a brush in two rows, closely in contact in the anterior third, posteriorly a very narrow linear interspace, not enlarged behind; in the original specimen, this narrow interspace is not so distinct, so that they might almost with propriety be described as a single row; extremities slender; fingers and toes slightly compressed, free; 1st finger much shorter than 4th; 2d shorter than 3d; 1st toe much shorter than 5th; 2d than 3d; 3d and 4th of equal length; skin smooth, costal grooves well marked, twelve or thirteen in number, tail round, tapering to a point, very slightly compressed at tip, about same length as head, neck and body:

Aneides lugubris.


Char. — Color dark olive above, yellow below, without spots or other markings, a row of small, circular spots on each side.

Dimensions. — Length 4\( \frac{1}{2} \) inches.


The U. atrétodères may be subdivided into the following groups, which will perhaps facilitate their study.

a. With longitudinal teeth.

1. SALAMANDRIDÆ. European.

Tongue rather large, attached in front and posteriorly, free at the sides; toes 4—5.

1 gen. Salamandra. 3 sp. maculosa, corsica, atra.

2. SEIRANOTIDÆ. European.

Tongue well developed, oblong, rounded in front, broader and almost truncate posteriorly, free in its posterior half, less so laterally, attached in front, toes 4—4.

1 gen. Salamandrina. 1 sp. S. perspicillata.


Tongue small, subcircular, free posteriorly, and at the sides, attached in front; toes 4—5; ribs not rudimentary, but much developed, perforating even the integuments.

4. TRITONIDÆ. European, N. American, Asiatic.

Tongue, fleshy, papillose, well developed, attached in front and behind, free at the lateral edges; toes 4—5.

* The true position of this animal is among the Plethodonts, that of Taricha the teeth of which are in two slender longitudinal series, commencing on a line with the inferior margin of the internal nares, about midway between them, but diverging widely posteriorly, among the Tritonidae.

5. ELLIPSOGLOSSID.E. Asiatic.
Tongue oblong oval, free at the sides only; toes 4—5.
1 gen. Ellipsoglossa. 1 sp. E. navia.

b. With transverse and longitudinal teeth.

"C. PLETHODONTID.E. N. American;"
Tongue broad oval, well developed, free at its lateral edges and posteriorly, attached in front; toes 4—5.
3 gen. Desmognathus, Aneides, Plethodon. 6 sp. D. nigra, auriculatus, A. lugubris, P. glutinosus, erythronotus and quadrimaculatus?

7. BOLITOGLOSSID.E. N. American and European.
Tongue of moderate size, mushroom-shaped, supported by a central pedicel; toes 4—5 and 4—4.
4 gen. Batrachocephs, Spelerpes, Pseudotriton, Geo·triton. 9 sp. B. quadriderigitus, attenuatus, S. longicauda, gutto-lineata, bi-lineata, mexicana, P. ruber and salmoneus, G. fuscus.

8. HEMIDACTYLID.E. N. American.
Tongue oval, attached in front and along the middle, more free posteriorly; toes 4—4.
1 gen. Hemidactylum. 1 sp. H. scutatum.

c. Transverse, but no longitudinal teeth.

9. AMBYSTOMID.E. N. American and Asiatic.
Tongue ovate, moderately free at its edges, slightly so in front, attached posteriorly; toes 4—5.
2 gen. Onychodactylus, Ambystoma, 15 sp. O. japonicus, A. punctatum (venenosum Bart.) opacum Grav. (as iatum Green) laterale, pophyriticum, macro·dactylum, punctulatum,? tigrinum, luridum, nebulosum, mavorium, episcopus, (an hypoxanthus Raf.?) talpoideum, proserpine, tenebrosum, and no doubt others.

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Description of two Ichthyodorulites.

By Joseph Leidy, M. D.

Stenacanthus nitidus Leidy. The species of a genus supposed to be distinct from those which have been described, is indicated by an ichthyodorulite, discovered by Charles E. Smith, Esq., in association with the remains of Holoptylus, in the old Red Sandstone formation of Tioga county, Pennsylvania. The specimen is partially imbedded in a mass of red sandstone; and it has its point broken off and is otherwise mutilated. The spine is straight throughout and indicates no disposition to curve. In its perfect condition it appears to have

* D. viridescens Raf. (Tr. dorsal) and D. miniatuS (Tr. symmetricus) are probably the same, the orange color and roughness being appearances which the female more especially presents after a long sojourn on land. At least this may be inferred from what is known of the habits of the European Tritons. Schlegel says that such is the case with T. punctatus. He also remarks that he has specimen of marmoratus (one of the very roughest of the Tritons, if we may judge from the specimen in the Bonaparte collection) perfectly smooth, and we have those of dorsal smooth and more or less rough. The Triton marmoratus, according to Kaup, leaves the water in June and becomes a land animal; the crests of the male disapppear, and the tail, from a swimming organ, becomes round.
been about three inches in length, by about six lines in breadth at its base; and it gradually tapers towards the apex. The anterior margin is convex. The posterior border at the edge of the exposed surface of the fossil is furnished with a row of closely set serrations, directed obliquely downward, of which eight may be counted within the space of seven lines. Whether there is a second row of serrations, the imbedded state of the very friable bone in a hard matrix will not permit me to determine.

The broad surface which is exposed in the specimen, so far as it is preserved, is longitudinally furrowed; and about three-fourths of an inch from the broken summit it exhibits a transverse zigzag fissure, which may probably be the result of an original fracture, although it has very much the appearance of being an articulation.

Cylindracanthus ornatus Leidy. On several occasions fragments of apparent fossil bones have been submitted to my inspection, the character of which has exceedingly puzzled me, and although I now view them as portions of ichthyodorulites, I am not positive of the correctness of my conclusion. The specimens alluded to are found in the cretaceous formations of New Jersey and Alabama. The most perfect one was obtained by W. Taylor, Esq., from near Pemberton, Burlington co., New Jersey. It is over three inches in length with the extremities broken off, is straight and gradually tapering, and is perfectly circular in transverse section. At the thicker end it is six and one quarter lines in diameter, and at the other end five lines. The centre presents a double tubular perforation of comparatively small calibre. The surface is invested with a thick, enamel-like layer, which is dense, brittle, and shining, and deeply fluted; the intervening ridges being of nearly uniform diameter, with pairs occasionally converging into single ones in their course.

**Synopsis of the Mycetophagidae of the United States.**

By John L. Le Conte, M. D.

The genera of this family of Coleoptera which have been thus far discovered in the country, are Mycetophagus, Litargus, Typhaeus, and Diphyllus. Of the latter genus two species are known to me, one found by Dr. Melsheimer in Pennsylvania, and the other by me at Tucson, in the valley of the Gila. I regret that the absence of the specimens prevents me from making them known on the present occasion. Thus if Diplocoelus be combined with Diphyllus as recommended by Lacordaire (Gen. Col. 2, 447,) the only genus left unrepresented in the United States, will be Triphyllus. Of the described species none are unknown to me.

The genera may be thus separated:

- **Tarsi maris antici 3-articulati; (thorax versus latera haud carinatus)**
  - Oculi transversi;
    - Antennarum clava elongata, multiarticulata
    - Antennarum clava triarticulata; (elytra confuse
      - punctata)
    - Oculi rotundati; antennarum clava triarticulata.
      - Ligula membrane
      - Ligula cornua
      - Tarsi omnes subpentameri; antennae clava biarticulata;
        - (thorax utriusque bicarinulatus)

- **Mycetophagus Hellwig.**

A. **Antennae extrorsum sensim incrassate; thorax lateribus haud serratus.**

1. **M. punctatus, ovalis infra rufus-testaceus, capite thoraceque nigris dense punctatis, elytris flavis maculae securi, margine laterali, macula discoidali mox pone mediana, fasciae flavae latae ante apicem nigris, ore antennisque rufoscentibus, his clava nigra, ad apicem testaceo; pedibus flavo-testaceis.** Long -21—25.


Middle and Southern States.
2. *M. flexuosus*, ovalis, testaceus, capite thoracique nigris confertim punctatis, elytris flavis, puncto humerali, macula communi scrutellari, margine laterali, maculis extrusum confluentibus versus medium, fasciae lata dentata ad dorstantem nigris, apice ipso piceo; antennis testaceis, clava nigro-picea ad apicem testaceam. Long. -15.


Middle and Western States. Allied to the preceding, but smaller and with the posterior band broader, less near the apex, and anteriorly dentate, and with three confluent spots forming an irregular external transverse band near the middle.

Varies in having the black spots very much extended so as to cover the greater part of the elytra which then become marked:

a. With a large orange colored humeral spot enclosing a black dot, and extending inwards below the scutel nearly to the suture; two very small spots a little behind the middle, and a larger rounded one very near the apex. Alabama, Mr. Haldeman.

b. With a quadrate humeral orange colored spot enclosing a black dot, and a rounded one very near the apex. Indiana, Mr. J. P. Wild.


San Jose, California. The posterior third of the elytra is usually free from spots, sometimes a very small one is seen near the apex.


Pennsylvania, Dr. Melsheimer; Alabama, Haldeman. I have been compelled to change the name proposed by Dr. Melsheimer, as by an unfortunate error his description was made from two distinct species, one being *M. flexuosus*, while the other is the present; it, however, affords me much pleasure to commemorate his long continued and successful labors in American Entomology by attaching his name to this species, which he was the first to detect.


One specimen, Georgia. Of the same form and with the same sculpture as *M. Melsheimeri*.

B. Antennae articulis 5 ultimis crassioribus; thorax lateribus serratis.


Middle and Southern States: the spots sometimes form several narrow, irregular, transverse fasciae.


Middle and Southern States, not rare.

C. Antennae articulis 4 ultimis majoribus; thorax lateribus haud serratis.

8. *M. obsOLEtus*, ovalis infra rufus, supra niger, elytris fascia dentata antica basin attingente, ad suturam paulo interrupta, macula laterali ad medium,
duabus pone medium quartaque ante apicem rufis; antennis testaceis, articulis 8—10 nigris, ultimis tribus abrupte majoribus. Long. -2.


Middle States. The anterior fascia is sometimes broken into two spots: on the other hand, the spot behind the middle sometimes combine into a dentated fascia.


Middle States, not rare. In the Catalogue of Described Coleoptera of the United States, Dr. Melsheimer has changed the name of this species to M. bisignatus, under the impression that the name had been previously employed. I do not, however, find any other described species named bipustulatus, and have therefore replaced the name first given.

Litarus Er.


Er. Ins. Deutschl. 416.

Middle and Southern States.

3. L. transversus, subelongatus ellipticus depressus niger, pubescens, clytris subtilius punctatis, pilis seriatis, macula humerali, altera pone basin, tertiaque maiore obliqua transversa ad dorstantem testaceis, tarsiis antenarum basi et apice testaceis. Long. -10.

One specimen found at San Jose, California.

4. L. insulatus, subelongatus, ellipticus, subdepressus piceus, pubescens, thoracis clytrorumque marginibus indeterminate testaceis, his maculis utrinque duabus ad basin, altera pone basin, fasciace angusta transversa dentata ad dorstantem testaceis; antennarum basi pedibusque pieco-testaceis. Long. -07.

One immature specimen found in Illinois, by Mr. Willcox. This species seems by the arrangement of the colors to be very distinct from any other found on the Atlantic slope. It differs from the preceding by the distinct punctuation of the elytra, and from the next by the same characters, and by the posterior band being narrow, as well as by the anterior pale spots not occupying nearly half the surface of the elytra.

5. L. batetautus, subelongatus, ellipticus subdepressus, rufo-piceus pubescens, cipate clytrisque obscura, his trizentum antican, macula parva laterali fasciace postica obliqua latera dentata pallida, confermiti subtiliter punctulatis; antennis pedibusque pallide testaceis. Long. -07—085

Colorado river, California, near the junction of the Gila. The pale markings of the elytra are so large that they may be described as pale with the apical fourth and a broad band at the middle obscure; the latter is dilated externally and includes a pale spot. The hairs of the elytra do not appear to be arranged in rows.
Er. Ins. Deutschl. 416.


Middle and Southern States; common.

7. L. nebulosus, ellipticus paulo convexus, subitus nigro-piceus, supra obscure picceo-testaceus, fortius punctatus pubescens, elytris picceo-nebulosis, antennae pedibusque piceo-testaceis. Long. '06—'08.

Maryland; Dr. Zimmermann and Mr. Wild. Broader, more convex and less densely punctured than L. didesmus. The dark marks of the elytra are sometimes very indefinite; in pale colored specimens they are more distinct, forming a spot on each elytron partly surrounding the humerus, and two transverse undulated bands, the first a little before the middle, and the second at the second third of their length; these bands do not reach the sides.

Typhle Curtis.


*Dermeutes fumatus* Linn. Syst. Nat. 2, 564.


Distributed by commerce over all parts of the world. The last synonyms are known to me by a specimen kindly communicated by Dr. Melshheimer; they were incorrectly referred by me, (Proc. 7, 217,) to Litargus.

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**Synopsis of the Phalacride of the United States.**

**By John L. Le Conte, M. D.**

In this family are contained four genera, first separated by Erichson; and since all with the exception of Tolyphus are found in our territory, I have here transcribed the table of genera given by him. (Ins. Deutschl., 108.)

1. Tarsi acuales; Tibiae calcaribus
   - obsoletis
   - distintis

2. Tarsi postici elongati, articulo 1mo
   - 2ndo breviore
   - 2ndo longiore

**Phalacrus** Payk.

Palpi maxillares articulo ultimo cylindrico; tibiae compressæ spinulosæ calcaribus obsoletis; tarsis acuales, articulo 1mo breviuscelo; femora compressa intere ciliata.

Usually shorter and more obtuse than Olibrus; the suture on the native species is distinct, and the club of the antennae elongate, with the last joint obtusely rounded at the tip.

A. Thorax ad basin distincte licet subtissime marginatus.

1. P. seriatus, ovalis paulo convexus, nitidus niger, elytris conferiim seriatiim punctulatis, versus basin fere levibus; antennae ad basin palpisque testaceis, Long. '1.'

One specimen, Kansas. Longer and less convex than the other species, and known by the testaceous palpi.

2. P. ovalis, ovalis convexus, nitidus niger, elytris obsoletissime substriatis, prope strias seriati subtilissime punctulatis; antennae ad basin testaceis. Long. '08—'10.

Two specimens, San Diego, California. The body tapers a little posteriorly in
the male, but is regularly oval in the female. Differs from the next by the longer form.


Kansas and California. By its larger size this species may be distinguished.

4. P. politus, breviter obtuse ovalis, nigerritudinis, elytris obsoletissime substriatis, prope strias subtilissimae seriatiim punctulatis, antennis piceis, ad basin palpisque testaceis. Long. '08—'09.


Middle and Southern States, abundant. Very similar in form and sculpture to the preceding, but differs by the smaller size and testaceous palpi. The male is slightly narrowed behind.

5. P. plumilus, breviter obtuse ovales, nigerritudinis, elytris obsoletissime substriatis, prope strias subtilissimae seriatiim punctulatis, tibialis tarsis palpis antennisque fusco-testaceis, his clava obscura. Long. '05.

Two specimens, Georgia: very considerably smaller than P. politus, which it otherwise resembles.

B. Thorax ad basin vix conspicue marginatus.


One specimen, Kansas. Nearly of the same form as P. ovalis, but somewhat attenuated behind, and without any rows of fine punctures upon the elytra, except very near to the apex.

Olibrus Er.

Palpi maxillares articulo ultimo ovali; tibieae tenues, calcaribus apicalibus conspicue; tarsi postici reliquis longiores, articulo secundo longiusculo; femora haud ciliata.

A. Metasternum antice productum, cum mesosterno connatum, protuberrantia; (elytra striis internis subplanis profundioribus).

1. O. bicolor, oblongo-ovatus, convexus, nigerritudinis, elytris macula rotundata anteapicali ornatis, substriatis, striis duabus internis distinctis; infra rufus, antennis pedibusque testaceis. Long. '08—'11.

Er. Ins. Deutschl. 116. (ubi synon. invenies.)


Middle States, not common. Perhaps imported from Europe.

2. O. striatulus, oblongo-ovatus convexus, nigerritudinis, elytris tenuiter striatis, interstiiis biseriatim subtilissime punctulatis; subitus cum antennis pedibusque rufo-testaceis. Long. '10.

Middle States and Kansas. Of nearly the same form as the preceding, but a little narrower with more distinct elytral striae.


One specimen, Shoalwater Bay, Oregon, Dr. Cooper. Of the same form as the preceding, with the head more distinctly punctured.

4. O. seministratus, oblongo-ovatus, convexus, nigro-piceus, nigerritudinis, capite vix punctato, elytris striis antice obliteratis versus apicem valde distinctis, interstiiis biseriatim obsolete punctulatis; subitus cum antennis pedibusque rufo-testaceis. Long. '08.

One specimen from Kansas. Also of the same form as the preceding.

5. O. rubens, ovalis convexus, ferruginosus nigerrimae, capite fere laevi, elytris
1856.] 17

stris duabus solis internis tenuibus distinctis, obsoletissime seriatim punctatis, pectore obscuriore, antennis pedibusque testaceis. Long. ·09.

One specimen, Georgia, which by its more regularly oval form differs from all the rest of this division.

B. Metasternum haud productum; (elytra stria suturali profunda.)

6. O. obtusus, breviter ovalis, convexus, niger nitidus, subitus cum pedibus rufo-piceus, antennarum clava fusca. Long. ·07.

One specimen, San Jose, California. Resembles Phalacrus in its form, but the palpi and tarsi are those of this genus. The protosternum is ciliate with long hairs behind, which projecting over the mesosternum cause the latter to appear sulcate.

7. O. a. palpis, oblongo-ovatus convexus, supra nigro-piceus, ore, thorace ad latera, elytrisque ad latera et postice indeterminate piceo-testaceis; subitus, pedibus antennisque testaceis. Long. ·07. — ·09.


Middle and Southern States and Lake Superior. Varies considerably in size and depth of coloring.

8. O. aquabilis, subovalis convexus, supra testaceo-piceus, medio obscuriore, subitus cum antennis pedibusque testaceus. Long. ·08.

San Jose, California, near water. More regularly oval than O. a. palpis, and narrower than O. obtusus.

9. O. nitidus, rotundatus subovatus convexus, rufo-testaceus nitidus, elytris levibus stria suturali (sicut in precedentibus) impunctata. Long. ·04.


10. O. pusillus, supra nigro-piceus, ad latera indeterminate rufo-piceus, oblongo-ovatus convexus, nitidus, elytris striae suturali antice punctata, punctisque seriebus duabus vel tribus utrinque abbreviatis parum distinctis, subitus cum antennis pedibusque testaceus pectore obscuriore. Long. ·04.

Middle and Southern States. Narrower than O. nitidus, and very easily distinguished by the two or three rows of punctures reaching near the base or tip.

Litochrus Er.

Palpi maxillares articulo ultimo cylindrico; tibiae tennes, calcaribus apicalibus conspicuis; tarsi postici reliquis longiores, articulo primo elongato; femora haud ciliata.

L. pulchellus, oblongo-ovatus convexus, supra piceus nitidus, thoracis elytrorumque lateribus, macula obliqua antice alteraque posteriori maxima, ore antennis pedibus, corporeaque subitus late rufo-testaceis, elytris striae internis duabus tenuibus postice confinientibus. Long. ·06.

One specimen from Louisiana, liberally given me by Mr. Guex. A very beautiful little species. The elytra have only two very fine internal striae, which unite about one fourth from the apex. The anterior spot is oblique, the posterior one is larger and rounded.

Litochrus brunnipennis, Mann. Bull. Mosc. 1852, 369; from Sitkha is according to a specimen sent me by Baron Chaudoir, a species of Agathidium.

Phalacrus pallipes, Say, Journ. Acad. Nat. Sc. 4, 90, from Kansas is unknown to me. It is a species of Olbrus, of the first division; it is described as not quite one tenth of an inch long, black, with the antennae, feet and palpi testaceous.
Note on the genus Lithodus Schonherr.

By John L. LeConte, M. D.

On examining a considerable number of specimens of this curious genus, procured by me several years ago, in the valley of the Platte River, it became evident at once that several species existed; from the close resemblance in color, form and sculpture, it seemed to be a matter of difficulty to separate them, and I proposed to leave them until time and inclination would induce some entomologist to labor upon a monograph of our native Curculionidæ; such time being, however, apparently remote, and desiring to make use of the names of these objects in other investigations, I have thought it desirable to make them known.

The species are all of a dull black color without lustre, and, covered, when alive, with a crust of dirty brown matter; the surface is thinly clothed with very short yellowish bristles, which proceed from punctures; the punctures of the head are small, and the front is deeply sulcate: the rostrum is shorter than the head, flat, slightly narrowed in front, with the mandibles distinct. The thorax is longer than wide, uneven, very coarsely punctured, rounded on the sides and narrowed somewhat rapidly in front, (except in L. longior); the disc has four vague impressions, and sometimes a slight dorsal channel: the part near the apex is transversely elevated, but more so in some species than in others; the sides are transversely impressed near the apex.

The elytra are convex, connate, declivous and somewhat pointed behind, emarginate at base, with the humeral angles variously prolonged and embracing the base of the thorax: they have rows of large irregular foveae, and the interstices are alternately more elevated; between the foveae may be seen a few elevated punctures. The legs are feeble, the tarsi are not dilated, and the pectoral excavation does not reach the anterior coxae.

1. L. humeralis, thorace fortius inæquali, ad apicem fortiter transversim elevato; elytris humeris valde productis, ad thoracis tertiam partem extendentibus, extrorsum curvatis. Long. .33.
   Germ, in Schônherr, Cure. 2, 420; 6, 2, 390.
   Thecesternus humeralis Say, Cure. 8.
   The humeral angles are much longer than in any of the others, and very distinctly bent outwards.

2. L. rectus, thorace fortius inæquali, ad apicem fortiter transversim elevato; elytris humeris valde productis, ad thoracis quartam partem extendentibus porrectis. Long. .35.
   One specimen. The thorax is as strongly impressed, and as much elevated at the base as in the preceding, but the humeral angles are less prolonged, and not curved outwards.

3. L. affinis, thorace minus inæquali, ad apicem modice transversim elevato, in latera minus profunde impresso; elytris humeris breviter recte productis. Long. .35.
   Differs from the next by the less strongly impressed and less deeply punctured thorax.

4. L. rudis, thorace valde cribroso, inæquali, ad apicem magis transversim elevato, in latera fortius impresso, elytris (sepe tomento variegatis) humeris breviter recte productis. Long. .31.—.35.
   The thorax is more strongly and densely punctured than in the others, and the small elevations between the impressed foveæ of the elytra are usually more distinct.

5. L. erosus, thorace minus inæquali ad apicem paulo transversim elevato, in latera minus profunde impresso; elytris humeris breviter recte productis. Long. .25.
Resembles L. affinis, but is only one third the size; the impressions of the elytra are also more irregularly distributed, and their sides are more rounded.


Narrower than any of the others; thorax one third longer than wide, very gradually narrowed at base and tip, with the four dorsal impressions, and the lateral ones well marked. Elytra only moderately emarginate at base, with the humeri only slightly produced, and somewhat acute.


Resembles in form and characters L. affinis and L. erosus; it is intermediate in size, but the humeral angles are less prolonged, being, in fact, but slightly produced, and subacute.

These species occur under dried buffalo excrement in the desert region along the valleys of the Platte and Arkansas river; and are sometimes very abundant.

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Notice of three genera of Scarabeide found in the United States.

By John L. Le Conte, M. D.

On account of the great resemblance in appearance between species of different genera among several of the tribes of Scarabeidae, much confusion has resulted from the effort to place our species properly. This has perhaps been particularly the case with our smaller Dynastidae. Eight species were placed by me in the genus Bothynus, and the species known to Burmeister were placed by that author in Podalgus and Heteronychus. A more careful examination convinced him that the reference to the former of these two genera was incorrect, and peculiarities in the stridulating organs required the construction of a new genus, Ligyrus Burm. (Lamell. 3, 542.) Although Heteronychus relictus is not mentioned, it also belongs to this genus, which comprises all the species from the United States known to Burmeister, except his Podalgus obesus (Bothynus castaneus Meis).

The genus Ligyrus possesses a small elliptical plate of stridulating surface on the inner surface of the elytra, near the outer and posterior margin; the mandibles are strongly dentate externally, and the outer lobe of the maxillae are toothed at the tip.

In the third volume of Prof. Lacordaire's admirable work on the genera of Coleoptera, these genera are carefully divided into groups, with the characters subordinated; and in one of the valuable notes he indicates the existence of a genus not recognized by Burmeister, and distinguished by having no organs of stridulation. No name was suggested, as the scope of Lacordaire's book permitted the introduction of no new materials; but, as I find myself under the necessity of referring to the species in some catalogues now preparing for publication, I have been obliged again to review those referred by me to Bothynus, and now present the results, with the addition of two other remarkable genera.

Ligyrus Burm.

As the inner surface of the elytra cannot always be conveniently examined, the following characters may be used to recognize the species of this genus. The mandibles are strongly toothed externally; the clypeus is only narrowly margined, furnished usually with two small upright teeth at the apex; the front is always transversely carinated, but the carina does not reach the sides of the head. The species may be divided into two groups, and the first may again be subdivided according as the clypeus has one or two apical teeth.
1. Thorax with an anterior forae and acute tubercle; anterior tibiae tridentate.

A. Clypeus bidentate at tip.


Middle States, not rare. Differs from the next by the less deep punctures of the elytra, by the less dense and less coarse punctures of the thorax, and the more distinctly angulated sides of the latter, and by the pygidium being hardly punctured. The body is also more elongated and less dilated posteriorly.

2. L. gibbosus, oblongus, postice latior, subitus ferrugineus, supra piceus vel ferrugineus, capite transversim carinato, rugoso opaco, thorace parce fortius punctato, lateribus vix angulati, elytris sepissime fortius punctato-striatis, pygidio parce punctato; (maxillarum galea bidentata.) Long. '48—'67.

Scearabaeus gibbosus De Geer, 4, 322; tab. 10, fig. 7.

Podalgyus variolosus Burm. Lamell. 3, 121.

Lagurus variolosus Burm. Lamell. 3, 542.

Var. Elytrus minus profunde punctato-striatis, seriebus internis fere obliteratis.


Our most common species; found from Massachusetts to Texas, and westwardly to Santa Fe, Colorado River and Oregon. The specimens from California, Oregon and Texas differ in having the sides of the thorax more regularly rounded, and in the Californian and Oregon specimens the inner sipe of the elytra are frequently almost obliterated, and the thorax scarcely foveate. From the locality there can be no doubt that this is De Geer's species, with the description of which it corresponds. The differences between this and the preceding have been already mentioned; from the next it differs (apart from the maxillae) by the less deep punctures of the elytra, and by the rugosely punctured and almost opaque clypeus.


? Podalgyus juvenes Burm. ibid. 3, 121.


? Scearabaeus juvenes Oliv. Ent. 3, 45, tab. 8, fig. 66, and tab. 16, fig. 143.


Georgia and South Carolina, common. The description of the clypeus "finely wrinkled, bidentate, the frontal suture elevated, abbreviated at the sides, slightly emarginate in the middle," given by Burmeister, leaves a doubt in my mind whether our species are really identical. The clypeus in mine is nearly smooth, and the frontal carina is in no respect different from that of the two preceding species. The references to Fabricius and Olivier are acknowledged by Burmeister to be doubtful, and it must be a matter of regret that the name was not allowed to become obsolete.

B. Clypeus at tip, with only a single elevated tooth.


One specimen found at Ringgold Barracks, Texas, by Lieut. Haldeman. In form and sculpture of the head and thorax this species exactly resembles L.
gibbosus, but the apical tooth of the clypeus is central, and therefore is not produced by wearing from a bidentate form; the transverse carina is less elevated. On the elytra the rows of punctures are somewhat more regular and smaller than in the specimens from the Atlantic States. The fovea behind the anterior acute tubercle of the thorax is rounded and densely rugous, while in all the species of division A it is polished. The maxillae are distinctly visible in the specimen, and their galea is obviously tridentate at tip. The form of the stridulating organs and the sculpture of the propygidium is precisely as in the other species.

2. Thorax without anterior fovea and acute tubercle; anterior tibiae sub-4-dentate.

5. L. relicatus, nigro-piceus oblongus, capite leviter rugose punctato, clypeo antice bidentato, transversim carinato, carina medio interrumpita, thorace parce punctato, lateribus rotundato, elytris linea suturali, alterisque 8 punctatis per paria approximatis, interstititis alternis punctis plus minusve confusi notatis, pygidio parce punctato, ad basin subtiliter rugoso. Long. 7—9.

Heteronychus relicatus Burm. Lamell. 3, 92.

Middle and Southern States, and Kansas as far as the Rocky Mountains; those from the latter locality are smaller than those found in Pennsylvania. Slight differences are observed in form in this species; females occur usually of a regular oblong form like the males, but occasionally they are quite considerably ovate.

In the other species of the genus I have been able to detect no sexual differences; here, however, the inner claw of the anterior tarsi of the male is thickened, dilated and suddenly curved.


Two specimens without any abdomen, from Georgia. Very closely resembles the preceding in form and sculpture, but the size is so different that I cannot consider them as the same species. The only specific differences I can find, however, are the more strongly rugose head and more densely punctured elytra.

Aphonus Lec.

This genus contains species agreeing with Ligyrus in every respect, except that the elytra on the inner surface are not furnished with stridulating plates, and the mandibles are not dentate externally; to avoid, however, the necessity of raising the elytra, recourse may be had to the structure of the head, which is narrowly margined, hardly transversely carinate just before the eyes, but at most furnished with a slight tubercle; the tip of the clypeus is varied in form; in the first division the tip itself is elevated, and immediately behind it is a sharp transverse elevated line, which is either uniform or tridentate. In the second division the tip is rounded, and the elevated line is strongly bidentate.

The species of the first division are of a very short ovate convex form; the mandibles are not prominent, the antennae are 10-jointed, the 6th and 7th joints wider than the preceding ones; the one forming the second division is, however, only moderately dilated behind, the mandibles are more prominent, and the fifth and sixth joints of the antennae are of the same size and closely united.

1. A. pyriformis, breviter ovoidus, obscure ferrugineus, capite confertum rugoso, vertice medio obsolete tuberculato, fronte ad apicem truncata, mox pone


Found near the forks of the Platte River. I observed in the collection of Capt. Wilkes’ Exploring Expedition a specimen from Oregon, that I referred to this species, but as I have not now an opportunity of re-examining it, I cannot answer for the correctness of the reference. The sides of the head are extremely narrowly margined.

B. Pygidium very convex, last abdominal segment with a very strong line near the margin.

2. A. tridentatus, ovatus, piceus, subtus obscure ferrugineus, capite dense rugoso tenuiter marginato, fronte ad apicem emarginata et medio submucronata, mox pone apicem alte transversim reflexo tridentato, thorace lateribus rotundatis, punctato, parcius in disco pone medium, elytris grosse punctato-striatis, pygidio subtillissime punctulato, abdominis segmento ventrali ultimo linea marginali insculpto. Long. *64.


One specimen found by me near Long’s Peak; another from Missouri was given me by Prof. Agassiz. Both are females, and have the marginal line of the last abdominal segment sinuate at the middle.


One male found in New Jersey, given me by Mr. Guex. Differs from A. tridentatus only by the pygidium being nearly smooth at the tip, with a few distinct punctures, and by the punctures of the elytra being smaller and the stripe less numerous; this is produced by the absence of the rows between the alternate striae; these intermediate rows are usually known by being slightly irregular. From the next species it differs by this character, as well as by the color and shape.


Georgia, not rare. Much more dilated behind than the two preceding, with the punctures of the elytra large and the rows numerous. The pygidium of the female is much more convex than that of the male, and the submarginal line of the last ventral segment is sinuous in the middle, while in the male it is uniformly curved.


Podalyus obsesus Burm. Lamell. 3, 119.
Middle and Southern States. Of the same form as the preceding, but only one-third the size, with the thorax less punctured, and the alternate striae of the elytra arranged in pairs and composed of smaller punctures than in A. hydrospicus. The sexual differences are as in H. hydrospicus.

II. Thorax at the apex submucronate and slightly foveate.

6. A. clunalis, oblongus, convexus, piceo-castaneus, postice parum dilatatus, capitc dense rugose punctato, tenuissime marginato, clypeo ad apicem rotundato submucronato, max pede apicem linea valde elevata bidentata armato, sutura frontali distincta emarginata, medio tuberculo parvo notato, thorace lateribus valde rotundatis, subtilius punctato, disco versus basin sublævi, ante apicem fovea parva punctata notato, et in apicem brevissime mucronato, elytris punctato- striatis, punctis externis minoribus confusis, propygidio subtilius punctato, ad apicem lævi, pygidio lævigate modice convexo; abdominis segmentis singulo serie transversa grosse punctato, ultimo tenuiter marginato, (maxillarum galea bidentata.) Long. -95.

One specimen found by Dr. Thos. H. Webb, of the Boundary Commission, and probably in the valley of the Gila. This species differs so much from the other species of the genus, that it can hardly be associated with them; I have, however, failed to discover any better place for it, and do not desire at present to increase the number of genera. Although the propygidium is somewhat rough with punctures, I do not perceive any transverse ruge, such as indicate the organs of stridulation in other genera. The bind tibicæ are thicker than usual, and the transverse crest at the middle is prolonged externally into an acute tooth; it does not, however, agree with any of the genera of Pimelolipides described by Lacordaire, and seems rather to belong to the division Pentodontides.

Polymecibus Lec.

Clypeus trilobatus, lobis rotundatis, margine fortiter reflexo, ad apicem dentibus duobus parvis erectis armato, fronte utrinque transverse carinata, carinis margine adnexit; oculi valde incisi; mandibulæ externorum hauud dentatae, ad apicem acute et sursum productæ; palpì articulo ultimo subcilindrico; (maxillæ hauud visæ;) antenæ 10-articulatæ, clava triphylla, feminae reliqua parte paulo, maris sesqui longiore; in hoc sexu articulis funiculi externi crassioribus compressis. Protosternum pone coxas hauud prominulum. Pedes breves, crassi, tibicæ femoribus hauud longiores, antice ultra medium tridentata, dentibus approximatis; intermedia et postice ultra medium externorum emarginatæ et unilamellatae; ad apicem vix ciliate, angulo externo paulo producto; tarsi tibis hauud longiores, articulis 1—4 aequalibus parce setosis, posteriores articulo 1mo hauud elevato, 4to vero subitus longe acuminato; 5to omnium longiore, uinguiculis anticeps sexus utrisque simplicibus, posterioribus feminæ simplicibus, maris externis ad medium fortiter dentatis, dente uingue ipso vix breviore. Pedex biarticulatus nudus.

A very remarkable genus of regularly oblong oval form, and not furnished with stridulating organs. Its characters approach those of Pachyulus, from which, however, it is quite distinct. Professor Lacordaire, to whom I sent a specimen submitted it to a careful examination, and from his letter I translate the following extract, convinced that the opinion of my most learned friend, who has examined nearly all the genera of this family, will be of more service to the student than any thing I could say: "The Lamellicorn which you have sent is very remarkable, but there can be no doubt regarding its place in the entomological series. It is a genuine Dynastide, as is proved by the last abdominal stigmata diverging strongly, and by the form of the mentum, the mandibles and the clypeus; but it is related to the Melolonthides by the form of the head, the eyes, the antennæ and the tarsi. Its facies is at once that of certain species of both groups. In short, it is a completely new form, intermediate between the two groups mentioned, and you can without fear found upon it a new genus,
which ought, in my opinion, be placed among the Cyclocephalides, along side of Pachyulus, which is also a very anomalous genus.

P. brevipes, nigro-piceus, vel obscure castaneus, oblongus, convexus, capite rugose punctato, clypeo ad apicem bidentato, fronte utrinque transversim carinata, margine reflexo, thorace lateribus rotundatis, conferim punctato, parce autem in disco pone medium, elytris punctato- striatis, punctis versus suturam confusi, podice punctato; abdomen coxisque posticis confertim aciculatis. Long. 63—7.

Pennsylvania, New York and Missouri; rare. Larger, more convex and more regularly oblong than Ligyrus variolosus. The outer strie of punctures are almost entirely regular, while those next the suture are confused, especially towards the base. The eyes of the male are larger and more prominent than those of the female.

Pleocoma Lec.

Clypeus (labrum?) prolongatus, antice angustatus acute rotundatus, pone apicem cornu transverso erecto furcato armatus; caput ante oculos acute extror- sum angulatum, vertice inter oculos brevi erecto armatum; oculi magni vix emarginati. Antennae 11-articulata, articulo 2ndo sequentibus crassiore; 3io paulo elongato, 4 et 5to aequibals, 6to paulo dilatato; 7mo adhuc duplo latiore, 8—11 lamellatis, valde elongatis aequibals. Mandibulae, maxillaeque haud visae, palpi tenues. Thorax latus aurorum angustatus parum convexus, disco antice declivi subdeplanato. Elytra parum convexa postice late rotundata. Prosternum haud prominulm Tibiae antice elongatae 7-dentatae, dentibus supernia tribus minutis, 4 mediocri, 5—7 magnis; posteriores elongatae parum incrassatae, extrorsum ultra medium emarginatae et ad medium undidentatae, ad apicem oblique truncatae, ciliatae, angulo externo parum producto; tarsi (inter- medi) tenues, tibia longiores, articulis 1—4 aequibals, 5to precedente duplo longiores, ungubus simplicibus, paranychia angusta bisetosa. Corpus subutus, os pedes elytraque ad marginem longe fulvo-pilosae.

A very remarkable insect, apparently belonging to the Dynastidae, but differing from all the described genera of that tribe by the 11-jointed antennae having a four-jointed club; the 7th joint might almost be considered as belonging to the club, but is only half the length of the four following. The very long hairs fringing the body give a strong resemblance in appearance to Syrichthus. The anterior tibiae are somewhat as in Athyres ferrugineus and other Geotrupides, but the teeth are more unequal; the anteocular lateral horns are seen also in that species; the eyes are very large, and contract the mouth so much beneath that the maxillae and mandibles are invisible, or have been destroyed by insects; the thick hair also prevents me from seeing the form of the mentum. The form of the prosternum is the same as in Athyres; the anterior femora are very densely clothed with hair on the anterior surface. The anterior and posterior tarsi and abdomen are unfortunately destroyed; the middle tarsi are exactly as in Athyres. Doubt must therefore be entertained whether this genus should be placed with the Dynastidae or Geotrupidae; the form of the antennae is equally repugnant to each, while the irregular puncturing of the elytra finds no parallel in the latter tr be.

I find it impossible to determine whether the projecting part of the head beyond the anterior horn is a clypeus or labrum; there is a slight appearance of a suture, but I am not certain of its existence; the part in question is longer than wide, gradually narrowed in front and acutely narrowed at tip.

P. fimbriata, latisscula, ovalis parum convexa, nigra nita supra glabra, capite inter cornua excavato laevi, occipite subtiliter rugose punctato, thorace latitudine fere triplo breviore antursum valde angustato, lateribus rotundatis parce punctulato, antice modice declivi, elytris strigis suturali, alterisque 8 per paria approximatis parum distinctis punctatis, interstitii sat dense punctatis, margine et subitus dense et longe fulvo-villosa. Long. 1-05.

A specimen found in California by Dr. A. H. Heermann was given by him to
Prof. Haldeman, and by the latter most liberally placed in my collection. It is, unfortunately, in a very bad state of preservation, but the remarkable characters will enable it to be readily identified when it again occurs. Mr. Motschulsky informed me, when in this country, that he had seen at the Imperial Museum of St. Petersburg, specimens of the same insect, which had been collected in California. He regarded it as allied to Ceratophyus Fischer, (a division of Geotrupes).

Analytical table of the species of Chlænius found in the United States.

By John L. Le Conte, M. D.

The close relationship existing between several of our species of Chlænius, and the fact that many species have been described under more than one name, induces me to believe that an analytical table by which the species, which are really distinct, may be readily recognized, will be of service to the students of the entomology of the United States. They may be thus arranged:

A. Caput punctatum; antennis articulo 3io longiore; pedes rufo-testacei.

A. Thorax convexus, grosse punctatus, subcordatus.

-6 - 7, supra aeneus, elytris macula magna apicali flavo. 1. C. posticus LeC.

-6, supra violaceus, elytris nigris, 2. C. viridifrons Esch.

-58, supra totus viridis 3. C. patruelis LeC.

B. Thorax planiusculus, æqualiter dense punctatus:

a. supra bicolores;

thorax postice subangustatus;

-6 - 7, supra aeneus, elytris atris, labro truncato 4. C. aestivus Say.

-3, supra aeneus, elytris atris, labro emarginato 5. C. pusillus Say.

thorax postice non angustatus;

-5 - 6, supra aeneus, elytris atris, labro emarginato 6. C. emarginatus Say.

-4, supra viridis, elytris paulo obscurioribus, labro emarginato 7. C. amœnus Dej.

b. supra cyanei, concolorès;

-75 - 85, magnus, thorace lateribus sinuatis 8. C. rufilabris Dej.

-85, magnus, thorace lateribus non sinuatis 9. C. erythropus Germ.


mediocres, elytris obsolete punctulatis;

-65, thorace lateribus subsinusatis 11. C. regularis LeC.

-6 - 65, thorace lateribus haud sinusatis 12. C. rufipes Dej.

c. supra virides, concolorès;


angulis posticis obtusis,

-7, thorace antrorsum valde angustato, angulis post-


-75, thorace postice haud angustato, ano rufo 15. C. sericeus Say.

C. Thorax planiusculus inæqualiter punctatus, subcordatus;

-6 - 7, viridis, thorace subtiliter versus basin dense 17. C. prasinus Dej.

punctulato

-6, cyaneus, thorace vage minus subtiliter punctato 18. C. cumatilis LeC.

B. Caput leve, vel subtilissime punctulatum.

D. Thorax inæqualiter punctatus, cordatus; antennis articulo 3io longiore.

26

C, obscure viridis, thorace depresso, elytris subtilius punctulatis

(•66, "niger, elytris nigro-virescentibus"

•53, lute viridis, thorace convexiore, elytris valde punctulatis

E. Antennæ articulo 3io hand longiore: (thorax precipue aequaliter punctatus.)

a. supra bicoloris, thorax aequaliter punctatus;

•47, thorace aeneo obsoletius punctato, elytris atri thorace fortius punctato;

•4—47, viridis, elytris vix obscurioribus, fortius punctulatis, striis vix punctatis

•42—5, cupreo-aeneus, thorace antrorsum fortius angustato, elytris atro-cyaneis, obsolete punctulatis, striis fortiter punctulatis

•45, viridis, thorace antrorsum parum angustato, elytris atro-cyaneis, obsolete punctulatis, striis fortiter punctulatis

•45, viridis, elytris paulo obscurioribus, subtiliter punctulatis, tenuiter striatis

•44—54, thorace vage punctato, viridis, elytris obscurioribus

b. supra concoloris, thorace ante basin latiore;

•46, cyaneus, thorace aequaliter obsolete punctato, postice hand angustato,

•43, aeneo-aeter, thorace inaequaliter punctato, transverso, postice angustato, elytris fortius punctulatis, (pedibus vel rufis vel nigris)

•37, aeneo-aeter, cyanescens thorace inaequaliter fere obsolete punctato, hand transverso, postice angustato, elytris minus conspicue punctulatis (pedibus rufis)

•45, viridis, thorace inaequaliter fortius punctato, lateribus rotundato,

•5, totus aeneo-aeter, thorace quadratro, rugose, ad basin utrinque densius punctato, elytris fortius punctulatis

•55—65, ovalis, obscure aeneus, thorace antrorsum angustato, dense subtiliter punctato, capite viridi

•5, ovalis totus niger, thorace antrorsum angustato, grosse inaequaliter punctato, profunde impresso, elytris valde punctulatis
e. pedes et corpus concoloria, thorace ad basin latiore;

•37, fere ellipticus, supra cyanescens, thorace inaequaliter punctato, elytris subtiliter striatis densissime punctulatis

36. C. purpuricoUis Randt.

fere elliptici fusco-aenei, thorace aequaliter fortius punctato, callo elongato utrinque discoidali notato, elytrorum stris antice grosse punctulatis.

•55, thorace lateribus parum rotundatis

•67, thorace lateribus antice valde rotundatis

37. C. tomentosus Dej.

38. C. amplus Lee.

Doubtful species.

C. impunctifrons Kirby, Fauna Bor. Am. 4, 21. Perhaps C. brevilabris, but the description is very indefinite.
C. quadricollis Kirby, Fauna Bor. Am. 4, 22. Probably C. pensylvanicus.


The species in parentheses are unknown to me; the characters above given of them are taken from the original descriptions.

Notes and Synonyms.


12. C. rufipes seems to vary much in the form of the thorax; the variety or race with the thorax short, more rounded on the sides, and the posterior angles obtuse is C. brevicollis Lec. Ann. Lyc. 4, 432. Many entomologists are disposed to receive it as a different species, but similar variations seem to occur in C. sericeus.


15. C. sericeus Say, Trans. Am. Phil. Soc. 2, 61: Dej. Sp. Gen. 2, 347. Carabus sericus Forster, Cent. Ins. 58, varies somewhat in the form of the thorax; a specimen in which the sides are more rounded than usual, and the anterior angles are considerably deflexed, is C. perviridis Lec. Ann. Lyc. 4, 454. This species is found from Maine to Oregon, and as far south as Texas.


23. C. nemoralis Say, Trans. Am. Phil. Soc. 2, 65. It is doubtful whether the species described under this name by Kirby, (Fauna Bor. Am. 22) is really this; the expression 'thorax densely punctured' seems to indicate that C. tricolor is meant.

24. C. pensylvanicus Say, Trans. Am. Phil. Soc. 2, 66. C. pubescens Harris, New England Farmer, 1828; C. vicinus Dej. Sp. Gen. 5, 659. This species varies slightly in the form of the thorax, but may be easily distinguished from the allied species, by the rough and distinctly punctured interstices of the elytra, while the striae are only faintly punctured. C. fulgiceps Newm. and C. quadricollis Kirby, are perhaps to be added to the synonyms of this, but the descriptions are very unsatisfactory. Mannerheim states that this species is found in California, but I have not seen any specimens from the regions west of the Rocky Mountains.

25. C. tricolor Dej. Sp. Gen. 2, 334. Specimens of this species were found by me at Tucson, in Northern Sonora, and at San Diego, California; they differ from those found on the Atlantic slope of the continent, by the thorax being shorter and more rounded on the sides.

by the thorax being broader and less narrowed anteriorly, and by the striae of the elytra being very strongly punctured; *C. constinilis* Lec. appears to be merely a variety in which the head and thorax are slightly coppery; and the latter is not narrowed toward the base.


Yellowstone River, Dr. Hayden: Santa Fe, Mr. R. C. Kern. Differs from the neighboring species by the more finely striate elytra; in a dorsal view in fact the outer stria appear almost obliterated.


Colorado river, near the junction of the Gila. Larger than the neighboring species, and known by the more quadrate thorax, being less densely punctured.

30. *C. asperulus* Ménétr., Bull. Soc. Imp. St. Petersb. 2, 55. Baron Chandoir informs me that *C. obscurus* Lec. Ann. Lyc. 5, 179, belongs to this species. The color varies, so that the head sometimes becomes greenish bronzed, as described by Ménétr. The antennae are sometimes entirely black, and sometimes the first joint is reddish brown. The feet vary in color from rufous to black. The thorax is slightly narrowed, both at the apex and base, but cannot be called cordate. The thorax is described by Ménétr. "cordato, profunde sed vage punctato," and I should not venture to refer his to my species, were it not for the direct comparison made by my learned and accurate correspondent, Baron Chandoir. This discrepancy in the description leads me to believe that *C. var.-abilipes* Esch. must also be referred here; it being premised that not only does the color of the legs and antennae vary, but even the punctures of the thorax, are sometimes very strong, (though never dense, as described by Eschscholtz), and the fine punctures of the interstices of the elytra are at times less distinct.

The description of Eschscholtz (Zool. Alas 3, 27), is as follows:

"Niger pubescens, capite laevi, thorace subviolaceo, punctatissimo, basi coarctato; angulis posticis, elytris obsolete punctulatis, striis profunde punctatis, antennarum basi pedibusque aut rufo-testaceis aut nigris. Long. 5 1/2 lin.

"San Francisco. Head black, almost imperceptibly rugose. Thorax wider than long, somewhat rounded on the sides, narrowed near the rectangular prominent posterior angles; disc dark blue, thickly covered with large but not deep punctures, hairy with brown pubescence, with two longitudinal impressions at the base. Scutellum black, smooth, shining. Elytra clothed with brown hair, opaque black, very finely and not obviously punctured; humeri not prominent; stric fine, and strongly punctured on the anterior half. Antennae and legs of one specimen black, palpi with the last joint red, cylindrical: in the other specimen, a female, the two basal joints of the antennae, the whole of the palpi, and the feet are red: the third joint of the antennae is of the same length as the following."

The description of Ménétr. reads thus:

"C. asperulus, obscure æneus, rufo-pubescent; capite laevi, viridi-cupreo, thorace cordato, profunde sed vage punctato; elytris striatis, striis forte punctatis, interstitiis subtillisimse asperatis; antennis pedibusque nitide nigris, palpis rufis."
31. C. obsoletus, Lec. Ann. Lyc. 5, 180, is certainly closely allied to the preceding, but the thorax is hardly wider than long, and is more narrowed behind; the feet, palpi and antennae are rufous, the latter being darker externally as is usual.


37. C. tomentosus Dej. Sp. Gen. 2, 357; Epomis tomentosus Say, Trans. Am. Phil. Soc. 2, 60; Amara luctuosa Germ. Sp. Nov. 10. On this species M. La Ferté has founded a genus Eurydactylus, which differs from Chilenius, only in the dilated joints of the anterior tarsi of the male being broader. I do not find in this character an exact agreement between our different species, and, although I have adopted the genus in my memoir in the Trans. Am. Phil. Soc. (10, 396,) I now unite in the opinion of Lacordaire, Gen. Col. (1, 224) that it is entirely unnecessary. Say mentions a green variety from Missouri.

38. C. amplius. I have separated under this name a species having the color and sculpture of C. tomentosus, but very different in the form of the thorax, which instead of being gradually rounded on the sides from the base to the apex, has the sides almost parallel near the base, and very much rounded before the middle. It is found in Georgia, and I have examined two specimens of which one is in the collection of Dr. Harris.

Synopsis of Species of Chrysomela and allied Genera inhabiting the United States.

By W. Frederick Rogers.

The Genera in the United States may be thus classified:—

Ungues fissi; femora postica incrassata; Palpi articulo ultimo breviore truncato

Ungues integri, vel vix dentati; femora haud incrassata; Doryphora.

Palpi articulo ultimo haudo breviore; (Polygramma, Labidomera).

Tarsi articulo 2ndo haudo angustiore

Tarsi articulo 2ndo minore Timarcha.

Blepharida.


Altica virginica Frolic, Naturf. 26, 129, 54.

Haltica rhosis Illig. Mag. 6, 161.


Haltica stollida Illig. Mag. 6, 161.

Chrysomela meticulosa Oliv. Ins. 91, 531, tab. 6, fig. 91.
**Locality.**—Middle States, Southern States, Nebraska and Upper Mississippi. There is considerable variation in the marking; one specimen from the Southern States was observed having the disc of the elytra irregularly ferruginous with a broad yellow margin. Another specimen from the South has the elytra ferruginous and the spaces between the suture and 1st, 2 to 3, 5 to 6 and 8 to 9th striae yellow.

These differences are sufficient to account for the supposed species above quoted.

**Doryphora Fabr.**

Ungues entire, posterior femora not thickened. Maxillary palpi thickened, penultimate joint conical, last joint cylindrical, truncaete shorter than the preceding; tibiae rounded at the extremity and excavated externally; tarsi with second joint small. Coxae widely separated.

The genus may be divided into three divisions:

1. Tropical species, in which the mesosternum is produced into a horn.
2. Those in which the mesosternum is slightly excavated, and the feet without spines. Sp. 1—4.
3. Those in which the mesosternum is slightly protuberant, and the anterior femora are armed with spines, at least in the male. Sp. 5.

1. **D. juncta.** Oval, convex, brownish yellow, head and thorax spotted with black; elytra pale yellow, each with 9 rows of punctures and four black vittae; scutellum black; suture and space between the two outer vittae and epipleurae brownish yellow; lateral margin blackish, beneath spotted with black; femora with a small black spot.

Length :35—:40.


**Locality.**—Georgia.

The two outer vittae are usually connected at the base and tip, but occasionally are completely confluent.

2. **D. 10-linœta.** Oval, convex, brownish yellow, head and thorax spotted with black, scutellum brownish yellow, margined with black, elytra each with five black lines; the interior line is confluent with the suture behind, beneath spotted with black; knees and tarsi black.

Length :35.

Say, J. Acad. 3, 453.

**Locality.**—Nebraska and Texas.

3. **D. rubiginosa.** Oval, convex, yellowish brown, scutellum black; elytra finely not densely punctured; antennæ and legs black.

Length :40.

One specimen collected by J. D. Clark, Esq., of the Mexican Boundary Commission at San Antonio, Texas.

Body above and below yellowish brown; head with a few punctures, a finely impressed vertical line, and a few small impressions between the eyes; thorax with a few scattered punctures, larger and more obvious at the sides, elytra finely punctured; the punctures in some places forming irregular rows.

4. **D. Haldemann.** Subovate, convex, purplish black; elytra dark metallic green, sparsely punctured.

Length :35.

One specimen collected by Lt. H. Haldeman, Fredericksburg, Texas.

Body subovate, narrowed in front very convex, almost gibbose; head and thorax sparsely punctured, purplish black, scutellum black, elytra sparsely punctured, the punctures becoming smaller towards the tip, and occasionally arranged in rows; antennæ, legs and under surface purplish black.

5. **D. trimaculata.** Oval, rounded convex, bluish green; elytra orange with blue band and large posterior spot; feet purplish.

Length :30—:40.
Say, J. Acad. 3, 455. Harris, Ins. 2nd edit. 117.

El. 1, 424. Oliv. Ins. 91, 515, pl. 3, fig. 29. Coquet. Ill. 3, 123.

Chrysomelae clivicollis Kirby, Faun. Bor. Amer. 213.

Locality.—Middle States, Southern States and Nebraska.

Antennae and palpi black; elytra punctured in double lines, which become confused near the tip; a dilated black band extending in breadth from near the base to the middle, not attaining the lateral edge, and often interrupted in the middle of each elytron; under surface black, feet purplish.

Timarcha Redt.

Palpi slightly thickened with the last joint, oval, truncate and a little longer than the preceding; tarsi with the second joint not smaller than the first or third; ungues simple approximate; coxae of anterior feet moderately, of the posterior widely separated; tibiae rounded at the extremity, not sulcate. Body oblong, very convex, black scabrous, with confluent impressed punctures, which are coarsest upon the elytra; the latter are united.

T. intricata. Head irregularly and strongly punctured, thorax with large scattered punctures, the interstices tolerably densely punctured, transverse, more than twice as long as broad; apex broadly emarginate, base subsinuate, basal angles rectangular; elytra with large confluent punctures, the interstices with fine scattered punctures; under surface coarsely, feet finely punctured. Tab. 1, fig. 1.

Length 40.

Hald. Proc. Acad. 6, 363.

T. intertexta Hald. Ibid.

Locality.—Oregon and northern California, Dr. Townsend and Mr. Child.

T. intertexta I regard as a variety of intricata, with the elytra a little more rugose.

Chrysomela Linn.

Palpi with the last joint not longer than the preceding; tarsi with second joint smaller than the first and third; ungues simple; coxae of anterior feet moderately or slightly, those of the posterior widely separated. The body varies in form from rounded to oval, and even to elongate; it is usually winged, but apterous in only one American species; the palpi vary in form, having the last joint in many thick and dilated, and in others slender; thorax always broader than long, sometimes equally convex, sometimes with the lateral margin broadly thickened. The sculpture of the elytra varies; some are very finely and confusedly punctured with labyrinthine rows of larger punctures limiting spots of different colors, while in others the punctures are arranged in nine regular striae with a short one at the scutellum. The mesosternum is never protuberant, the femora are never toothed. The tibiae vary in form; they are sometimes rounded at the tip and not sulcate; sometimes dilated into an angle; and sometimes sulcate on the outer margin.

The species found in this country may be divided into the following groups:—

I. Palpi dilated;

1. Sides of the thorax not thickened.
   
   *Tibiae rounded at the apex, elytra irregularly punctured, or
   
   with sinuous striae.

   Elytra with labyrinthine spots.

   Elytra striped.

   **Tibiae with an external tooth near the apex; elytra with
   
   regular striae of punctures.

2. Sides of the thorax thickened.
II. Palpi slender.

1. Body elongate.
   * Elytra irregularly punctured.
   Sides of the thorax thickened.
   Sides of the thorax not thickened.
   ** Elytra with regular striae of punctures.

2. Body rounded
   *** Elytra with regular striae of punctures.
   **** Elytra irregularly punctured.
   Tibiae excavated externally and dilated at tip.
   Tibiae excavated externally, hardly dilated at tip.

Group K, does not appear in the subsequent pages, as I have seen no American specimens of C. adonisidos, the species on which it is founded; although Kirby states that specimens of it were obtained in high northern latitudes.

A.

1. C. scalaris. Oval, greenish blue, elytra punctate, yellowish white spotted with blue, suture with a broad metallic black stripe branched in three or four places, humerus with a large lunate spot; under surface bronzed black, antennae and legs ferruginous. Tab. 1, fig. 2.
   Length -32—40.
   Locality.—Middle States, Lake Superior and Nebraska.
   Oval, rather narrower than usual, greenish blue, sometimes dark bronze; thorax with scattered punctures at the sides, elytra punctate, yellowish white, and very brilliant silvery when living; suture with a broad metallic stripe generally black, sometimes bronze and dark blue. This insect is closely allied to C. philadelphia Linn., the difference consists in the suture being marked with a broad black stripe, with which the spots are connected so as to form branches; in C. philadelphia the suture is black, straight and narrow, separated from a narrow subsutural black vitta by a narrow yellow line. There is considerable variety in the color and size of the spots of these insects.

2. C. serpentina. Oval, greenish blue, elytra pale gold, with the suture and several narrow sinus of dark blue spots more or less confluent; margin black, antennae black, red towards the base; legs dark red, under surface bluish black. Tab. 1, fig. 3.
   Length -42.
   Five specimens collected by J. D. Clark, Esq., at San Antonio, Texas.
   Body oval, moderately convex; head with a triangular impression between the eyes, thorax coarsely punctured at the sides, scutellum bluish green, elytra pale gold, suture and confluent stripe blue, the latter not reaching the base, with about ten dark blue spots, wings brilliant red; under surface very dark blue, almost black; antennae hairy at the tip.
   I have adopted the name used in Dr. Le Conte's Cabinet. In dried specimens the golden tint of the elytra fades, and the color becomes yellowish white.

3. C. dislocata. Oval, bluish green, elytra pale ferruginous, with subsutural vitta and several sinuous black spots more or less confluent, antennae blackish, red at the base, legs and under surface black. Tab. 1, fig. 4.
   Length -35.
   Three specimens collected by J. D. Clark, Esq., San Antonio, Texas.
   Body oval, moderately convex, head moderately punctured; thorax strongly punctured at the sides.

4. C. tortuosa. Oval, ferruginous; elytra yellow with several black spots, suture and a subsutural vitta dark ferruginous, the latter confluent near the tip, antennae, legs and under surface ferruginous. Tab. 14 fig. 5.
   Length -25.
   Two specimens collected by J. D. Clark, Esq., San Antonio, Texas.
Head and thorax ferruginous slightly punctured, scutellum ferruginous, elytra with from five to nine black spots; sometimes confluent, legs slightly punctured.

5. *C. philadelphia*. Oval, greenish black, elytra pale yellow, with a longitudinal stripe near the suture, and a number of dark green spots; palp, antennæ and legs rufous, under surface dark green. Tab. 1, fig. c.

Length. 27—34.


C. decipiens Web. Obs. Ent. 1, 52, 1?

Locality.—Middle, Southern and Western States.

Body oval, with scattered punctures, head and thorax sparsely punctured; scutellum dark green, elytra with three larger dark spots near the suture; the suture is generally black, and dilated towards the thorax, but in one specimen from Missouri Territory, this is not the case, and in it the suture is pale yellow, and does not become broader in front.

C. spiraeæ. Green, elytra pale yellow tinged with red, with green spots and a common sutural line, trifid at base, antennæ and legs rufous; under surface dark green.

Length. 25.

Say, J. Acad. 5, 297.

*C. confinis* Kirby, Fauna Bor. Amer. 211.

Locality.—Lake Superior.

Body oval, head and thorax dark bronzed green, elytra pale yellow, sometimes rufous, each with about seventeen small green dots, and a common sutural line which sends off a lateral short branch on each side near the base. In one specimen the spots and sutural line are black.

7. *C. bigsbyana*. Oval, green, anterior margin and sides of prothorax yellow, elytra yellow, with a sutural stripe. antennæ and legs rufous, under surface dark green.

Length. 25—35.

Kirby, Fauna Bor. Amer. 212.

Locality.—Middle and Western States, also two specimens from Steilacoom, Puget sound, W. T., collected by Geo. Gibbs, Esq.

8. *C. multipunctata*. Oval, ferruginous. thorax yellow, with ferruginous spots arranged in a circle, elytra yellow, with numerous green spots; antennæ, legs and under surface ferruginous. Tab. 1, fig. 7.

Length. 24—35.

Say, J. Acad. 3, 451. Kirby, Fauna Bor. Amer. 211.

Locality.—Missouri Territory.

Head ferruginous, thorax yellow, with a ferruginous, irregular arcuated line and basal edge, including an obsolete spot, elytra with a sutural stripe and numerous irregular green spots, and abbreviated lines. In one specimen the suture has a common ferruginous fillet.

B.

9. *C. exclamationis*. Oval, ferruginous, thorax with a yellow margin. elytra pale yellow, with four black striæ; the third abbreviated, the fourth interrupted.

Length. 30.

Fabr. El. 1, 435. Oliv. Ins. 91, 530, tab. 6, fig. 81.

Locality.—Southern States and Kansas.

Head ferruginous, anterior margin of the prothorax yellow, elytra pale yellow, with the suture and four striæ ferruginous; the first and second not reaching the margin, the third confluent with the fourth at the edge of the elytra; legs and under surface ferruginous.

10. *C. casta*. Oval, dark ferruginous; thorax strongly but sparsely punctured; elytra pale yellow, sparsely punctured; suture and three lines marked
with fine punctures; legs and under surface ferruginous; epipleuræ brown. Tab. 1, fig. 8.

*Locality.*—Kansas and Illinois; specimens from the latter locality were collected by Mr. R. Kennicott.

This insect is allied to *C. pulchra*, but in that species the outer vittæ are usually entirely confluent into one broad stripe. In *C. casta* these lines are narrow and the subsutural one is confluent only behind the middle.

11. *C. conjuncta.* Oval, convex, ferruginous; thorax yellow, sparsely punctured with a large ferruginous spot covering the base; elytra pale yellow, with the suture and subsutural vitta confluent; the other two connected behind and a short one at the humerus, legs and under surface ferruginous. Tab. 1, fig. 9.

Length. 23.

*Locality.*—Kansas.

Related to *C. exclamationis*, but is smaller, with head and thorax more shining and less punctured; with the conjoined vittæ more abbreviated behind there is no lateral dot at the middle, and the epipleuræ are not ferruginous, except at the extreme margin.

12. *C. disrupted.* Round and convex, blackish; thorax coarsely punctured. Elytra pale yellow, punctured; the suture, sub-sutural vitta and three other discoidal narrow ones anteriorly abbreviated, with several sub-marginal bronzed dots; legs and under surface blackish. Tab. 1, fig. 10.

Length. 21—26.

*Locality.*—Louisiana and Kansas.

This insect is of the same form as the previous ones, but may be distinguished by the interruption of the interior dorsal vitta; the middle one nearly unites posteriorly with the inner one, but is a little shorter than it; the outer posterior dots are directly in continuation of the external abbreviated vitta; epipleuræ pale.

13. *C. hybrida.* Ferruginous, elytra pale yellow, with a wide sutural and discoidal ferruginous band, the band nearly divided into two, of which the inner one is narrower. Tab. 1, fig. 11.

Length. 35.

Say, J. Acad. 3, 449.

*Locality.*—Southern States and Nebraska.

Body oval, thorax irregularly punctured and with larger confluent punctures on the sides; scutellum unpunctured, rounded at the tip; antennæ, legs and under surface ferruginous.

There is great variety in the marking, a specimen from Nebraska has the band divided into three, the first joined to the second at the base, the middle one sinuous and joined to the outer one at the tip, the outer one very faint, at the base.

14. *C. incisa.* Oval, rounded, bronzed, ferruginous; thorax with coarse punctures; elytra pale yellow, with a broad blackish brown sutural vitta abbreviated at the base, a broad stripe narrowed at the humerus and not reaching the base, and a small dot at the base, and another at the tip; epipleuræ dark. Tab. 1, fig. 12.

Length. 24.

*Locality.*—One specimen from Kansas.

This insect has the same form and size as *C. pulchra*, the punctures of the dark vitta and those of the external rows are, however, more distinct, and the form of the vittæ different. The sutural one is not prolonged at the base, but truncated anteriorly at the scutellum, which, as usual, is dark colored; at about two-thirds the length it is suddenly slightly dilated nearly to the apex. The outer vitta is a very broad spot extending three-fourths the length of the elytra; narrowed before and behind, convex on its inner, but moderately emarginate on its outer surface about the middle.
15. *C. pulchra.* Rounded, black bronzed; elytra pale yellow; suture and a broad dorsal vitta dark bronzed.
*Locality.*—Middle and Southern States.
Body oval, rounded; thorax coarsely punctured; scutellum black, which gives the sutural vitta the appearance of extending to the prothorax; elytra pale yellow, with punctures on the suture and vittæ which do not reach the apex or base, outer margin of the vitta slightly and obtusely sinuous; the vitta is sometimes partially divided by a yellow line, and may sometimes form two vittæ; in another specimen the sutural and discoidal vittæ are confluent; antennæ, legs and under surface brownish black.

16. *C. similis.* Oval, dark bronzed; elytra pale yellow; suture and a broad dorsal vitta dark bronzed. Tab. 1, fig. 13.
Length: 26.
*Locality.*—Middle and Southern States.
This species differs from the preceding in the shape; it is quite oval, whereas, *C. pulchra* is round; the emargination of the outer margin near the middle is more angular and sudden.

17. *C. praecelsis.* Oval, convex, ferruginous; thorax with a yellow margin; elytra pale yellow, with fine punctures; legs, thorax and under surface ferruginous. Tab. 1, fig. 14.
Length: 31.
*Locality.*—Kansas river.
Thorax with the disc coarsely punctured, with a narrow yellow margin at the side impunctured; elytra with fine punctures on the suture and dorsal vittæ, with a broad sutural vitta suddenly narrowed at the base, and a broad bronze brown dorsal vitta, narrowed at the apex and base.

18. *C. elegans.* Oval, metallic black; thorax yellow, with a black mark at the base; elytra pale yellow, with a black suture and dorsal vitta.
Length: 20—25.
Oliv. 91, 532, tab. 6, fig. 92.
*Locality.*—Middle and Southern States and Lake Superior.
Head black; antennæ black, with the second and third joints slightly ferruginous; thorax yellow, slightly punctured, with two confluent spots on each side placed obliquely, the anterior one being nearer the middle; and with a broad dorsal line; the spots have the appearance of the letter W inverted; elytra pale yellow, slightly punctured with a black sutural and dorsal vitta regularly punctured; legs and under surface black.

19. *C. rufipes.* Oblong, oval, ferruginous; head black, with mouth and antennæ red; thorax coarsely punctured with two large triangular spots at the base; elytra ferruginous, with ten black spots, legs red, under surface black.
Length: 25.
De Geer. Ins. 5, 295, tab. 8, fig. 5. Suffr. Linn. Ent. vol. 5, 211.
*Phytodecta rufipes* Kirby. Fauna Bor. Amer. 213.
*Locality.*—Lake Superior.
There is great variety in the marking of the thorax and elytra, the markings in some specimens are very faint, and in others wanting. I have not been able to make any comparison between this and the European species, and I give it as identical on the authority of Kirby.

20. *C. arctica.* Oblong, oval, elongate, ferruginous; head black; thorax with two basal black spots usually confluent, coarsely punctured; scutellum black; elytra ferruginous, with ten black spots; legs black, with the tibiae and tarsi red.
Length: 26.
21. *C. subsulcata*. Oblong, oval, apterous, dark blackish green; thorax with the margin much thickened, not reaching the apex internally, slightly punctured; elytra connate, very convex, rounded at the sides, sulcate and punctured in regular rows; antennæ, legs and under surface very dark bluish green.

Length. .32.  
Locality.—Russian America.

According to Mannerheim’s description, this species varies much in color; he also states that it is nearly allied to the European *C. nivosa*.

D.

22. *C. cribriaria*. Oblong, oval, bronzed black; thorax much thickened at the sides, reaching the apex, with a few large marginal punctures near the impression; elytra very dark, bronzed black, thickly and irregularly punctured; antennæ, legs and under surface black.

Length. .37.  
Locality.—Southern States.

23. *C. inornata*. Oblong oval, bronzed; thorax with margin thickened and a few coarse punctures at the side; elytra bronzed black; legs and under surface dark blue.

Length. .25.  
Locality.—Western States.  
This insect is closely allied to *C. cribriaria*, but differs in the color of the thorax and elytra; there are also more punctures on the thorax, and the lateral impression is less deep than in *C. cribriaria*.

24. *C. subopaca*. Oblong oval, black, bronze, tinged with green; thorax with thickened margin, with a few punctures at the sides; elytra finely punctured, with the punctures forming indistinct rows; antennæ dark blue, with the four last joints hairy, legs and under surface black, bronzed.

Length. .25.  
Locality.—Middle States.  
Thorax less punctured; elytra more finely punctured and less lustrous than in *C. inornata*; the punctures are arranged in rows.

25. *C. auripennis*. Oval, oblong, violaceous; thorax with the margin thickened and slightly distant punctures; scutellum violaceous; elytra golden cupreous brilliant, exterior edge green, punctured, punctures placed in somewhat regular rows; antennæ, legs and under surface violaceous.

Length. .32—46.  
Say, J. Acad. 3, 452.  
Locality.—Western States, Nebraska, New Mexico and Texas.  
These insects vary greatly in color; two specimens from New Mexico are entirely violaceous, and in one from Texas the elytra are brilliant green.

26. *C. vidua*. Oblong oval, black, slightly bronzed; thorax with the margin thickened, with coarse punctures; elytra black, slightly bronze, with the punctures in somewhat regular rows; antennæ, legs and under surface black.

Locality.—Oregon, Col. McCall.

27. *C. flavomarginata*. Oblong, black; thorax with lateral margin thickened and punctured at the sides; elytra black, with regularly-disposed punctures, and smaller irregularly disposed punctures; exterior and tip yellowish, legs and under surface black.

Length. .22—29.  
Say, J. Acad. 3, 452.  
Locality.—Kansas.
28. C. interupta. Oblong, elongate, black; thorax black, with a yellow margin thickened; elytra pale yellow, with six spots on each more or less confluent; legs bluish black, with tibiae ferruginous.

Length: 25—35.

Locality.—Middle States, Southern States, Lake Superior, Nebraska and Oregon.

This species varies much in color, the specimens I have examined may be classed under the following varieties, though intermediate forms occur:

1. The two anterior spots confluent; two middle spots confluent; and the two posterior spots confluent, forming a very broad band; legs bluish black, with tibiae ferruginous; under surface bluish black.

2. The two anterior spots confluent, having the shape of a horse shoe; the two middle spots separate and the two posterior confluent, but much more narrow than in 1.

3. With none of the spots confluent; legs bluish black; tibiae pale yellow, under surface black, with the four last segments of the abdomen slightly marked with yellow.

4. In which all the spots have disappeared, with the exception of the two middle ones; legs blue, black, with the tibia ferruginous, under surface black.

5. The two anterior spots confluent; the middle separate, and the posterior confluent; legs and under surface ferruginous, except the sides of the pectus, which are black.

6. None of the spots confluent; legs ferruginous; under surface of the thorax black.

29. C. scripta. Oblong, elongate, black; thorax black, with a yellow margin thickened; elytra yellow, coarsely and sparsely punctured, with seven elongate spots on each elytron, two at the apex, slightly elongate, three at the middle very elongate; and two at the base, the one nearest the suture slightly elongate, the other broad and very elongate.

Length: 27—35.

Locality.—Middle States, Southern States, Nebraska and Lake Superior.

In two specimens the thorax is dark red, with a yellow margin, and the under surface black with the legs ferruginous.

30. C. confluent. Oblong oval, black, head and thorax black, thorax with a wide yellow margin, elytra brownish black, finely and sparsely punctured, with four very faint oblong ferruginous spots on each elytron, antennae, legs and under surface black.

Length: 28.

Locality.—Oregon, one specimen.

Closely allied to C. obsolleta of Say, but differs from it in the form of the body, being wider in proportion, also in having the elytra more finely punctured.

31. C. obsolleta. Oblong oval, head and thorax tinged with green, margin of the latter yellowish, thickened, with a black insulated point; elytra brownish black irregularly punctured, margin, tip and obsolete lines before and behind the middle yellowish, antennae legs and under surface black.

Length: 33.

Helodes obsolleta Say, J. Acad. 3, 435.

Locality.—Western States.

Differs from C. confluent in the form of the body, being longer and more narrow, also in having the elytra more coarsely and densely punctured.

F.

32. C. californica. Oblong oval, dark green, thorax sparsely punctured,
elytra dark green, coarsely punctured, antennæ and legs black, under surface blackish green.

Length 18.

This insect was sent by Col. Motschulsky, under the name of Plagiodera californica, as coming from California, but I have been unable to find any description of it.

G.

33. C. trivittata. Oblong, blue-black, head entirely blue-black, with an impressed frontal line divericated before; thorax sparsely punctured, lateral margins yellowish, this color being contracted in the middle on the inner side; elytra with punctured striae, sutural margin yellow; vitta on the middle not reaching the tip, and exterior edge blue-black; legs black, tibiae ferruginous, abdomen with the caudal segment margined behind with dull yellow.

Length 15.

Helodes trivittata Say, J. Acad. 5, 289.

Locality.—Middle States, Lake Superior.

34. C. vitellinae. Oblong slightly oval, coppery violaceous, antennæ with first and second joint rufous; thorax finely and sparsely punctured, elytra coppery violaceous, punctured in rows with the interstices indistinctly punctured; under surface bronze black, legs black with the first joint of tarsi rufous.

Length 15—18.

Phytodecta vitellinae Kirby, Faun. Bor. Amer. 216.

Locality.—Middle States, Western States and Lake Superior.

One specimen from Lake Superior had the elytra black.

H.

35. C. viride. Rounded, dark green, head with an impressed frontal line, thorax very finely and sparsely punctured; scutellum blackish, elytra very finely punctured in striae with the lines remote, antennæ, legs and under surface blackish.

Length 12—16.

Gastrophyrsa viride Mels. Pro. Acad. 3, 175.

Locality.—Middle States.

I.

36. C. dissimilis. Oblong oval, metallic blue or green, head impressed between the antennæ, antennaE black, thorax regularly convex, lateral edges regularly curved, scutellum unpunctured, elytra densely punctured, legs and under surface black, posterior angles of thorax very obtuse and rounded.

Length 24.


Locality.—Nebraska.

Varies in its colors. It is sometimes of a very dark purple, and sometimes of a bright green, more or less tinged with violaceous, particularly about the suture.

37. C. caesia. Oblong oval, brilliant metallic green, head and thorax densely punctured with the posterior angles of the thorax obtuse, elytra metallic green, finely punctured, legs and under surface blackish green.

Length 21—23.

Locality.—California, at San Francisco.

The thorax is very perceptibly narrower than the elytra; and the body is longer and more convex than C. cyanea.

One specimen is blackish.

38. C. cyanea. Oblong oval, purplish, head and thorax densely punctured, elytra purplish, densely punctured, antennæ legs and under surface purplish black.

Gastrophyrsa cyanea Mels. Pr. Acad. 3, 175.
Length '20.

Locality.—Middle and Southern States.

This insect is very closely allied to C. caesia, but differs in having the thorax wider, and the body longer and more narrow in proportion to its size.

39. C. polygoni. Oblong oval, brilliant metallic blue, head blue-black punctured, antennae black, basal joint rufous beneath and at tip, thorax rufous sparsely and finely punctured, elytra brilliant metallic blue densely punctured, under surface blackish blue, legs rufous, tarsi black, anus rufous.

Length '18.

Linn. Fn. Succ. 520; Syst. Nat. 2, 583, 24. Harris, Insects, 118, (2d edition.)

C. coruleipennis Say, J. Acad. 5, 296.

Phaedon polygoni Kirby, Fn. Bor. Am. 216.

Locality.—Southern and Middle States.

40. C. formosa. Oblong oval, convex, above golden green, strongly punctured, thorax with the basal angles obtuse, scutellum purple, elytra strongly punctured, suture purplish, exterior edge blue, antennae and palpi black, tibiae black, under surface violaceous.

Length '18.


Locality.—Kansas and Santa Fé.

List of Species unknown to me.


Gastrophysa aenea Meis. Pr. Acad. 3, 175.

Gastrophysa raphani Fabr. Kirby, F. B. A. 216.

All the specimens, I have described in the preceding pages, are in the Cabinet of Dr. J. L. Le Conte, to whom I must return my sincere thanks for his valuable assistance and the kind loan of books and specimens.


By John Cassin.


"Buteo Swainsonii, Bonap." Cassin, B. of Cal. and Tex. i, p. 98.


On examination of not less than twenty specimens of this bird from various localities in the Western countries of North America, I have found the characters constantly present which distinguish it from Buteo borealis, as pointed out in my Birds of California and Texas, p. 98. The voice of this species is represented by several of the late naturalists who have visited California, as quite peculiar, and I am assured by my friend Dr. Thos. M. Brewer, of Boston, that the egg is entirely different from that of B. borealis. Though nearly related to that species, it is very probably entitled to be regarded as distinct, for which purpose Mr. Nuttall's name as above given is proper.

This bird appears to be of common occurrence in California, being brought in nearly every collection from that country, and it is also in Dr. Suckley's collection from Washington Territory. The specimen figured by Mr. Audubon as above, and which was brought by Dr. Townsend from the Rocky Mountains, is in the collection of the Philadelphia Academy. It is the same specimen described by Mr. Nuttall, and named as above.
2. **Spizella pallida**, (Swainson).


The bird described and figured by Mr. Audubon as above, is the _Emberiza pallida_, Swainson, as any one may readily determine by examining and comparing the descriptions as above cited, with or without specimens.

This species is easily recognized by its wide stripe of ashy white from the base of the bill over the eye, two longitudinal stripes on the head of brownish black, and with an intermediate or middle stripe on the top of the head ashy white. Ears and cheeks behind and below the eye pale brown, with a line of black on its lower edge, and another line of black from the corner of the lower mandible. Upper parts of body pale ashy brown, every feather on the back and wing coverts with a black longitudinal stripe; tail brown. Under parts white, tinged with ashy and pale brown on the sides and flanks. Bill and feet yellowish. Total length 5Ⅱ inches, wing 2⅔, tail 2⅔ inches.


3. **Spizella Breweri**, nobis.


This species has the head above and other upper parts uniform pale ashy brown, every feather having a narrow brownish black line, a short and obscure stripe of ashy white over the eye. No stripes on the head, as in the preceding. Under parts ashy white. Bill and feet yellowish. Total length 5 inches, wing 2⅔, tail 2⅔ inches.


Easily distinguished from the preceding by the absence of the stripes on the head, so strongly characterizing that species and smaller size. It is apparently a much more abundant species, being brought in nearly all collections from California and New Mexico.

I have much pleasure in embracing the present opportunity to dedicate a bird of the United States to my esteemed friend Thomas M. Brewer, M. D., of Boston, one who to the highest abilities and social qualities adds an arbor in devotion to Ornithological science rarely paralleled.


_Totanus pulvulentus_, Müller, Verh. p. 153 (1844)?

_Totanus oceanicus_, Lesson, Comp. aux Oeuv. de Buffon. p. 244 (1847).


_Pallas Zoog. Rossio-As._ Birds, pl. 60. Team. and Schl. Fauna Japon. Birds, pl. 65?

About the size of or rather larger than _T. flavipes_. Wing long, pointed, first primary longest, secondaries short, truncate, emarginate, tertaries long, tarsi and toes rather short, tibia feathered about two-thirds of its length.

_Adult._—Entire upper parts, neck, breast and sides dark lead colored, uniform and without white marks; throat, middle of abdomen, ventral region and under tail coverts white. Under wing coverts white, spotted and barred with dark lead color. A stripe of white from the base of the bill over the eye, lores brownish black, eye enclosed in a narrow circle of white. Quills dark brown, shaft of the first primary white on its upper surface; shafts of the other primaries reddish brown on their upper surface, and of all on their under surfaces, white. Tail lead colored, uniform with the upper parts of the body, shafts of tail feathers lead colored above, white beneath. Bill dark, feet greenish.

_Younger._—Upper parts as above, entire under parts transversely barred with
dark ashy brown and white, the former predominating on the sides and flanks. Throat and middle of the abdomen white.

**Dimensions.**—Total length (of skin) about 10\(\frac{1}{4}\) inches, wing 6\(\frac{1}{2}\) inches, tail 3\(\frac{2}{4}\) inches.


For the first time within the limits of the United States, this extensively diffused species has been found in Washington Territory, the extreme north west portion of this Republic, by J. G. Cooper, M. D., naturalist attached to the party which surveyed the most northern proposed route for a rail-road to the Pacific Ocean, and commanded by Hon. I. I. Stevens. It is a small species uniformly colored above, and not difficult to distinguish from any other of its genus yet discovered in the United States.

This species possesses an extensive range of locality, probably including the greater part of the entire western coast of North and South America, the Sandwich and Feejee Islands, and is very nearly allied to, if not identical with the Japanese species, figured as above in Fauna Japonica. It has, moreover, quite a redundancy of names, a portion of which we cite above. Pallas gives this species as an inhabitant of Kamtschatka and the Russian American islands.


Anas nivalis, Forster, Phil. Trans. London, lxii, p. 413, (1772.)

Wilson, Am. Orn. viii, pl. 68, fig. 5. Aud. B. of Am. pl. 381, fig. 1, oct. ed. vi, pl. 381, fig. 1.

This species is either liable to great variation in size and color of plumage, or three distinct birds have been confounded under one name. My present information inclines me to the opinion that the latter is the truth; after having collected numerous specimens now in the Museum of the Academy, and rather carefully noted the observations of northern voyagers and of naturalists attached to Arctic Expeditions.

Two distinct sizes appear to be constant in the same sexes of specimens that are perfectly white, with the black tips of the primaries and the ferruginous markings on the head and face in both, and these I regard at present as distinct species. The larger is the bird described by Pallas and Forster and by all American authors as the Snow Goose, and is much the more frequent on the Atlantic coast of North America. It is figured by the authors above cited and by others, and specimens are frequently brought to the markets of the cities, though some winters have passed in Philadelphia in which I have not noticed it. Specimens of adults and young are in the Museum of this Academy, the young being distinguished by the prevalence of a cinereous color on the upper parts of the head, neck and body. Sexes alike, female slightly smaller.

**Dimensions.**—Male. Total length (of skin) about 31 inches, wing 18\(\frac{1}{2}\), tail 6\(\frac{1}{2}\), bill from the tip to frontal feathers along the culmen 2\(\frac{1}{4}\), to gape 2\(\frac{3}{4}\), tarsus 3\(\frac{2}{4}\) inches.


**Form.**—Smaller than the preceding, bill shorter, bare space at the base of the upper mandible not extending so far into the feathers (on the sides of the bill in front.) Wing long, second quill longest, tail short but comparatively rather longer than in the preceding, which is also the case with the tarsus.

**Dimensions.**—Male. Total length (of skin) about 25 inches, wing 15\(\frac{3}{4}\), tail 5\(\frac{2}{4}\), bill measured along the culmen from tip to frontal feathers 2, to gape 2, tarsus 3 inches. Sexes alike, female slightly smaller.

**Colors.**—Adult. Entire plumage white, except primaries, which are pale cinereous at base and black in the terminating two-thirds of their length. Front and cheeks spotted with ferruginous, bill and feet red.

**Hab.**—Western and Northern America, Oregon, rare on the Atlantic.

A single specimen from Oregon is in the collection of the Exploring Expedition in the Vincennes and Peacock; and four specimens, which occurred in pairs, have come under my notice in the market at Philadelphia in the course of twenty years. These five specimens are all that I have seen of this species, and it is
very probably of rare occurrence on the coast of the Atlantic in this latitude, much more so than the preceding. The four specimens alluded to, which are a pair of adults and a pair of young, are now in the collection of the Philadelphia Academy.

The third species, confounded by authors with the preceding, is:

7. Anser ceruleens (Linn.)

- *Anas ceruleens*, Linn. Syst. Nat. i. p. 198, (1766.)
- Edwards, Birds, iii, pl. 152.
- Wilson, Am. Orn. viii. pl. 69, fig. 5. Aud. B. of Am. pl. 381, fig. 2, oct. ed. vi. pl. 381, fig. 2.

This bird is figured and described by both Wilson and Audubon, as the young *Anser hyperboreus*, but neither of them appear to me to have done so on any sufficient information, as may, I think, readily be inferred from their articles on that species. That it is not the young of either of the preceding species is my conclusion, being, as I believe, acquainted with the young of both.

The figure given by Edwards as above, represents, apparently, the young of this species, and those of Wilson and Audubon a more mature stage of plumage, if not adult. This bird was known to the earlier naturalists, having been named by Linnaeus as above, in 1766, and before him by Brisson in 1769. Both, however, probably described on the faith of Edwards’ figure, which was published in 1748. Pennant apparently does not, but gives a sufficient description of this species under the name of “Blue winged Goose” in Arctic Zoology, ii, p. 269, (1792.)

If this bird is the young of *Anser hyperboreus*, which I deem very improbable, its specific name as above is the proper designation of the species, having priority over Pallas’ *Anser hyperboreus*, or Forster’s *Anas nivalis* (Phil. Trans. London, lxii. p. 413, 1772,) which are synonyms. It is of rare occurrence on the coast of the Atlantic; in the latitude of New Jersey, though stated to be abundant in the Arctic regions. Specimens in the Museum of the Philadelphia Academy.

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A Synopsis of Entozoa and some of their Ecto-congeners observed by the Author.

By Joseph Leidy, M.D.

**PROTHELMINTHA.**

1. *Bodo ranarum* Ehrenberg.
   Abundant in the intestines of different species of frogs and toads.

2. *Bodo helicis* Diesing.
   *Bodo helicis* Diesing. Leidy, Pr. A. N. S., v, 284.

   In the cloaca of *Tropidonotus virtalis*.

   Pr. A. N. S., v, 100; Trans. Am. Phil. Soc., 2d ser., x, 244.

5. *Bodo muscarum* Leidy.
   Frequent in the intestine of the house fly, *Musca domestica*, in immense quantity.

   Body spherical: diameter .00449 to .0112 mm.
   Tail simple, about the length of the diameter of the body.
   Found in the intestine of *Melolontha quercina* and *M. brunnnea*.

   In the intestine of *Rana pipiens*.

   In the liquids of the body of *Enchytraeus*. 
9. Leucophrys clavata Leidy.
Journ. A. N. S., 2d ser., ii, 50; iii, 144.
Found in the Lumbriculus limosus, and L. tenuis.

10. Leucophrys cochleariformis Leidy.
Journ. A. N. S., 2d ser., iii, 144.
Found in the intestine of Lumbriculus tenuis.

11. Leucophrys socialis Leidy. Cordate, ovate, oval, pyriform, or globular, contractile, active, with one or many internal vacuoles; striated, ciliated. Length .036 to .045 mm., breadth .03 mm.
Found very frequently and abundantly within the stomach of the remarkable bryozoan Urnatella gracilis. (Pr. A. N. S., vii, 191.)

Pr. A. N. S., v, 233; Trans. Am. Phil. Soc., 2d ser., x, 244.
Found in the intestine of Julius marginatus.

Pr. A. N. S., v, 100; Trans. Am. Phil. Soc., 2d ser., x, 244.
From the intestine of the common cockroach, Blatta orientalis.

Aneleodesmus pellucidus Leidy, Pr. A. N. S., v, 287.

MYZELMINTHA.

15. Monostomum incommodum Leidy. Body compressed, above convex, below concave, sides parallel, anteriorly convex, posteriorly angularly convex. Head continuous with the body, obliquely truncated. Mouth round, surrounded with a wide circular lip which is emarginate below. Male generative aperture? communicating with a hemispherical cavity (acetabulum?) one fourth the length of the body from the head. Length 9 lines, breadth 14 lines.
Five specimens were obtained from the fauces of the Alligator mississippiensis, in Florida, by Prof. J. W. Bailey, of West Point. Is it probably a species of Distomum, with the ventral acetabulum emersed within the body?

16. Monostomum ornatum Leidy. Body slightly compressed ovoidal, anteriorly broad; yellow variegated with brownish red. Mouth infero-terminal, acetabulum, transversely oval. Penis conical, protruding a short distance below the mouth. Female aperture a short distance below the penis. Length 1 to 1½ lines, breadth 2 to 3 of a line, thickness ¼ to ½ a line.
A dozen specimens were obtained from the abdominal cavity of Rana pipiens.

17. Monostomum renicapite Leidy. Body depressed, lateral margins parallel, anteriorly and posteriorly rounded, above convex, below concave. Head formed by a transverse, reniform callosity. Mouth transversely crescentic, surrounded with a double lip. Penis a small conical tubercle. Length from ½ an inch to 1 inch, breadth 1½ lines.
Numerous specimens were obtained by Prof. Agassiz from the intestine of Sphargus coriaceae.

I have found two specimens, of what I suspect to be a species of Monostomum in the lungs of two individuals of Sternotherus odoratus. The species is so soft that in the removal of the specimens I mutilated both, and since then I have been unable to find others.

Reported to exist in the sheep, Capra aries; the ox, Bos taurus; and the hog, Sus scrofa. Stated to be frequent in the sheep, in several of the Western States.

20. Distomum hepaticum.
In the hepatic ducts of the Cervus virginianus. Though I have never seen
specimens from the source given, yet I think there is little doubt of its existence, from the circumstance that sportsmen and hunters have frequently informed me, they had seen leeches in the liver of the deer, which they supposed the animal had swallowed in drinking. Also reported to exist in the ox, *Bos taurus*, and in the horse, *Equus caballus*.

21. **Distomum variabile** Leidy. *Var. a.* Body white, variegated with black in the course of the oviduct, clavate, posteriorly obtuse, minutely echinated. Neck long, narrow, cylindrical, echinated. Oral and ventral acetabula nearly equal; the latter one prominent, situated at the base of the neck. Length to 6 lines; breadth of body \( \frac{1}{2} \) a line.

*Var. b.* Body flattened ovate, continuous with the head, anteriorly narrowed, posteriorly obtuse, color and echination as in the preceding variety. Length 2\( \frac{1}{2} \) lines, breadth 2 lines.

Variety *a* is found attached to the sides of the cavity of the lungs of *Tropidonotus sipedon*, singly or in groups up to six, with the head and neck buried in tumors, as in the case of the attachment of *Echinorhynchi*. Variety *b* is found detached in the mucus of the lungs and trachea. Common;—obtained in December, when the water snakes were hybernating.

22. **Distomum horridum** Leidy.

*Distoma horridum* Leidy, Journ. A. N. S., 2d ser., i, 303.

From the excretory duct of the kidneys of the *Boa constrictor*.

23. **Distomum variegatum** Rud.

Leidy, Pr. A. N. S., v, 207.

From the lungs of *Rana pipiens*.

24. **Distomum retusum** Dug.

Leidy, Pr. A. N. S., v, 207.

From the intestine of *Rana halecina*.

25. **Distomum cycnoides** Zeder.

Leidy, Pr. A. N. S., v, 207.

From the urinary bladder of *Rana pipiens*, *R. palustris*, *R. halecina*; *Salamandra maculata*, *S. rubra*, *S. salmonea*.

26. **Distomum longum** Leidy.

Pr. A. N. S., v, 206.

From the mouth of *Esox estor*.

27. **Distomum terreticolle** Rud.

Leidy, Pr. A. N. S., v, 206.

From the stomach of *Esox reticulatus*.

28. **Distomum incivile** Leidy. Body flat, elongated elliptical; echinated between the oral and ventral acetabula, which are equal, and the latter one is hemispherical and sessile. Length 2\( \frac{1}{2} \) to 3 lines, breadth 3-5ths to 4-5ths of a line.

Obtained from the intestine of *Leiostomus obliquus*.

29. **Distomum clavatum** ? Rud. Body pyriform, transversely annulated, plicated. Neck curved conical, 3 lines long. Ventral acetabulum oblique, prominent, at the base of the neck, 3 lines in diameter, with a circular aperture much larger than the mouth. Length 1 inch, breadth 4 lines.

One specimen in the collection of the Academy. Locality unknown.

30. **Distomum vagans** Leidy.

*Distoma helicis* Leidy, Pr. A. N. S., iii, 220.

*Distomum pericardium* Creplin, Arch. f. Naturg. xvi, 78.

*Distoma vagans* Leidy, Journ. A. N. S., 2d ser., i, 304.


Found in *Heliz alternata* and in *H. albolabris*. 

[February]
CLINOSTOMUM Leidy.

Head shorter than, and separated from the body by a lateral constriction opposite the ventral acetabulum, compressed semi-oval. Body compressed oval. Mouth anterior. Ventral acetabulum, large, hemispherical, immersed within the commencement of the body, and having a truncated conical aperture with the apex posterior. A terminal pore to the body.

31. CLINOSTOMUM GRACILE Leidy. Head semi-ovoid, anteriorly obliquely truncated. Mouth transversely oval, with a prominent margin and a second border, which is slightly emarginate below. Body compressed oblong, oval, convex above, concave below, obtuse posteriorly, acetabulum larger, immersed between the head and body. Length to 3 lines, breadth to 1 line.

Found in the intestine of Essox, and within cysts in the gills, fins, and muscles of Potomis vulgaris.

32. CLINOSTOMUM DURUM Leidy. Head compressed oval, convex anteriorly; mouth minute, not bordered. Body compressed oblong oval. Ventral acetabulum immersed between the body and head. Length 2½ lines, breadth ⅔ of a line.

From the intestine of Rusticola minor.

33. HOLOSTOMUM CORNE Nitzsch. Found in the small intestine of Ardea herodias.

34. HOLOSTOMUM NITIDUM Leidy. Body divided by a constriction at the anterior third, everywhere echinated. Head ovoidal; mouth terminal, round, opening into a cup-shaped pharynx. Body compressed oblong oval, variegated white with yellow. Length to 1⅓ lines, breadth 2-5ths of a line.

Two specimens were obtained from the small intestine of Rana pipiens.

35. DIPLODISCUS SUBCLAVATUS Diesing. Found in the intestine of Rana pipiens.

36. DIPLOSTOMUM CUTICOLA Diesing. Head elongated elliptical, excavated inferiorly, obtusely angular, much longer than the body. Mouth small, round, pharynx oval, gizzard oval. Generative apertures hemispherical, situated just posterior to the middle. Body ovoid, with a terminal excretory pore. Length from 1-5th to ⅔ of a line. Contained in oval sacs about ½ a line in length.

Found in great number in the liver of Pomotis vulgaris.

37. ASPIDOGASTER CONCHICOLA Baer. Leidy, Pr. A. N. S., v, 224.

38. MALACOBDELLA GROSSA Blain. Leidy, Pr. A. N. S., v, 209.

CEPHALOCOTYLEA.


40. CYSTICERCUS CELLULOSUS Rud. Occasionally in the muscles of the hog, Sus scrofa.

41. CYSTICERCUS TENUICOLLIS Rud. Occasionally in the liver of the hog, Sus scrofa, and in the mesentery of the sheep, Capra aries.

42. CYSTICERCUS ELONGATUS Leuck. In cysts, in the peritoneum of the European domestic rabbit, Lepus cuniculus.

43. ECHINOCOCUS GRANULOSUS Rud. Echinococcus polymorphus Diesing.

From a cyst, of about three inches in diameter, between the muscles on the right side of the abdomen, in an English sailor boy; and also in two large
cysts in the liver of a Frenchman. I have never met with this parasite in the Anglo-American. In three large cysts in the liver of a large species of monkey (species unknown); the specimen being preserved in the collection of the University.

44. COENURUS CEREBRALIS Rud.
In the sheep, Capra aries.

45. T. ENIA SOLIUM Lin.
Leidy, Pr. A. N. S., ix, 443.

46. T. ENIA LATICEPHALA Leidy.
Ibidem.

47. T. ENIA SERRATA Goeze.
Ibidem.

48. T. ENIA CUCUMERINA Bloch.
Ibidem.

49. T. ENIA ELLIPTICA Batsch.
Ibidem.

50. T. ENIA CRASSICOLLIS Rud.
Ibidem.

51. T. ENIA PUSILLA Goeze.
Ibidem.

52. T. ENIA PECTINATA Goeze.
Ibidem.

53. T. ENIA RACILLARIS ? Goeze.
Ibidem.

54. T. ENIA PESTIFERA Leidy.
Ibidem.

55. T. ENIA STRIGIS ACADICE.
Ibidem, 444.

Ibidem.

57. T. ENIA DISPAR Goeze.
T. ENIA DISPAR Goeze. Leidy, Pr. A. N. S., ix, 444.

58. T. ENIA LACTEA Leidy.
Pr. A. N. S., ix, 444.

59. T. ENIA GIBBOSA Leidy.
Ibidem.

60. DIBOTHRIUM FUNCTATUM Rud.
Leidy. Pr. A. N. S., ix, 444.

61. SPARGANUM REPTANS Diesing.
Ligula reptans Diesing, Syst. Helm. i, 581.
Ligula tritonia Leidy, Pr. A. N. S., v, 96.

62. DIBOTHRIODBIGNCHUS ARPITUS Leidy. Head continuous with the neck, apex convex and emarginate. Bothria 2, lateral continuous above, oval, with the lateral margins involute. Proboscides filiform, projecting 1½ lines from the head. Neck tænia-form, widening posteriorly. Body constricted from the neck, narrower and longer, tænia-form, narrowing posteriorly and ending in an obtusely angular extremity. Length of head and neck 6 lines, breadth posteriorly 1 line; length of body 7 lines, breadth 3-5ths of a line.
Four specimens were found in a large cream-colored liver, which had been left upon a stall in our fish market. I could not ascertain the species of fish from which it had been obtained, but I suspect it to be the halibut, *Hippoglossus vulgaris*. Each worm was closely coiled up at the bottom of a long clavate sac, which was composed of three distinct membranes. The first membrane adhered to the structure of the liver in which it was imbedded, beneath the peritoneum. The second membrane was transparent, crisp, and shining. The third one was milk-white, soft, and contractile; and it presented a delicate, tortuous, white opaque line extending the length on each side. After opening the third membrane, beneath water, the worm gradually crept out of its own accord.

63. *Pentastomum subcylindricum* Diesing.  
*Pentastomum Didelphidis virginiana* Leidy, Pr. A. N. S., v, 96.  
In cysts of the liver of the opossum, *Didelphis virginiana*.

64. *Pentastomum euryzonum* Diesing.  
In the liver of *Cynocephatus porcarius*.

In the lungs of the *Boa constrictor*.

66. *Pentastomum gracile* Diesing. Body sub-clavate, incurved, most narrowed anteriorly, annullar, not plicated, with the margins of the annuli microscopically denticulated. Head obtuse, bothria subterminal, elevated, each with two hooks, of which the upper one is the smaller. Mouth elevated, conical, in the focus of the semicircle formed by the bothria. Length from 3 to 4 lines, breadth ¼ of a line.  
Eleven specimens were obtained by Jos. Jones from the stomach of the *Alligator mississippiensis*.

**RHYNGODEA.**

67. *Gregarina Juli marginati*.  
*Gregarina larvata* Leidy, Pr. A. N. S., iv, 232.  

68. *Gregarina Juli pusili*.  

69. *Gregarina Polydesmi virginensis*.  
Ibidem.

70. *Gregarina Passali cornuti*.  
Ibidem.

71. *Gregarina Achete abbreviatæ*.  
Ibidem.

72. *Gregarina Locustæ caroline*.  
Ibidem, 239.

73. *Gregarina Blattarum* Siebold.  

74. *Gregarina Scarabei reliqui*.  

75. *Gregarina Melalonthæ brunneæ*. Body oblong oval; head oblate spheroidal, slightly elevated at the summit. Single and in pairs. Length of body .405 mm, breadth .252 mm; length of head .108 mm, breadth .144 mm.  
Found in the intestine of *Melalontha brunnea*.

76. *Gregarina Nereidis denticulatæ*.  
Leidy, Journ. A. N. S., 2d ser., iii, 144.
77. Echinorhynchus ovatus Leidy.
Pr. A. N. S., v, 97, (1850.)
Echinorhynchus campanulatus Diesing, Syst. Helm. ii, 21, (1851.)
From the small intestine of Felis leopardus.

78. Echinorhynchus gigas Goeze.
Small intestine of the hog, Sus scrofa.

79. Echinorhynchus microcephalus Rud.
Echinorhynchus tortuosus Leidy, Pr. A. N. S., v, 97.
Found in the mesentery of Didelphis virginiana.


Several specimens were obtained by Jos. Jones from the intestine of Tantulus loculator.

81. Echinorhynchus manifestus Leidy.
Echinorhynchus Pici collaris. Leidy, Pr. A. N. S., v, 98. Body slightly compressed cylindroid, most dilated anteriorly, obtuse posteriorly, transversely corrugated. Proboscis subpyriform, with the rounded apex armed with 3 or 4 rows of hooks. Neck a simple linear constriction. Length 8 lines to an inch.

Several specimens were found in the intestine of Picus collaris.

82. Echinorhynchus hamulatus Leidy.
Echinorhynchus emydis. Leidy, Pr. A. N. S., v, 207. Body long, white, sub-clavate, curved. Proboscis sub-globular, with a single row of strong hooks and a few rudimental hooklets. Length 2 to 14 lines, breadth to ½ of a line.

Frequent in the intestine of Emys geographica, E. insculpta, E. guttata, and E. serrata. From several individuals of the latter species, Mr. Joseph Jones obtained more than a hundred specimens.

83. Echinorhynchus acus Rud.
Intestine of Morrhua americana.

84. Echinorhynchus proteus Westrum.
Pr. A. N. S., v, 208.
Intestine of Labrax lineatus.

85. Echinorhynchus globulosus? Rud.
Echinorhynchus lateralis Leidy, Pr. A. N. S., v, 207. Body sub-fusiform, most narrowed posteriorly. Proboscis cylindrical, projecting laterally, furnished with 12 to 14 rows of hooks. Neck very short. Length to 1 inch, breadth to two-fifths of a line.

Intestine of Salmo fontinalis; obtained by Prof. Baird and Prof. Agassiz.

86. Echinorhynchus angustatus? Rud.
Echinorhynchus socialis Leidy, Pr. A. N. S., v, 156. Body cylindroid, narrowing posteriorly, frequently dilated anteriorly. Proboscis cylindrical, with 26 rows of hooks. Neck very short, conical, unarmed. Length from 6 lines to 2½ inches, breadth to ⅔ of a line.

Frequent in the intestine of Platessa plana.

NEMATOIDEA.

87. Trichina spiralis Owen.
Occasional in the Anglo-american.

88. Trichina affinis Diesing.
Trichina spiralis Owen. Leidy, Pr. A. N. S., iii, 108.
Observed in the muscles of the hog, Sus scrofa.

89. Anguillula aceti Ehrenberg.
Common in ordinary cider vinegar.

90. **Anguillula glutinis** Ehrenberg.
Common in paste of wheat, rye, tragacanth, &c.

91. **Anguillula socialis** Leidy.
*Oxyurus socialis* Leidy, Pr. A. N. S., v, 102.
Found in the intestine of the black cricket, *Acheta abbreviata*.

92. **Anguillula longa** Leidy.
Pr. A. N. S., v, 225.
Found in ditches near Philadelphia.

93. **Anguillula fossularis** Leidy.
Pr. A. N. S., v, 226.
Found in stagnant ponds near Philadelphia.

94. **Ambylura serpextulus**? Hemp. et Ehrenb.
*Anguillula longicauda* Leidy, Pr. A. N. S., v, 225. Mouth with cirri (*error in the previous observation and description*). Tail long, subulate; suctorial disk exceedingly minute, clavate. Length to one-fourtieth of an inch.
Common about gutters and water spouts in Philadelphia.

95. **Hystrixanthus rigidus** Leidy.
Pr. A. N. S., v, 102; Flora and Fauna within Liv. An. 44.

**Pontonema** Leidy.

Body capillary, narrowing towards the extremities. Head continuous with the body, truncated, or obtuse and surmounted with angular papilae, cirrated. Eyes none. Tail obtuse. Generative aperture ventral, near the middle of the body. Oesophagus long, cylindro-clavate; gizzard none, intestine straight, capacious; anus ventral and posterior.

96. **Pontonema vacillatum** Leidy.
Jour. A. N. S., 2d ser. iii, 144. Body cylindroid, anteriorly with longitudinal rows of short cirri in addition to those of the head; posteriorly incurved; tail short, thick, conical, obtuse. Length to 9 lines, breadth to one-fifth of a line.
Found on the sea shore of Rhode Island, beneath stones, between tides.

97. **Pontonema marinum** Leidy.
Jour. A. N. S., 2d ser., iii, 144. Body cylindroid; head convex; mouth surrounded with angular papilae. Cirri 4, at the side of the head. Tail long, narrow, conical, obtuse. Length to 3 lines.
Found at the bottom of a sound on the coast of New Jersey.

**Ponamonema** Leidy.

Body filiform, narrowing towards the extremities. Head continuous with the body, slightly dilated, obtuse. Mouth large, infundibuliform, unarmed; oesophagus narrow, flexuous, membranous, gradually expanding into a capacious, straight, cylindrical intestine; anus none? or exceedingly indistinct. Caudal extremity obtuse. Generative aperture of the female near the middle of the body.

An active, wriggling, glistening white worm, found among beds of *Valisneria americana*, growing in the river Schuylkill, near Philadelphia.

**Nema** Leidy.

Body ascaridiform. Head without appendages. Mouth unarmed, large, infundibuliform, oesophagus tubular, membranous, expanding into a simple straight intestine; anus ventral. Tail conical, acute, recurved. Generative aperture near the middle of the body.
99. Nema vacilans Leidy. Body white, glistening. Length 1½ milimetres, breadth .050 mm. Tail .115 mm. long. An active wriggling worm, found about some dead specimens of a black Phryganea, which was infested with a fungus parasite, and attached to stones at the water's edge of a small brook near Philadelphia.


104. Thelastomum labiatum Leidy. Pr. A. N. S., v, 101; ib. 285; Flora and Fauna, 47.


106. Thelastomum venustum Leidy. Body of female fusiform, straight, with the tail long, narrow, conical, straight, acute. Body of male incurved, with the tail short, depressed, ending in a recurved subulate point, and having a pair of oblong lobes or alae, extending the length ventrally. Generative and anal apertures terminating together abruptly. Penis a curved, conical, acute spiculum. Length of female to 2½ lines, breadth to one-fifth of a line; length of male to 1 line, breadth ½ of a line. Found in great number within the large intestine of Testudo polyphemus. Obtained by Mr. Joseph Jones in Georgia. It is a singular fact, that this species is infested with vegetable parasites, as in the case of those found in myriapods and insects.

107. Ascaris vermicularis Lin. This species is the most common of all the parasitic worms, in the anglo-american.

108. Ascaris lumbricoides Lin. This species is the second of the most common of parasitic worms in the anglo-american.

In the University museum, there is a preparation of the liver of a boy, in which a number of individuals of this worm have forced themselves into the divisions of the hepatic duct. Frequent also in the small intestines of the hog, Sus scrofa.


111. Ascaris marginata Rud. Frequent in the dog, Canis familiaris.
112. Ascaris columnaris Leidy.

*Ascaris alienata* Rud. Leidy, Pr. A. N. S., v, 205. Body very uniformly cylin-
drical until within a short distance of the extremities. Head naked; lips promi-
nent. Tail short, conical, obtuse, in the male incurved. Length of female 4
inches, breadth 1\(\frac{1}{4}\) lines; length of male 2 inches, breadth \(\frac{3}{8}\) a line.

Two specimens, male and female, were found in the intestine of *Mephitis chinga*.


Head naked; lips prominent. Tail conical, mucronate. Length of female 3\(\frac{3}{4}\)
inches, breadth 1\(\frac{3}{4}\) lines. Male not seen.

A single specimen was obtained by Mr. Packard, from the intestine of *Arto-
mys monax*.

114. Ascaris tentaculata Rud.

Found in the intestine of *Didelphis virginiana*.

115. Ascaris vesiculifer Frölich.

Common in the cecum of the turkey *Meleagris gallopavo*, and of the fowl.

*Phasianus gallus*.

116. Ascaris inflexa Rud.

Common in the small intestine of the fowl, *Phasianus gallus*.

117. Ascaris serpentulus Rud.

One female, 1\(\frac{1}{2}\) inches long, was obtained by Mr. Schafhirt from the intestine
of *Ardea violacea*.

118. Ascaris longa Leidy. Body most narrowed anteriorly, and only slightly
so at the posterior fourth. Head naked, subaënt; lips slightly prominent.

Tail obtusely rounded, with the anus forming a transverse, subcrecentic
fissure nearly at its extremity. Length of the female 9 inches, breadth 1\(\frac{3}{4}\)
lines. Male not seen.

A single specimen was obtained by Mr. Joseph Jones, from the intestine of
*Tantalus loculator*, in Georgia.

119. Ascaris texticollis Rud.

Frequent in the stomach and intestine of the *Alligator mississipiensis*.

120. Ascaris anoura Dujardin.

Eight specimens were obtained from the intestine of *Coluber constrictor*. The
females measure up to 6 inches in length by 1 line in breadth; the males 3\(\frac{3}{4}\)
inches in length by \(\frac{3}{4}\) of a line in breadth. Six specimens, apparently of this
species were sent to me by Prof. Agassiz. They were obtained with nearly a
pint of others, from the intestine of the *Boa constrictor*. I do not feel positive
that they are really of the same species, as the specimens are too badly pre-
served to ascertain the fact correctly; but the size and details of form agree
pretty closely.

121. Ascaris xuda Leidy. Body most narrowed anteriorly. Head naked,
with the epidermis closely adherent; lips large, oblong. Tail short, incurved,
conical, minutely mucronate. Length of female 2 to 2\(\frac{1}{2}\) inches, breadth \(\frac{1}{2}\) to \(\frac{3}{4}\)
a line. Male not seen.

Two females were obtained from the intestine of *Crotalus adamanteus*, by Mr.
Schafhirt. Is this probably the same as the last species?

122. Ascaris humilis Leidy. Body cylindroid, recurved, white. Head ob-
tuse, naked; mouth trilobed? pharyngeal apparatus none; oesophagus pestle-
form. Tail substraight, conical, acute. Length 2 lines, breadth one-tenth of a
line.

Eight specimens were obtained from the lungs of *Tropidonotus sirtalis*, in De-
cember.

123. Ascaris entomelas Leidy.


From the lungs of *Rana helleina*. 

A single male, 14 lines long and 3/5 of a line broad, was obtained from the intestine of *Platessa plana*.


Twelve specimens were obtained by Prof. Baird, from the intestine of *Diodon maculo-striatus*.

126. *Ascaris clavata* Rud. Head with a linear ridge on each side. Tail short, conical, incurved, mucronate; in the female with a linear ridge extending forward on each side. Length of female to 3 1/2 inches, breadth 3/5 of a line; length of male to 2 inches, breadth to 7/8 a line.

Numerous specimens were obtained by Prof. Agassiz from the intestine of *Morrhua pruinosa*, and I have obtained others from the intestine of *Morrhua americana*.

127. *Ascaris cylindrica* Leidy.


*Ascaris cylindrica* Leidy, Pr. A. N. S., iv, 229. Body cylindroid, equally attenuated towards the extremities, curved. Mouth distinctly trilabiate. Tail narrow, conical, curved, acute. Female generative aperture just posterior to the middle. Length four-fifths of a line, breadth one-twelfth of a line.

Found in the intestine of *Helix alternata*. No cartilaginous pharynx as in Angiostomum!

128. *Ascaris infecta* Leidy.

Pr. A. N. S., iv, 229; Faun. and Flora within Liv. An. 42.

Found in the ventriculus of *Julus marginatus*.

129. *Synplecta pendula* Leidy.

Pr. A. N. S., v, 240.

From the stomach of *Emys guttata*.

130. *Oxyurus compar* Leidy. Body fusiform; head continuous with the body, subacute, with a dilatation of the epidermis; mouth small. Tail of female long, subulate, spirally contorted; the generative aperture one-fifth the length of the body from the head. Length of female 4 to 7 lines, breadth 7/8 of a line; length of tail from the anus 1 1/2 lines.

Seventeen specimens were found in company with others of *Tania crassicollis* in the small intestine of the cat, *Felis catus*. Esophagus long, pestle-form; gizzard globulo-pyiform; intestine dilated at the commencement, afterwards cylindrical. Males were not seen.

131. *Oxyurus curvula* Rud.

Intestine of the horse, *Equus caballus*.


Found in the cæcum of *Bufo americanus*, and of *Salamandra rubra*.

SPIRONOURA Leidy.

Body cylindroid, attenuated at the extremities. Head continuous with the body. Mouth round, surrounded by a circular papillated lip. Caudal extremity of male spiral, acute, tuberculate, with the two spicula of the penis curved, ensiform, costate; of the female conical, acute, with the generative aperture at the posterior third of the body.

133. *Spironoura gracile* Leidy. Body of female incurved; that of male spiral posteriorly. Head naked; mouth with a circular lip of 6 papilæ. Tail of female long, calcarate, acute; of male, with two rows each of three tubercles. Spicula
of penis curved ensiform, costate, emarginate at the extremity. Length of female 8 lines, breadth \(\frac{4}{3}\) of a line; length of male to 4 lines, breadth to \(\frac{4}{3}\) of a line.

Found in the stomach of *Emys serrata*. Esophagus long, pestle-form, gizzard globular, commencement of the intestine cordiform, rectum short, wide, pyriform. Ovaries double.

134. *Sphondylus affinis* Leidy. Body of female curved; that of male posteriorly spiral. Head naked; mouth with a circular lip of 67 papillae. Tail of female nearly straight, moderately long, conical, acute; of the male, conical, incurved with a pair of tubercles on each side near the end. Spicula of penis curved ensiform, costate, acute. Length of female 4\(\frac{1}{2}\) lines, breadth one-fifth of a line; length of male 3 lines, breadth \(\frac{3}{4}\) of a line.

Found in the cecum of *Cistudo carolina*.

*Sphondylus* *Didelphis* *virginiana*. Leidy, Pr. A. N. S., v, 155.  
Common in the stomach of *Didelphis virginiana*. Found by Dr. Goddard, Mr. Schafhirt, and myself; and also by Mr. Jos. Jones, in Georgia.

*Sphondylus* *Scalops* *canadensis*. Leidy, Pr. A. N. S., v, 156. The mouth bilabiate and surrounded by an elevated linear margin. Alae of male, each with 4 diverging costae. The length 6 lines, breadth \(\frac{4}{3}\) of a line.

137. *Physaloptera mucronata* Diesing.  
Numerous specimens were obtained by Mr. Joseph Jones, from the stomach of the *Alligator mississippiensis*, in Georgia.

138. *Physaloptera constricta* Leidy. Body white, with the brown intestine shining through, cylindrical to within a short distance of the extremities, incurved; anterior extremity with one or two constrictions, and abruptly inflexed. Lips large, lateral, constricted from the body, each trilobate. Tail of female incurved, abruptly conical and acute; of the male alated, with the alae narrow, long, and turgid. Length of female 1\(\frac{3}{4}\) inches, breadth two-fifths of a line; male half the size.

Found frequently in the stomach of *Tropidonotus sipedon*, with the anterior extremity of the body hooked through the mucous membrane, and very tightly adhering by means of the one or two constrictions.

139. *Physaloptera contorta* Leidy. Body capillary, most narrowed anteriorly, with the posterior four-fifths spirally contorted; white, with the intestine brown. Lips prominent, constricted from the body, trilobate. Tail short, conical, acute; in the male with narrow alae, each furnished with five funnel-shaped pores. Length of female from 6 lines to an inch; breadth to \(\frac{4}{3}\) of a line; male from one half to three-fourths the size.

Frequent in the stomach of *Emys serrata*, *Emys reticulata*, *Cistudo carolina*, and *Kinosternum pennsylvanicum*, adhering to the mucous membrane in the same manner as *Physaloptera constricta*.

140. *Physaloptera abjecta* Leidy. Body most narrowed anteriorly, incurved. Mouth distinctly bilabiate; lips lateral, prominent. Caudal extremity incurved, obtusely conical. Length 10 lines, breadth \(\frac{3}{4}\) a line.

One specimen was obtained by Mr. Jos. Jones, from the stomach of *Psammodon phleg Caucasian*.

141. *Cheiracanthus horridus* Leidy. Body subcylindrical, incurved, posteriorly sub-clavate, obtuse; anteriorly covered with palmate plates, furnished with as many as eight spines, and degenerating posteriorly to single spines. Head oblate-spheroideal, spirally echinate. Mouth bilabiate, with the lips lateral and papillated. Length of female 2\(\frac{3}{4}\) inches, breadth 1\(\frac{3}{4}\) lines. Male not seen.

Four specimens were obtained by Mr. Joseph Jones, in the stomach of the *Alligator mississippiensis* in Georgia.

Not unfrequent in the children of the Anglo-american, and also in the negro.
143. **Trichocephalus minutus** Rud.
Numerous specimens were obtained by Joseph Jones from the cæcum of *Diplolepis virginiana* in Georgia.

144. **Cucullanus microcephalus** Dujardin.
*Cucullanus trigonius* Leidy, Pr. A. N. S., v, 240. Frequent in the stomach and intestine of *Emys guttata, Emys reticulata, Emys serrata*, and *Chelomera serpentina*.

145. **Cucullanus rosetis** Leidy, Pr. A. N. S., v, 155. Body fusiform, sub-straight, red, anteriorly obtuse. Tail straight, short, conical, acute. Mouth with a complex conical apparatus. Upper lip of anus turged. Penis consisting of two calcarate spicules. Generative aperture of the female two-fifths the length of the body from the tail. Length of female to 1 1/2 inches, breadth to three-fifths a line; length of male to 10 lines, breadth 1/4 a line.

From the intestine of *Testudo* — — — ? from Java.

146. **Sclerostomum dentatum** Rud.
Several specimens, male and female, were obtained from the liver of the hog, *Sus scrofa*.

147. **Sclerostomum syngamus** Diesing.
Common in the trachea of the common fowl, *Pheasantus gallus*.

148. **Sclerostomum armatum** Rud.

149. **Strongylus attenuatus** Leidy. Body cylindroid, narrowing towards the extremities; female nearly straight, male curved. Head obtuse, bialated; abdomen long and moderately broad. Mouth, with minute angular papilla. Tail of female straight, conical, acute. Bursa of the male bilobed, multiradiate. Length of female 6 lines, breadth one-fifth of a line; length of male 4 1/2 lines, breadth one-fifth of a line.

Sixteen specimens were obtained by Mr. Schaffhirt from the intestine of *Cynocephalus porcinus*.

150. **Strongylus simplex** Leidy. Body cylindroid, anteriorly rather abruptly narrowed; female straight; male curved, with the caudal extremity incurved. Head obtusely conical, not alated nor papillated. Tail of female compressed conical, acute; generative aperture one-third the length of the body from its extremity. Bursa of male trilobed? one lobe posterior and two lateral, multiradiate. Length of female 4 to 5 lines, breadth 1/4 of a line; length of male 2 1/2 to 3 1/2 lines, breadth 1/4 of a line.

Numerous specimens were obtained from the small intestine of *Hystrix dorsata*.

151. **Strongylus auricularis** Zeder.
Intestine of *Bufo americanus* and of *Cistudo carolina*.

152. **Eusstrongylus gigas** Diesing.
Frequent in the kidneys of the mink, *Putorius vison*, and occasionally occurring in the dog, *Canis familiaris*. One specimen, eight inches long, was obtained by Mr. Joseph Jones from the heart of the latter animal, in association with *Filaria*, mentioned in another part of this paper.

153. **Thichosomum lineare** Leidy. Body filiform, nearly equally narrowed towards the extremities. Caudal extremity of the female spirally involute. Tail incurved, obtuse, with two conical points on the ventral aspect of the extremity. Caudal extremity of the male spiral; tail long, conical, acute; generative aperture a considerable distance from the end of the tail. Length of female 3 inches, breadth 1/4 of a line; length of male 1 1/2 inches, breadth one-tenth of a line.

Seven specimens were obtained from the small intestine of the cat, *Felis catus*. 

154. **Cystusoma truncatum** Leidy. Body globular, sparsely covered with fine hairs; tail gradually narrowed to a point. Setae 6 lines, breadth 1/4 of a line; length of male 10 lines, breadth 1/4 of a line.

Numerous specimens were obtained from the small intestine of the cat, *Felis catus*.

A single specimen was obtained by Mr. Schafhirt from the intestine of *Piceus colaris*.

155. *Agamonema capsularia*? Diesing. Body slender, most narrowed anteriorly. Month small, circular, surrounded by an undivided lip. Tail short, obtusely conical, minutely mucronate. Length 5 to 10 lines, breadth from 1/5 to 1/4 of a line.

Found free in the intestine of *Centropristes nigricans*, *Clupea elongata*, and *Alosa sapidissima*. Also free in the intestine and pancreatic ceca of *Morrhua americana*; and larger specimens: 1 inch in length and 1/4 of a line in breadth, coiled up within sacs of the peritoneum in the same fish.

156. *Agamonema papilligerum*? Diesing. Body cylindroid, most narrowed anteriorly, posteriorly obtusely conical. Month surrounded by four papille; anus terminal. Length to 4 1/2 inches, breadth two-fifths of a line.

One specimen was obtained from the abdominal cavity of *Esox*.


A specimen is preserved in the collection of the Academy, and was recently brought from Western Africa, by Dr. J. L. Burtt, U. S. N., who obtained it from the leg of a white soldier.


159. *Filaria immitis* Leidy. *Filaria Canis cordis* Leidy, Pr. A. N. S., v, 118. Body cylindroid, obtusely rounded at the extremities. Month small, round, unarmèd. Caudal extremity of male spiral, with a row of five tubercles and a narrow ala upon each side. Penis protruding a short distance above the anus. Length of female to 10 inches, breadth to 1/4 a line; length of male to 5 inches, breadth 1/4 of a line.

Mr. Joseph Jones recently presented to me two specimens of the heart of the dog, in the right ventricle of one of which there were five of the *Filariae* just described. In the other specimen, the right auricle and ventricle, and the pulmonary artery in its ramifications through the lungs are literally stuffed with *Filariae*. A portion of the blood of this dog, given to me by Mr. Jones, contains a great number of the young of the *Filaria*.

In relation to the symptoms which accompanied the presence of these worms in the heart while the dogs were living, Mr. Jones has furnished the following notes: The heart containing the five worms, was taken from a male pointer dog, whose appetite was voracious and insatiable, and notwithstanding he was abundantly supplied with food, he remained in a very lean condition. The heart and lungs containing great numbers of worms was from a cur dog, who was always so thin as to resemble a skeleton; and it was impossible to benefit his condition with the most liberal supply of food. Both dogs were of an exceedingly restless disposition. They did not die in consequence of the presence of the *Filariae*, but were killed in the course of some physiological experiments.


Nine specimens were contained within two globular sacs of the gastric mucous membrane of the Albatross, *Diondrea cuculans*, the preparation having been obtained in the South Atlantic, by Dr. W. S. W. Ruchenberger, U. S. N. The sacs also contained each a brown globular body about 3 1/2 lines in diameter, divided by lines into quarters, intersected by transverse corrugations. At one pole of these enigmatic bodies was an elliptical aperture, and at the opposite pole a small conical tail-like appendage. One of the bodies being cut open, ex-
hibited no regularity of structure. The Filariae were situated between the globular bodies and the walls of the sacs containing them.

161. Filaria attenuata? Rud. Body cylindrical, conical at the extremities. Head convex; mouth round, unarmed. Caudal extremity of male incurved. Tail short, obtusely conical. Length of female 4 inches, breadth \( \frac{1}{3} \) of a line; length of male 2 inches, breadth one-fifth of a line.

Five specimens were obtained by Prof. Baird from the abdominal cavity of Sturnella ludovicianae.

Two female Filariae having the same form as the above, 5 inches in length and \( \frac{1}{3} \) a line in breadth, were obtained by Prof. Baird from the abdominal cavity of Colaptes auratus.

162. Filaria bispinosa Diesing. Filariae Bow constrictroris Leidy, Pr. A. N. S., v, 118.

Found beneath the skin of the Bow constricitor.

163. Filaria cistudinis. Body capillary, spirally involute, attenuated at the extremities. Head and tail obtusely rounded. Mouth unarmed. Anus terminal. Length 1\( \frac{1}{4} \) inches, breadth \( \frac{1}{3} \) of a line.

One specimen was obtained by Mr. Schafhirt from the heart of Cistudo carolina.

164. Filaria amphiume. Body cylindroid, attenuated towards the extremities, spirally coiled, anteriorly truncate, posteriorly acute. Length 6 lines, breadth one-fifth of a line.

Numerous specimens were found coiled up in the pariotes of the stomach of Amphiuma means, the individual of which had been so long preserved in alcohol, that the characters of the worms could be partially determined only.

165. Filaria nitida Leidy. Body filiform. Mouth large, round, unarmed; oesophagus one-fourth the length of the body; intestine straight, capacious, with a short narrow rectum; anus terminal with a short tubular prolongation. Tail sub-distinct, conical. Color red. Length to 5 lines, breadth one-twelfth of a line.

Found coiled up in oval cysts in the peritoneum and abdominal muscles of the Rana pipiens.

166. Filaria solitaria Leidy. Mouth transverse, sub-elliptical, papillated. Caudal extremity obtusely rounded. Anus terminal. Length to 2 inches, breadth \( \frac{1}{4} \) of a line.

Coiled up in cysts between the tunics of the stomach and intestines of Emys serrata and Chelonura serpentina. Obtained by Mr. Joseph Jones, in Georgia.

167. Filaria rubra Leidy. Capillary, anteriorly truncated, posteriorly obtusely conical, dark brownish red in color. Mouth transverse, slightly bilabiate; lips papillated. Anus terminal, transverse, crescentic. Length to 4\( \frac{1}{4} \) inches, breadth \( \frac{1}{4} \) of a line.

Frequently found in considerable number in the peritoneal cavity of Labrax lineatus, during the winter.

168. Filaria quadriruberculata Leidy. Body capillary, red in color, anteriorly conical, unarmed; mouth circular, with an elevated, non-papillated, circular lip. Caudal extremity incurved, conical, ending in a minute conical papilla, and having on each side a pair of minute tubercles. Length 4 inches, breadth \( \frac{1}{4} \) of a line.

A single specimen was found by Mr. Schafhirt in the muscles of the back of Anquilla vulgaris.

169. Gordius varius Leidy.

Pr. A. N. S., v, 263, (1851).

Gordius aquatice of American authors.

Gordius tricuspis? Siebold, Zeits. f. Wiss. Zool. vii, 143 (1855). Body long, linear, cylindrical, attenuated towards the extremities; narrowest anteriorly; passing through a variety of shades from a dusky yellowish white or
cream color, to a dusky ochreous yellow, yellowish brown, reddish brown, light chocolate to dark chocolate brown, or to ebony black; lustrous, often iridescent in sunlight. Head surrounded by a dark brown or black ring, obliquely truncated and terminated by a convex, translucent, whitish vesicular membrane, at the lower part of which is a minute round mouth. Integument areolated; areole irregularly pentahedral.

**Female.**—Lighter in color than the male, and usually much longer and thicker. Caudal extremity trifurcate; caudal lobes elongated, elliptical; one narrower than the other two. Generative aperture round, enclosed by the caudal lobes.

**Male.**—Usually dark-brown, often inclining to black. Caudal extremity curved. Tail bifurcate; caudal lobes curved conoidal, obtuse, divergent. Generative aperture ventral, just above the caudal lobes.

Twenty females and twelve males were found in Rancocas creek, a branch of the Delaware, New Jersey, in the month of August. Length of the former 5 to 12 inches; breadth $\frac{1}{2}$ to 2-5ths of a line. Length of the latter from 4 to 6 inches; breadth 1-5th to $\frac{1}{2}$ of a line. Three females from 7 to 12 inches in length, and from $\frac{1}{2}$ to 2-5ths of a line in breadth; and one male 6½ inches in length and $\frac{1}{4}$ of a line in breadth, were obtained from the Delaware river. Six females and two males were obtained from the Schuylkill river. Mr. Pearsall has given me eight specimens from Philadelphia Co. Prof. Agassiz has given me a female 12 inches in length, from Niagara; a male 6 inches in length and a female 8 inches in length from the vicinity of Cambridge; two females 6 inches in length from Edgartown; and a male 3 inches in length, and 2 females 4 inches and 9 inches in length from Trenton. Dr. King, of Greensburg, Penn., has given me a male 5 inches in length, from his vicinity. Mr. Hazzard, of Point Judith, R. I., has given me a female 10 inches in length by 2-5ths of a line in breadth, from his vicinity. Prof. Kirtland has given me a male 5 inches in length, said to have been passed per annum by a girl, near Cleveland, Ohio. Prof. Baird has given me three males from the Susquehanna river, near Carlisle, Pa., and a male and female from Lake Champlain, N. Y.

The *Gordius varius* is the most common species of the genus in the United States; and it is familiar to most persons under the name of hair-worm, and is erroneously supposed to originate from the maceration of horse hairs in water. The species is remarkably prolific. A single female, 9 inches in length, by 2-5ths of a line in breadth, which I had preserved in a large vessel of water, extruded from between its caudal lobes, a cord of ova, broken into segments, the aggregate length of which was 91 inches, and breadth 1-20th of a line. I counted in each transverse disk of the cord, about 70 eggs, and in the length of 1-40th of an inch, 26 eggs, so that by simple calculation: $70 \times 26 \times 40 \times 91 = \text{the whole number of eggs deposited is } 6,624,800$.


*Gordius seta* Müller, Diesing, Syst. Helm. ii, 83.

*Gordius lineatus* Leidy, Pr. A. N. S., v, 263, (1851).

*Gordius robustus*? Leidy, Ibidem, 273. Body long, filiform, not narrowed anteriorly, dusky yellowish white, cream colored, white, light brown, or dark brown in color, sometimes darker at the extremities, lustrous. Areole of the integument hexagonal.

**Female.**—More robust than the male, opaque, and lighter colored. Head obtusely rounded. Caudal extremity truncated, rounded.

**Male.**—Narrower than the female. Head obtusely rounded. Caudal extremity incurved, bifurcated; caudal lobes curved conoidal, obtuse, fimbriated upon the ventral border with simple branching dermal appendages.

Six males from 5 to $\frac{1}{2}$ inches in length, and $\frac{1}{4}$ of a line in breadth; and one female 5 inches in length, by $\frac{1}{2}$ of a line in breadth; of a dusky yellowish white color, were obtained by Prof. Baird from a spring in Essex Co., New York. (*Gordius lineatus*, Pr. A. N. S., v, 263). One female, of a light brown color, with the head ringed with black, 3½ inches long by 1-5th of a line broad, procured by Dr. W. S. Gibson, from a spring in Philadelphia county. A female of a cream-color, with the head ringed with dark brown, 4½ inches long by 1-5th of
a line broad, I found in Frederick Brook, at the head of the Bey of Fundy, New Brunswick. A female (\textit{G. robustus}, \textit{Pr. A. N. S.}, \textit{v}, 275), hardly narrowed at the extremities, brown, rigid, with the head edged with dark brown, and the tail slightly expanded, conical and obtuse, 6\frac{1}{4} inches long, and \frac{1}{2} a line wide, was obtained by Dr. Chas. H. Budd, from a boy, who informed him it had crept out of the abdomen of the specimen of grasshopper which accompanied the worm. A male and female were obtained by Mr. Schaffirt, from a single specimen of \textit{Pterostichus fastidites} Dejean. The length of each is about 3 inches; the breadth of the male \frac{1}{4} of a line, of the female \frac{1}{3} of a line.

171. \textit{Mermis albicans} Siebold.
\textit{Mermis crassicaudata} Leidy, Ibidem.
\textit{Mermis ferruginea} Leidy; \textit{ib}. Body long, capillary, narrowed towards the extremities, most narrowed anteriorly. Head slightly dilated or not at all, truncated, convex. Caudal extremity slightly curved, conoidal, obtuse. Color milk white when the worm is parasitic, or is buried in the earth; cream or yellowish white, or light ochreous yellow, or light reddish brown when it lives in water. In alcohol becomes translucent yellow, bright yellow, approaching to orange, or brown.

Eleven individuals (\textit{Mermis elongata} \textit{Pr. A. N. S.}, \textit{v}, 263,) of a dusky yellowish white, and from 6 to 18 inches long, by \frac{1}{4} to \frac{1}{3} of a line broad, were obtained by Dr. Chas. H. Budd, in the early spring season, in a ditch emptying into the Rancocas creek, New Jersey. Six specimens, opaque white in color, from 8 to 15 inches in length, were obtained by Samuel Powell, Esq., in digging in the earth mould of his garden at Newport, R. I. One specimen, of a cream color, 22 inches long and \frac{1}{4} of a line broad, was obtained by Dr. William Gibson, from a rivulet in Philadelphia county. I found four specimens of a brownish white, from 9 to 16 inches long and from \frac{1}{4} to \frac{1}{3} of a line broad, in pools of fresh water, among the rocks of the sea shore of Point Judith, R. I. One specimen (\textit{Mermis crassicaudata} \textit{Pr. A. N. S.}, \textit{v}, 263,) opaque white, and 8 inches long, I found in a ditch below Philadelphia. A specimen (\textit{Mermis ferruginea} \textit{Pr. A. N. S.}, \textit{v}, 275,) from Brazil, contained in the collection of the Academy, is brown in color, and measures 14\frac{1}{2} inches long. A cream colored individual, 4 inches long and 1-5th of a line broad, was obtained from an apple by Major Le Conte, who, with great probability, supposed it had issued from the larva of a lepidopterous insect, in the core of the fruit. Professor Agassiz sent me a specimen translucent yellowish white in color, and 94 inches long, and 1-5th of a line wide, obtained from the abdomen of \textit{Orchelium gracile} Harris. Lastly, I have obtained specimens very frequently from \textit{Lycus carolina}, of the meadows below Philadelphia, and occasionally from the earth and ditches in the same locality. From one to six of the worms occupy the body of a single insect, closely coiled among the viscera, from the head to the end of the abdomen. The worms are opaque white, and measure from 3 to 15 inches in length, and from \frac{1}{6} to \frac{1}{3} of a line in breadth. When the grasshoppers infested with these parasites are bruised, the worms creep out and penetrate into the earth, as I have satisfied myself by careful observation. In alcohol the \textit{Mermis} of the grasshopper assumes in time a bright yellow hue.

172. \textit{Mermis robusta} Leidy.

I found one specimen, of a pale pinkish white, 3 inches in length, and \frac{1}{4} of a line in breadth, which crept from the abdomen of a species of \textit{Lycosa} with four stripes on the cephalothorax and three on the abdomen, from New Jersey. The specimen described by Mr. Haldeman, was pale reddish, and over five inches in length, by 2-5ths of a line in breadth, and was obtained from \textit{Lycosa scutulata}? Hentz, in Pennsylvania.
genera and species of Fossil Fishes from the Carboniferous Strata of Ohio." Referred to Drs. Le Conte, Leidy, and Hallowell.

Mr. Samuel Ashmead, in presenting the very fine collection of Marine Algae made by himself during the past winter at Key West, Florida, stated that he was indebted to Prof. Bailey, of West Point, for his assistance in determining a number of the species.

April 29th.

Vice President BRIDGES in the Chair.

The Committees on Mr. Lea's papers, read 1st inst.; on Dr. Leidy's paper, read 8th inst.; on Mr. Kennicott's paper, read 15th inst.; on a paper by Messrs. Meek and Hayden, read same date; on Dr. Leidy's papers, of same date; on Mr. Lea's paper, of same date; and on Dr. Newberry's paper, read 22d inst.; severally reported in favor of publication in the Proceedings.

Description of a New Sub-Genus of Naiades.

By ISAAC LEA.

Family NAIADES.

Sub-genus PLAGIODON.

Testa æquivalvis, inæquilatera, obliquè trigona, valdè inflata; dentibus cardinalibus crenulatis, compressis, transversis, curtis, in utraque valva duplicis; dentibus lateralibus nullius; ligamentum vix extrorsum; impressio muscularis antica composita.

This sub-genus is proposed for a fluviatil shell, which is nearer to Monocondylus, D'Orbigny, than to Margaritana, Schumacher; and may be considered properly so interposed as a link to connect them.

PLAGIODON ISOCARDIODES.

Testa lævi, rotundo-trigona, globosa, ventricosissimæ, ad lateris planulatis, valdè inquilaterali, antice brevissimæ, umbonibus tumidis, valvulis subtenuibus; natibus valdè elevatis, incurvis, terminalis; epidermide subrugosa, tenebroso-olivacea; dentibus cardinalibus crenulatis, compressis, transversis, curtis, in utraque valva duplicis; margaritæ alba et iridescente.


Description of a New Species of Triquetra, Klein (Hyria, Lamarck.)

By ISAAC LEA.

TRIQUETRA LANCEOLATA.

Testa lævi, transversissimâ, subcompressâ, lanceolatâ, valdè inquilaterali, posticæ acuto-angulatæ; antice caudatim producata; valvulis crassis; natibus parvis, prominulis, ad quartam anteriorem partem positis; epidermide striatâ, tenebroso-fuscâ; dentibus cardinalibus subgrandibus crenulatisque; lateralibus prolongis rectisque; margaritæ alba et argentæ.

Description of New Fresh water Shells from California.

By ISAAC LEA.

Family LYM.N.EANA.

Genus POMPHOLYX.

Testa rotundo-gibbosa, subtus retorsa, superne planulata, non umbilicata; spiræ depressa, apertura amplissima, subrotunda, effusa; labro acuto; labio incrassato, planulato; operculum nullum.

POMPHOLYX EFFUSA. Testa parvâ, striatâ, rotundo-gibbosa, subtenuis, effusa, luteo-corneâ; anfractibus trinis, superne planulatis, inferne convexis; apertura subrotunda, dilatata, intus albidâ, maculatâ.

Hab. Sacramento River, California. Dr. Trask.

MELANIA SHAFTAENSIS. Testa striatâ, subcylindraceâ, subtenuis, tenebroso-corneâ, fasciâta; spiræ elevatâ ad apicem plicatâ; suturis valde impressis; anfractibus convexis; apertura parvâ, ovatâ, intus albidâ; columellâ laevi, incurvâtâ et recurvatâ.

Hab. Shasta and Scott Rivers, California. Dr. Trask.

MELANIA NIGRINA. Testa laevi, parvâ, conicâ, subtenui, nigrïcânti, politâ; spiræ subelevatâ; suturis impressis; anfractibus regulariter convexus; apertura parvâ, ovatâ, superne angulatâ, intus tenebroso-purpureâ; columellâ incurvâ, purpureâ.

Hab. Clear Creek, Shasta County, California. Dr. Trask.

PHUSA TRITÆCA. Testa subfusiformi, pellucidâ, politâ, rufo-castaneâ; spiræ brevi, subacutâ; suturis subimpressis; anfractibus quaternis, subcylindraceis; apertura elongatâ, intus lineatâ.

Hab. Shasta County, California. Dr. Trask.

PLANOEBS TRASKII. Testa magnâ, tenebroso-corneâ, subcylindraceâ, minutâ, crebrê et regulariter striatâ, superne latê et profunditer umbilicata; inferne magis excavatâ; anfractibus quinis, superne acutê carinatâ ad peripheriam, inferne obtusê carinatâ; apertura auriculâceformi.

Hab. Kern Lake, Tulan County, California. Dr. Trask.

LYMNÆA PROXIMA. Testa acuto-conicâ, subtenui, crebrê et irregulariter striatâ, corneâ, minutê perforatâ; spirâ subelevatâ, ad apicem acuminatâ; suturis valde impressis; anfractibus septenis, convexis; apertura subinflatâ, subelliptîcâ, intus fasciâta, columellâ paulo plicatâ.

Hab. Arroya Sao Antonio, California. Dr. Trask.

ANCYLUS PELLOLOIDES. Testa magnâ, crassâ, elliptîcâ, maculâtâ, oblique conicâ; striis crebris, minutis; apice submedianâl.

Hab. Sacramento River, California. Dr. Trask.

The following species, heretofore described, were part of the "envoi" made by Dr. Trask.

Margaritana margaritifera, Lea.

Atlas jolecata, Gould.

Atlas Yubavensis, Trask.

From Klamath and Yuba Rivers.

I received specimens of this shell from Prof. Nuttall in 1837, brought by him from Columbia River. I thought then, and I still think, there were not characters sufficiently distinct in them to form a new species. The observations published at the time (Trans. Amer. Phil. Soc. v. 6, p. 97) are still in accordance with my opinions, after having had many specimens from various localities under examination. The purple in the nacre is stronger than any I have seen from other localities, but this with the other differences would not I think warrant its being considered more than a mere variety of M. margaritifera.
_Anodonta Wahlamatsinis_, Lea. Tr. Am. P. S. v. 6, p. 78.==_A. triangulata_, Trask.
_A. rotundata_, Trask. From Sacramento River.
Randalli_, Trask. From upper San Joaquin.
_Helix Oregenensis_, Lea. Trans. Am. P. S. v. 6, p. 100. Point Cypress, Monterey
County.
_Melania occata_, Hinds. Voy. of the Sulphur, pl. 15, f. 5. Sacramento River.
_Melania seminalis, (Paludina, Hinds._) Voy. Sulphur, pl. 16, fig. 22. Sacramento River.

Descriptions of twenty-eight new species of Acaphala and one Gasteropod, from the Cretaceous formations of Nebraska Territory.

By F. B. Mee and F. V. Hayden, M. D.

Pholadomya undata. Shell oval or ovate, moderately ventricose, anterior end rounded, posterior extremity rounded chiefly from below, cardinal border nearly straight; base somewhat broadly curved; beaks rather elevated, incurved, placed between the centre and the anterior end; surface (of cast) ornamented by numerous, regular, distinct, concentric undulations, which are crossed by much smaller radiating costs, scarcely marked in the depressions between. Length about one inch.

As we have not seen the hinge of this species, we refer it with doubt to the above genus. The radiating costs are about equal, the spaces between, and in consequence of being marked only on the concentric undulations, and not in the intermediate depressions, furnish a character by which even fragments of the species may be at once identified.

Locality and position. Mouth of Judith River, in a sandstone supposed to be same as No. 1 of the series.

Goniomya americana. Our specimens of this interesting shell are too imperfect to give a clear idea of its form, though the direction of the lines of growth indicate an oblong or very narrow oval outline, with a narrowly rounded anterior and subtruncate posterior. Laterally the valves must have been considerably compressed. The beaks are small, not much elevated, and placed in advance of the centre. On the two extremities the coste, which are quite distinct, traverse the shell obliquely backwards from near the hinge to the base, while those originating immediately in front and behind the beaks, converge and meet at various distances down the sides of the shell, so as to form arched or convex angles of from 20° to 30°. Surface ornamented by fine irregular lines of growth, crossed by regular, equi-distant, radiating rows of minute transparent granules, placed at regular distances from each other. These granules are so small as to be scarcely visible without the aid of a strong magnifier, under which they look like minute drops of melted amber.

In its surface markings this species resembles _G. Dubois of Prof. Agassiz, (Etudes critiques sur les Molusques fossiles, tab. 1.) but in our species the converging coste continue to meet at the same acute angles as far as they can be traced towards the points of the beaks, while on the beaks of _G. Dubois and
other allied species, these angles are truncated, and the opposite costae united by horizontal bars. Perfect specimens would probably show other differences. This is, we believe, the first species of this genus found in America. According to Prof. Bronn, (*Index Paleontologicus*), five species have been hitherto described from the whole cretaceous system, two of which were from the Neocomien, two from the green sand, and one from the true chalk.

**Locality and position.** Moreau Trading Post, No. 5 of the series.

*Solen sublificatus.* Shell very thin and fragile, elongated, cardinal and basal margins straight and parallel; buccal extremity obliquely truncate, anal end rounded from below, both ends gaping; beaks nearly at the anterior extremity, not distinct from nor rising above the hinge line. Six to eight broadly rounded, very faint plications radiate from behind the beaks obliquely backwards to the posterior margin, to which they appear to have imparted a slightly waved outline; surface marked with faint lines of growth, and minute transverse closely arranged striae, which do not radiate from the beaks, but traverse the shell at right angles to its longitudinal diameter. Length 1′15 inches; breadth .26 inch; height 42 inch.

The fine transverse striae on this shell are only visible under a high magnifying power, and appear to have been as well marked on the inside as on the exterior, distinct impressions of them being left on internal cast.

**Locality and position.** Moreau river, No. 5 of the series.

*Tellina gracilis.* Shell elliptical, moderately compressed, extremely thin and fragile; buccal margin rounded; posterior end contracted, subtruncate, and having a broad obsolete ridge passing from the beaks obliquely backwards to the postero-basal margin; cardinal border convex before and concave behind the beaks; lower border forming a regular elliptical curve; beaks rather depressed, and located a little behind the centre; surface marked with fine lines of growth. Length .90 inch; breadth of left valve .17 inch; height .60 inch.

The above description is made out from a single left valve, so attached to the matrix as to show only external characters.

**Locality and position.** Mouth of the Judith, in a sandstone supposed to be the same as No. 1 of the series.

*Tellina equilateralis.* Shell elliptical, compressed, moderately thick, extremities rounded; anterior end slightly broader than the posterior; beaks small, not elevated, located a little in advance of the middle; surface marked with fine regular concentric lines. Length of right valve 1′15 inches; breadth .12 inch; height .57 inch.

We have of this species but one right valve, showing none of its internal characters. The position of its beaks, as well as its much greater thickness, preclude the idea of its being an opposite valve of the last.

**Locality and position.** Same as preceding.

*Tellina ? Cheyenensis.* Shell ovate, compressed, very thin; anterior extremity rounded; posterior end subtruncate or rounded from above, and very obtusely angular below; base forming an elliptic curve; beaks somewhat elevated, placed a little in advance of the middle, surface ornamented with fine lines of growth and numerous small regular concentric wrinkles, becoming mere lines near the beaks and on the extremities. Length .88 inch; breadth .36 inch; height .67 inch.

We have only seen the outside of this specimen.

**Locality and position.** Forks of Cheyenne River, No. 4 of the series.

*Tellina scitula.* Shell elliptical, small, thin, much compressed, curved so as to be convex on the left, and slightly concave on the right sides; extremities narrowly rounded, the anterior end being wider than the posterior; beaks small, nearly central; base forming a regular elliptic curve; surface polished, and marked with distinct lines of growth. Length .50 inch; breadth .13 inch; height .30 inch.

**Locality and position.** Moreau River, No. 5 of series.
Tellina subelliptica. Shell small, ovate or elliptical, thin, much compressed; anterior extremity rounded; posterior end somewhat rounded or subtruncate; beaks small, not much elevated, a little in advance of the centre; surface rather faintly marked with fine lines of growth. Length 5.0 inch; breadth 1.2 inch; height 1.32 inch.

This species is chiefly distinguished from the last by its more broadly rounded extremities, less distinct lines of growth, and greater thickness.

Locality and position. Cherry Creek, Upper part of No. 5 of the series.

Tellina Procti. Shell ovate, much compressed, very thin and fragile; extremities rounded; posterior end somewhat contracted, and having a broad, indistinct ridge passing from the beaks obliquely backwards to the postero-inferior margin, the outline of which it have slightly modified; cardinal border convex before, and concave behind the beaks; umbones nearly central, elevated, somewhat gibbous, closely approximate; surface ornamented with fine but distinct lines of growth; internal lamina of the shell marked with faint, very fine radiating lines; sinus of the pallial impression oblong, obtuse or subtruncate at the extremity, about one-third the length of the shell. Length 2.42 inches; breadth 0.83 inch; height 1.60 inches.

We have not seen the hinge of this shell. The species is dedicated to Dr. II. A. Prout, of St. Louis, Missouri, to whom we are indebted for the only specimen we have seen.

Locality and position. Fort Benton, No. 4 of the series.

Cytherea Deweyi. Shell subcircular or slightly oval, somewhat compressed; beaks moderately elevated, a little in advance of the centre; surface ornamented by distinct irregular lines of growth; lunule small, narrow, oval or broad lanceolate, not very distinctly impressed; muscular impressions shallow, anterior one narrow ovate; posterior broad ovate, acutely angular above; pallial impression having a rather deep triangular sinus, forming at the apex an angle of 55°; border smooth. Length 0.66 inch; breadth 0.51 inch; height 0.85 inch.

Specimens slightly more elongated, but apparently identical with this, occur on the Yellow-stone River in a bed we have considered the upper part of No. 4, but which may represent No. 5. This species is dedicated to Prof. Chester Dewey, of Rochester University, N. Y.

Locality and position. Moreau River, No. 5 of the series.

Cytherea Nebrascensis. Shell subcircular, much compressed; beaks somewhat elevated, small, a little in advance of the centre; ligamentary cavity long and very narrow lanceolate; surface marked with rather faint lines of growth. Length 0.70 inch; breadth 0.28 inch; height 0.60 inch.

The much more compressed form of this shell will serve to distinguish it at once from the last.

Locality and position. Same as preceding.

Corbula ventricosa. Shell small, very thin, subglobose, nearly equivalent; anterior end broadly rounded; posterior extremity abruptly contracted into a narrow prolongation; beaks elevated, ventricose, a little behind the centre of the globose part of the shell; surface marked with distinct irregular lines of growth; cardinal tooth of right valve prominent, flattened; posterior muscular impression deep; pallial impression having a broad triangular sinus. Length 0.55 inch; breadth 0.26 inch; height 0.27 inch.

Locality and position. Same as last.

Corbula Moreauensis. Shell small, subovate, ventricose, rounded in front, suddenly contracted and somewhat attenuate behind; beaks prominent, situated behind the middle of the broadest part of the shell, rather inclined backwards; surface ornamented with strong, regular, elevated concentric lines, nearly equaling the spaces between. Length about 0.27 inch; breadth 0.10 inch; height 0.16 inch.

We have not yet seen the left valve of this shell, nor the interior of the right,
from which the above description is made out. The species may be distin-
guished from the last by its much stronger and more regular concentric lines.

**Locality and position.** Same as last.

**Corbula? gregaria.** Shell very small, somewhat triangular, subglobose; right valve more ventricose than the left; beaks nearly central, gibbous, that of the right valve elevated considerably above the left, incurved; surface polished and marked with a few faint, irregular, concentric wrinkles, indicating stages of growth; hinge having under the beaks a single prominent tooth in each valve; anterior muscular attachment indistinct, posterior raised upon a strongly pro-
jecting lamina; palpeal impressions scarcely sinuous. Length -13 inch; breadth
-10 inch; height -13 inch.

It is with much doubt we refer this little shell to the genus *Corbula*. In the
inequality of its valves, as well as in the character of its hinge, it agrees ex-
actly with that genus, but we have seen no species of *Corbula* having either of
the muscular attachments raised upon a projecting plate, as in this shell. In
this respect it is more like *Cordilla* of Deshayes, but it appears to want the spoon-
shaped projection of the hinge of that genus; and it is the posterior, instead of
the anterior muscular attachment that here forms a projecting plate. We sus-
pect it belongs to an undescribed genus.

**Locality and position.** Yellow-stone River, one hundred and fifty miles from
mouth, where it is found in vast numbers compacted together in concretions, in
the upper part of No. 4 of the series.

**Astarte gregaria.** Shell small, subtriangular, rounded below and at the
extremities, nearly equilateral, valves moderately convex; beaks much elevated,
rather pointed, incurved, approximate, slightly turned forward; escentiche
narrow lanceolate; lunule somewhat broadly lanceolate or narrow ovate,
not very distinctly impressed; surface ornamented by small, but distinct con-
centric undulations, and much finer lines of growth; border smooth; muscular
impressions shallow. Length -21 inch; breadth -14 inch; height -21 inch.

**Locality and position.** Yellow stone River, from a bed probably near the top
of No. 4, if not in No. 5 of the series. Abundant.

**Nucula scitula.** Shell ovate, rather ventricose, rounded in front, somewhat
contracted and narrowly rounded behind; umbonal region gibbous; beaks
prominent, incurved, approximate, located in advance of the middle; surface
marked with distinctly elevated, regular concentric lines, about equal to the
spaces between, and stronger on the middle than towards the extremities of
the valves; dorsal border marked by a distinct longitudinal groove behind the
beaks. Length -39 inch; breadth -21 inch; height -22 inch.

From *N. ventricosa* of Hall and Meek, (see vol. 5, new series, Trans. Am. Acad.
Arts and Sciences,) to which it bears some resemblance, this may be distin-
guished by its beaks being located nearer the anterior end, and by its larger
size and comparatively smaller concentric lines.

**Locality and position.** Moreau River, No. 5 of the series.

**Nucula Evansi.** Shell elongate, narrow elliptical, thin, moderately convex;
cardinal margin nearly straight, marked with a distinct longitudinal groove on
each valve; extremities rounded, posterior end compressed and slightly gaping;
inferior border forming an elliptical curve, with sometimes a faint impress-
sion near the middle; beaks very small, not much elevated, located in advance of
the centre; surface polished and marked with faint lines of growth; muscular
impressions indistinct; teeth of the hinge numerous, closely interlocked. Length
-72 inch; breadth -22 inch; height -32 inch.

Dedicated to Dr. John Evans, U. S. Geologist of Oregon Territory.

**Locality and position.** Moreau River, No. 5 of the series.

**Nucula equilateralis.** Our specimens of this shell are only casts. The
species may be characterized as follows: subelliptical, rather convex; extremi-
ties narrowly rounded; beaks central, somewhat elevated; umbonal region gib-
bous; muscular impressions comparatively large, distinct, but not deep; border
smooth; teeth of the hinge numerous, short, obtuse, closely interlocking. Length 0.64 inch; breadth 0.21 inch; height 0.25 inch.

Even casts of this species may always be known from the last, by the central position of the beaks and more narrowly rounded extremities.

**Locality and position.** Same as last.

**Nucula subplana.** Shell small, oval, compressed; anterior end obliquely subtruncated from the beaks a little more than half way down; posterior end round, base broadly rounded; beaks prominent, compressed, located about half way between the centre and the anterior end; surface (of cast) having a few faint indications of concentric undulations; teeth of hinge moderately long; border smooth. Length 0.25 inch; breadth 0.09 inch; height 0.20 inch.

Of this little Nucula we have only seen casts. It may be known from other species from these formations by its short compressed form and elevated beaks. It is rare.

**Locality and position.** Yellow-stone River, one hundred and fifty miles above mouth, in a bed supposed to be upper part of No. 4 of series.

**Nucula cancellata.** Shell rather large and thick, ovate or subtriangular, ventricose, pearly within; anterior end short, obliquely truncate, posterior end longer, narrowly rounded; umbonal region gibbous; beaks somewhat elevated, slightly incurved; escutcheon lanceolate; lunule ovate, flattened, but scarcely impressed; surface ornamented by numerous flatly rounded, simple, closely arranged, radiating costae, which are crossed by small, irregular, concentric wrinkles, and finer indistinct lines of growth; border nearly crenulated. Length 0.95 inch; breadth 0.50 inch; height 0.65 inch.

This beautiful Nucula resembles in its surface markings *N. pectenata* of Sowerby; (Min. Conch. vol. 2, page 209, fig. 6, 7,) but differs in the form and depth of its lunule, which is rather narrow ovate and very shallow, while in Sowerby's species it is distinctly cordate and deeply impressed. The muscular impressions, though large, are much more shallow than in *N. pectenata*. The radiating costae of our species become obsolete on the lunule and escutcheon, and are about five times as broad as the grooves between, near the border. The anterior muscular impression is bordered by a distinct ridge, which extends nearly up to the beaks.

**Locality and position.** Moreau River, No. 5 of the series.

**Nucula planomarginata.** Shell ovate, somewhat compressed, pearly within; anterior end very short, obliquely truncate; posterior end long and narrowly rounded, dorsal and ventral margins forming, from the beaks backwards, elliptical curves; beaks much elevated; surface unknown; muscular impressions faint; border smooth. Length 0.95 inch; height 0.60 inch; breadth 0.26 inch.

We have only seen internal casts of this species, the shell being always left adhering to the matrix, from which we infer the surface was ornately marked. It may be at once distinguished from the last by its more compressed form and smooth border.

**Locality and position.** Same as last.

**Pectunculina parvula.** Shell very small, obliquely oval, somewhat compressed, inequilateral; buccal end and base rounded; anal extremity rounded and slightly extended obliquely downwards; cardinal border short, and having a narrow, well defined, longitudinally striate area on each valve; beaks small, not much elevated, about midway between the centre and the anterior end; surface polished and marked with lines of growth, sometimes crossed by faint indications of radiating costae; hinge having in each valve three or four teeth on each side of the central triangular ligamentary pit; interior marked with faint radiating grooves terminating in distinct crenulations at the border. Length 0.18 inch; breadth 0.10 inch; height 0.16 inch.

This little shell might, upon a hasty examination, be mistaken for *Cardium rarum*, (Evans and Shumard's unpublished MS.), but it possesses all the characters of the above genus. The shell is often so translucent that the internal radiating grooves are seen through it.

**Locality and position.** Yellow-stone River, No. 5 of the series.
ARCA (CUCULLEA) CORDATA. Shell thick and strong, subovate, somewhat triangular or cordiform, very ventricose, abruptly rounded before, obliquely subtruncate behind, and forming a broad curve below; umbones gibbous, much elevated, incurved, located near the anterior end; ligamentary area very short, deeply excavated, grooved and finely striated longitudinally; surface marked with strong imbricating lines of growth and indistinct radiating costae. Length 2-05 inches; breadth 1-77 inches; height 1-96 inches. Length of ligamentary area 1-25 inches; breadth of do. .30 inches.

This species, in its thickness and general appearance, approaches Cucullaea Nebrascensis, (Owen,) but may be distinguished by its shorter buccal extremity, more elevated, approximate and incurved beaks, and especially by its much shorter and narrower ligamentary area. There is in our specimen a distinct sulcus starting from before the beak of each valve, and extending obliquely downwards to a point a little behind the middle of the shell, where it dies out before reaching the border. When viewed on either end, this shell presents a beautiful cordate form.

Locality and position. Morean Trading Post, No. 5 of series.

ARCA (CUCULLEA) SHUMARDI. Shell oval, ovate, somewhat globose, rather thin, obliquely subtruncate behind, rounded before, and forming an elliptic curve below; umbones very gibbous, oblique, moderately elevated, incurved, and located a little in advance of the centre; surface ornamented by distinct lines of growth, crossed by numerous, rather indistinct radiating costae; ligamentary area straight, narrow, moderately excavated, grooved and striated longitudinally; hinge having in each valve three or four transversely striated, oblique, lateral teeth on each side, and small, irregular, intermediate transverse ones in the centre; border smooth. Length (specimen about four times the medium size) 1-67 inches; breadth 1-28 inches; height 1-40 inches.

This is one of the most abundant and beautiful bivalves found in the cretaceous rocks of the upper Missouri country. It varies much in form, some of the specimens being more nearly of an ovate form, in consequence of the anal region being extended, and the beaks more oblique, while others are shorter and more rotund. These two forms are quite well enough marked to constitute a specific distinction, if they were not connected by numerous intermediate ones. As these differences are not due to age or size, we are inclined to regard them as sexual. In old shells the radiating costae are usually obsolete. In some specimens a single raised line may be seen passing from behind the beak of the right valve to the posterior border, following the direction of the raised edge of the posterior muscular impression. This is rarely seen on the left valve. We dedicate the species to Dr. B. F. Shumard, of St. Louis, Missouri.

Locality and position. Same as last.

MYTILUS ATTENUATUS. Shell much elongated, slightly arcuate; extremities compressed and rounded; anterior end narrow; beaks nearly terminal; surface (of cast) faintly marked with lines of growth. Length 1-90 inches; breadth .50 inch; height .56 inch.

From M. Golphinianus and M. Meekii, (Evans and Shumard,) this species may be known by its much greater proportional length and less gibbous beaks. Having only seen casts, we know nothing of its surface markings.

Locality and position. Same as last.

AVICULA ? FIBROSA. Shell ovate, subtriangular, very oblique, pointed at the beaks, somewhat rounded below; beaks small, acute, placed at the anterior extremity, and scarcely rising above the hinge; right and left valves alike, convexly arched from the beaks to the base; posterior wing somewhat flattened and apparently broadly rounded; surface ornamented by strong, rounded, radiating plications, which bifurcate very irregularly, and are crossed by strong concentric undulations, so as to give the surface, which is otherwise smooth, a subnodose appearance. Some of our specimens must have been as much as two inches in length when perfect.
It is with much doubt we place this shell in the above genus, as we have in none of our specimens seen any indications of an anterior wing. It is also worthy of note, that the substance of the shell is composed of an internal lamellar, and an external fibrous portion, like Pinna, from which, however, it differs in having a posterior wing-like expansion. The radiating costae are faint or wanting on the wing.

Locality and position. Forks of Cheyenne River, No. 4 of series.

Niceramus ventricosus. Shell ovate, oval or oblong, extremely inflated, very thin and fragile, structure entirely fibrous; cardinal border straight; anterio- r end rounded, posterior end apparently subtruncate, base broadly curved; umbonal region remarkably gibbous; beaks oblique, located at the anterior extremity; surface marked with fine regular imbricating lines of growth, and occasionally with a few faint irregular concentric undulations. Length about 4.30 inches; breadth (of right valve) 1.76 inches; height 2.75 inches. Thickness of thickest part of shell, near the hinge, .12 inch; do. of thinnest part near border .03 of an inch.

The most striking characteristics of this species are its remarkably ventricose form, extreme thinness and entirely fibrous structure, there being no internal lamellar portion, as is generally the case in this genus. In our specimens the calcareous matter has been replaced by ferruginous and siliceous matter, so as to preserve the original structure of the shell perfectly. If the left valve is as gibbous as the right, the transverse diameter of the shell must be considerably greater than its height. The beak of one of our specimens appears to have been truncated. We have only seen right valves.

Locality and position. Mouth of Judith River, in sandstone, supposed to be the same as No. 1 of the series.

Pecten nebrascensis. Superior valve suborbicular, moderately compressed, ornamented by twelve to fifteen strongly elevated costae about equal to the spaces between; surface marked with very fine, closely arranged concentric lines, crossed by equally fine crowded radiating striae; buccal ear (imperfect in our specimens) apparently triangular, rather distinctly marked with radiating costae, crossed by concentric striae stronger than on the body of the valve; annal ear smaller, triangular, concave on the margin, and marked with distinct concentric lines. Length and breadth .49 inch.

From P. venustus of Dr. Morton, (Synopsis, pl. 5, fig. 5,) to which this species appears to be closely allied, it may be distinguished by the fine radiating striae. In some of the specimens the costae occasionally bifurcate, while the radiating striae never run exactly parallel to the costae, but pass very obliquely along their sides. These striae are so fine as to be invisible without the aid of a lens. We have not seen the inferior valve.

Locality and position. Yellow-stone River, one hundred and fifty miles from its mouth, in a bed supposed to represent No. 5 of the series.

Natica subcrassa. Shell obliquely oval or oblong, thick; spire rather short; volutions three to three and a half, convex; suture distinct or somewhat grooved; surface marked with strong lines of growth, which rise, on the body whorl, into distinct imbricating wrinkles; outer lip bevelled; inner lip rather thick, and nearly covering the small umbilicus; aperture ovate, oval, or elliptical, nearly as obtusely rounded above as below. Length .95 inch; breadth .87 inch; apical angle about 93°.

It is possible there may have been other surface markings than those mentioned above, as all our specimens are so worn that fine lines would have been obliterated, had they existed. The species may be known from those found in the higher members of the series in this region, by its stronger lines of growth, and greater thickness.

Locality and position. Mouth of Judith River, from a sandstone supposed to be the same as No. 1 of the series, where it is associated with Tellina gracilis, and T. equilateralis.
Notices of Remains of Extinct Mammalia, discovered by Dr. F. V. Hayden, in Nebraska Territory.

By Joseph Leidy, M. D.

PACHYDERMATA.


The genus and species are proposed upon a small fragment of the lower jaw of an apparent subline animal, containing two molar teeth, which appear to be the first and second true molars. The crowns of these teeth have the general form of the corresponding ones of the Peccary, and they are composed of four tubercles or lobes confluent into a thick base, with a ridge anteriorly and posteriorly, and between the outer lobes externally. Of the four lobes that posterio-internal is the largest, the external pair are nearly equal, and the antero-internal one is smallest. The inner lobes are trilateral, and the outer ones are much like the corresponding lobes of ruminants. The areas of the crescentoid summits of the outer lobes join the inner lobes; that most anteriorly joining the antero-internal lobe, while the other three join the postero-internal lobe.

| Antero-posterior diameter of first true molar | 2½ lines. |
| Transverse, do. do. do. | 2 " |
| Antero-posterior, do. second do. | 3 " |
| Transverse, do. do. do. | 2½ " |

Discovered in the Mauvaises Terres of Nebraska.

RUMINANTIA.


In Dr. Hayden's collection there are several specimens from the valley of White River, Nebraska, consisting of fragments of upper and lower jaws with teeth, which belonged to a ruminating animal allied to the Camel.

Of the fragments contains the left superior true molars and the last premolar. The true molars have their crowns more nearly square than in either the Camel or Lama, and the anterior folds of their outer lobes are produced relatively much more outwardly and forwards than in either of the latter. The surfaces between the folds are concave and directed much more obliquely backward than in the Camel. The last pre-molar is bilobed and holds the same relation of position of its outer face to the true molars as in the Camel.

In several fragments of lower jaws containing the last two true molars, and in another with the anterior two true molars, these teeth have a strong resemblance to the corresponding teeth of the Camel.

Another fragment of a lower jaw discovered by Dr. Hayden, on Bear Creek, Nebraska, appears to belong to the same animal as the former, though this may not be the fact. It contains the alveoli for three incisors, a canine, and three premolars. The incisive alveoli are in close relationship as in the Lama. The canine is separated from the former by a hiatus of less than one line, and it has nearly the form of the corresponding tooth in the Camel. Posterior to the canine and separated from it by a hiatus of less than two lines, there is a portion of the first premolar, which appears to have had nearly the same form as the canine. The succeeding two premolars are separated from the first by a hiatus of a little more than four lines. These are inserted by two fangs, are in close contiguity, and have broad, laterally compressed, pyramidal crowns, bearing considerable resemblance to the premolars of the Musk.

| Length of series of upper true molars and last premolar | 15½ lines |
| Antero-posterior diameter of second true molar | 5 do. |
| Transverse do. do. do. | 5½ do. |
| Length of series of lower true molars | 15½ do. |
| Antero-posterior diameter of last true molar | 7 do. |
| Depth of lower jaw below | 11 do. |
| Depth of lower jaw below second premolar | 10 do. |
| Breadth of crown of third premolar | 4½ do. |
| Breadth of crown of second premolar | 4 do. |
CETACEA HERBIVORA.

3. Ischyrotherium antiquus, Leidy.

This genus and species are proposed upon numerous fragments of bones, consisting of two vertebral bodies, the half of a third specimen, several transverse processes, and portions of ribs, discovered by Dr. Hayden, in an out-layer of a lignite formation, between the Morcan and Grand rivers, Nebraska.

The bones are as dense and heavy as those of *Manatus*, to which the genus appears to be most nearly allied. The vertebral bodies, apparently posterior dorsal, are transversely oval in outline, and are perforated at the sides and lower part by large canals converging towards their centre. The anterior and posterior articular surfaces are slightly depressed, as are also the sides of the body. The upper part of the latter, on each side of the position of the spinal canal, presents a large, rugged concavity, about an inch and a quarter in diameter, apparently for articulating with the transverse processes. These latter are antero-posteriorly flattened, cylindrical and curved. Their vertebral extremity is furnished with a convex rough surface, corresponding to the concavities on the vertebral bodies, and above this surface is a smooth one forming the side of the vertebral canal, and overhanging by an abutment for the articular and spinous processes.

The ribs are cylindroid and tapering towards the broken ends of the specimens, and they are quite as dense in structure as those of *Manatus*.

| Length of vertebral bodies | 1 1/2 inches. |
| Transverse diameter of do. | 2 3/4 " |
| Vertical do. do. | 2 " |

RODENTIA.

4. Steneofiber nebrascensis, Leidy.

This species is established upon several specimens, consisting of a much mutilated skull and several fragments of upper and lower jaws with teeth. The skull appears to have the same form as that of *Steneofiber viciacensis*, but is between a fourth and third less in size. The dental formula is the same as in the latter, that is, in. $\frac{1}{4}$ $m$ $\frac{1}{4}$ = 20. The molar teeth resemble those of *S. viciacensis*.

| Length of skull of *S. nebrascensis* | 2 1/2 inches. |
| Length of lower jaw | 1 1/2 " |
| Length of upper molar series | 7 lines. |
| Length of lower molar series | 8 " |

From the valley of White River, Nebraska.

5. Ischyromys typhus, Leidy.

A new genus and species established upon the greater portion of a skull and two fragments of lower jaws. The cranium bears considerable resemblance of form to that of *Steneofiber*. Formula of dentition as follows:—

| in. $\frac{1}{4}$ $m$ $\frac{1}{4}$ = .22. The molars have cuboidal crowns and are inserted by distinct fangs. The upper ones bear some resemblance to those of *Arctomys*; but the lower ones are more like those above.
| Estimated length of skull | 2 1/2 inches. |
| Length of upper molar series | 7 1/2 lines. |
| Length of lower molar series | 8 " |

From the Bad Lands of Nebraska.

6. Palaeolagus Haydeni, Leidy.

The genus and species are founded upon numerous small fragments of jaws, containing molar teeth, of a rodent allied to the Hares. The formula of the molar dentition is the same as in the latter, $\frac{5}{6}$ $\frac{5}{5}$. The molars are con-
structed like those of the Hares. The first inferior molar is bilobed and not tri-
lobed as in the latter. The number of incisors cannot be ascertained in the
specimens. These inferior have much longer roots than in the Hares, as they
extend back beneath the molar teeth.

Length of superior molar series  4½ lines, 6 lines, 7 lines.
Length of inferior molar series  5 lines, 8 lines.

Found in the Mauvais-es Terres of Nebraska.

7. Eumys elegans, Leidy.
The genus and species are founded upon a fragment of the lower jaw, con-
taining the middle molar, and the fangs of two others. The estimated size of
the skull would be about that of the Rat, (Mus decumanus), and the animal also
appears to belong to the same family. The molar series of the lower jaw consists
of three teeth, and they have exserted crowns inserted by distinct roots.

Length of lower molar series, - - - - 3¾ lines.
Depth of lower jaw below middle molar, - - - 2¼ lines.
Discovered in the Mauvais-es Terres of Nebraska.

CARNIVORA.

A small species of this genus is probably indicated by a specimen in Dr.
Hayden’s collection, consisting of a fragment of the lower jaw containing two
teeth, of which one corresponds in form with the antepenultimate molar of
Amphicyon major DeBl., or of A. vetus Leidy, and the other, being the tooth in
advance, has nearly the same form as the corresponding tooth in the wolf. The
length of the crown of the antepenultimate tooth is 2½ lines; its breadth 4½ lines;
and the depth of the lower jaw is 5 lines.
The specimen was discovered by Dr. Hayden, in association with remains of
Anchitherium, Hyopotamus, Igraenodon, etc. in Nebraska.

Notice of the remains of a species of Seal, from the Post-pliocene deposit of the Ottawa
River.

By Joseph Leidy, M. D.

E. Billings, Esq., of Ottawa, West Canada, recently sent to the Academy, for
the inspection of its members and for description, a specimen consisting of a
slab or portion of a concretion of indurated clay, containing some imbedded
bones, which Mr. B. observes, in a letter accompanying the specimen, "appear
to him to be those of the extremities of a small animal of aquatic habit." Mr.
B. further states, "the specimen was discovered by Mr. Peter McArthur, in a
bed of blue clay containing boulders and marine shells and fishes. The locality
is in the township of Gloucester, county of Carleton, Canada West, about nine
miles east of the city of Ottawa. From this city the river Ottawa runs easterly
for about sixty miles, in a channel excavated through a bed of the glacial drift,
composed in some places of clay, and in others of sand, gravel and boulders.
Where the specimen was discovered, the bank of the river is of clay about thirty
feet high, at the time of low water. The water washes out of the bank nume-
rous nodules of the clay, which are consolidated into a pretty hard kind of stone.
Many of these nodules, when split open, are found to contain shells, or the skele-
tons of fishes, often beautifully preserved. The species of shells found up to the
present time are Tellina groenlandica, Mytilus edulis, Saxicava rugosa, and a small
rostrated one like a Leda; and of fishes two species, Mollolhus villosus and Cyclo-
teris bumpy. They also contain leaves of trees, broken twigs and grass, showing
that there was land at no great distance. There is a ridge of low metamorphic
hills on the north shore of the river, extending for a great distance parallel with
and near the stream. On the south side the country is level, and underlain with
lower Silurian rocks, Utica slate, Trenton, Black River, Bird’s-eye and Chazy
limestones, with here and there a strip of the lower rocks brought up to the
surface by undulations. I think there was an ancient valley excavated in these rocks before the period of the drift, that it was filled up during that period, and that the river is now cleaning it out again."

The bones referred to prove, on examination, to be those of the greater portion of the hinder extremities of a young seal, but whether of a species distinct from those now found living in the neighboring seas, is a question only to be determined by careful comparison with the corresponding parts of the recent animals. The soft distal extremities of the tibia and fibula are crushed together. The bones of the ankle and foot are well preserved, but the epiphyses of the latter are separated and only partially developed. The matrix in the vicinity of the bones, is marked by the impressions of the hairs and skin which enveloped them.

Mr. Logan, in a report on the "Geological Survey of Canada," (1850, '51, p. 8,) refers the deposit, in which the above described specimen was found, and similar deposits of the St. Lawrence and its tributaries, to the post-tertiary period; and he further observes, that in these deposits, "the remains of whales, seals, and two species of fishes, and many marine shells of those species still inhabiting the Gulf of St. Lawrence, are found;" from which remarks, together with those of Mr. Billings, and the appearance of the fossil itself, we are inclined to suspect the seal of the Ottawa has its descendants yet sporting on the sea border of the Canadas.

Independent of all other considerations, the specimen is interesting, as exhibiting the same process at the present geological period, which for so many successive ages has preserved the remains of vegetables and animals, which are now examined by the palæontologist as so many iconographic illustrations of life in the history of our planet.

Plate III. Representation, two-thirds the size of nature, of the greater portion of the bones of the hinder extremities of a young seal, partially imbedded in one-half of a concretion of indurated clay, from a post-pliocene deposit of the Ottawa River, Canada.

**Notices of several genera of extinct Mammalia, previously less perfectly characterized.**

By Joseph Leidy, M. D.

**CARNIVORA.**

1. **Deinictis**, Leidy.

Skull intermediate in form to that of *Felis* and *Machairodus*. Orbits more open posteriorly than in either of these genera; and the anterior extremity of the lower jaw constructed as in the latter. Formula of dentition as in *Putorius*, viz. 3-3 1-1 2-2 1-1 1-1

Incisors relatively as well developed as in *Felis*, with the lower ones arranged as in *Putorius*. Canines like those of *Machairodus*. First premolars small, those succeeding robust with the upper pair bilobed, and the lower ones trilobed. Carnassial molars like those of *Machairodus primavus*. Lower tubercular molar like that of *Putorius*; the upper one thickest at its outer part.

**Deinictis felina**, Leidy. Pr. A. N. S. vii, 127, 156. A unique species, with the skull about the size of that of *Machairodus primavus*, or about a fifth smaller than the Panther, (*Felis concolor.*)

Locality. Mauvais Terres of Nebraska.

**PACHYDERMATA.**

2. **Hyracodon**, Leidy.

Skull without horns; with the cranium surmounted by a long and narrow sagittal crest; orbits better defined from the temporal fossæ than in *Rhinoceros*; nasal bones articulating with the intermaxillaries, and deeply notched at their
free ends. Lower jaw intermediate in form to that of Rhinoceros and Tapirus. Formula of dentition as in the latter, viz.,

\[
\begin{array}{ccc}
3-3 & 1-1 & 4-4 \\
\text{in.} & \text{c.} & \text{p.} \text{m.} & \text{t.} \text{m.} \\
3-3 & 1-1 & 4-4 & 3-3
\end{array}
\]

The incisors and canines are arranged in semicircles as in Tapirus, differ little in size, and have simple conical crowns. The premolars and molars resemble those of Acerotherium incisivum.


*Acerotherium*, Owen’s. *Anc. Faun. Nebr.* 1—1

A unique species, possessing a greater number of teeth than any other known member of the *Rhinoceros* family. It was about the size of the common hog.

**Locality.** Mauvaises Terres of Nebraska.


Formula of dentition as follows:

\[
\begin{array}{ccc}
2-2 & 1-1 & 4-4 \\
\text{in.} & \text{c.} & \text{p.} \text{m.} & \text{t.} \text{m.} \\
?-? & 1-1 & 4-4 & 3-3
\end{array}
\]

The molars are separated from the canines by wide intervals. The latter teeth have short, robust, conoidal crowns. Outer lobes of the premolars like those of *Rhinoceros*, the inner ones isolated from the former and connate. Outer lobes of the true molars like those of *Palaeotherium*; the inner ones three in number, of which the intermediate one is conical and is the largest, and the others are trihedral, as in *Chalicotherium*.


A unique species, and one of the largest of pachyderms. Length of the upper dental series in a straight line 17 inches; transverse diameter of second true molar 3½ inches, antero-posterior diameter the same.

**Locality.** Mauvaises Terres of Nebraska.

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**Description of Twenty-five New Species of Exotic Uniones.**

By Isaac Lea.

**Unio Hainesianus.** Testa alatâ, lavi, subrotundata, subinflata, valde inaequilaterali, valvulis crassiss; natibus prominentibus, angulatis; epidermide luteofusace; dentibus cardinalibus crassis, crenulatis elevatisque; lateralibus longis, crassis subcurvisque; margaritâ albâ et iridescente.

*Hab.* Siam. S. R. House, M. D.

**Unio Myersianus.** Testa bialetâ, lavi, triangulari, subcompressa, inaequilaterali, postice angulata; valvulis crassiss; natibus prominulis epidermide tenebroso-fusace; dentibus cardinalibus longis crenulatisque; lateralibus praelongis, lamellatis subcurvisque; margaritâ colore salmonis tinctâ.

*Hab.* Siam. S. R. House, M. D.

**Unio Housei.** Testa bialetâ, lavi, triangulari, compressa, valde inaequilaterali, postice obtusa angulata, valvulis subcrassis; natibus prominulis; epidermide fusace; dentibus cardinalibus lamellatis; lateralibus praelongis, lamellatis subcurvisque; margaritâ colore salmonis tinctâ.

*Hab.* Siam. S. R. House, M. D.
UNIO GRAVIDUS. Testa alata, levii, triangulati, validi inflata, validi inaequilaterali; valvulis tenuibus; natibus elevatis, tumidis; epidermide lutea, nitida; dentibus cardinalibus praelongis, validi lamellatis; lateralis longis, lamellatis subcurvisque; margaritâ caeruleo-albâ et iridescente.

Lab. Siam. S. R. House, M. D.

UNIO NORMATUS. Testa levii, elliptica, inflata, subaequilaterali, posticé subangulata; valvulis sub-pellucidis tenuibusque; natibus subprominentibus; epidermide olivacea, substriata; dentibus cardinalibus longis lamellatisque lateralis longis rectis, lamellatisque; margaritâ caeruleo-albâ et iridescente.

Lab. Siam. S. R. House, M. D.

UNIO LUTENS. Testa levii, elliptica, inflata, subaequilaterali, posticé obtuse angulata; valvulis crassis; natibus prominentibus; epidermide virido-lutea, obsoleta radiata; dentibus cardinalibus lamellatis tenuisque; lateralis brevis, subcrassis subrectisque; margaritâ albâ et iridescente.


UNIO EXIMUS. Testa alata, plicata, obovata, compressa, validi inaequilaterali, posticé rotundata; valvulis tenuissimis; natibus prominulis; epidermide virido-lutea, obsoleta radiata; dentibus cardinalibus lamellatis tenuisque; lateralis longis, lamellatis subcurvisque; margaritâ caeruleo-albâ et iridescente.

Lab. Siam. S. R. House, M. D.

UNIO TUMIDULUS. Testa levii, obliquâ, inflata, posticé angulata, validi inaequilaterali; valvulis subcrassis; natibus prominentibus; epidermide tenebroso-olivacea, striata; dentibus cardinalibus longis lamellatisque; lateralis praelongis subcurvisque; margaritâ albâ et iridescente.

Lab. Siam. S. R. House, M. D.

UNIO EUSTICUS. Testa taberculata, elliptica, inflata, inaequilaterali, posticé subangulata; valvulis subcrassis; natibus prominentibus; epidermide olivacea, substriata; dentibus cardinalibus longis lamellatisque; lateralis longis, lamellatis subrectisque; margaritâ albâ et iridescente.

Lab. Siam. S. R. House, M. D.

UNIO SAGITTARIUS. Testa levii, validi transversâ, validi inaequilaterali, subinflata, subcylindracea, posticé aceto-angulata; valvulis subtenuibus; natibus viridi-prominentibus; epidermide virido-olivacea, striata; dentibus cardinalibus longis, rectis lamellatisque; lateralis praelongis subrectisque; margaritâ albâ et iridescente.

Lab. Siam. S. R. House, M. D.

UNIO SUBSTRATUS. Testa levii, elliptica, subinflata, subaequilaterali; posticé angulata, antice rotundata; valvulis crassi-angulatis; natibus subprominentibus granulatisque; epidermide olivacea eradiata et rugoso-striata; dentibus cardinalibus longis, rectis lamellatisque; lateralis longis, rectis lamellatisque; margaritâ argentea et iridescente.

Lab. Siam. S. R. House, M. D.

UNIO SCORINATES. Testa plicata, transversâ, in medio compressâ, validi inaequilaterali, posticé angulata, ad basim enarginata; valvulis subcrassis; natibus parvis, prominentibus, ad apicem undulatis; epidermide viridi et lutea, minutâ striata; dentibus cardinalibus obliquis, compressis; lateralis praelongis, in uterque valvis duplicâ subrectisque; margaritâ albâ et iridescente.

Lab. Siam. T. R. Ingalls, M. D., S. R. House, M. D.

UNIO HUMILIS. Testa plicata, transversâ, subinflata, subaequilaterali, subcylindracea, posticé biangulata; valvulis tenuibus, pellucidis; natibus prominentibus, perplicatis; epidermide virido-lutea, striata; dentibus cardinalibus lamellatis rectis; lateralis longis lamellatisque; margaritâ caeruleo-albâ et iridescente.

Lab. Siam. S. R. House, M. D.
UNIO PHASELUS. Testā plicatā, transversā, inflatā, subemarginatā, valdē, inaequilateralī, posticē obtusē angulatā; valvulis crassis; natibus parvis, prominulis, ad apicem undulatī; epidermis viridi et lutē; politā; dentibus cardinalibus brevis subcussis; lateralius prælongis, duplicis int uterque valvis subcurvis; margaritā alba et iridescente.

_Hab._ Siam. S. R. House, M. D.

UNIO VEREAUTANUS. Testā sulcatā, oblongā, inflatā, subemarginatā, subæquilateralī, posticē obtusē angulatā; valvulis crassis; natibus parvis, subprominentibus undulatī; epidermis luteo-brunea, striatā dentibus cardinalibus magnis, obliquis, compressī crenulatis; lateralius longis, rectī lamellatis; margaritā salmonis colore tinctō et iridescente.

_Hab._ Cape of Good Hope. Mr. E. Verreaux.

UNIO AFRICANUS. Testā laevi, ellipticā, subcompressā, subemarginatā, valdē inaequilateralī, posticē obtusē angulatā; valvulis subtenuibus; natibus parvis, prominulis undulatī; epidermis luteo-olivaceae et polita; dentibus cardinalibus parvis, obliquis, compressis sublamellatī; lateralius prælongis subrectis; margaritā salmonis colore tinctō et valdē iridescente.

_Hab._ Cape of Good Hope. Mr. E. Verreaux.

UNIO SHUTTLEFIANUS. Testā minutē plicatā, ellipticā, inaequilateralī, subcylindracea, posticē obtusē angulatā, antice rotundatā, ad latus subplanulatā; valvulis subcrassī; natibus prominulis, ad apices minutē undulatī; epidermis virido-lutea; dentibus cardinalibus sublongis, compressī geminis; lateralius longis subrectis; margaritā salmonis colore tinctō et iridescente.

_Hab._ Sina River, India, Major Le Conte. Ahmednugger, India. S. Shurtleff, M. D.

UNIO EFFULGENS. Testā sulcatā, ellipticā, subinflata, inaequilateralī, posticē obtusē angulatū; valvulis subcussis; natibus prominulis; epidermis tenebro-fusca, polita; dentibus cardinalibus parvis crenulatī; lateralius longis curvis; margaritā cæruleo-alba.

_Hab._ Brazil. B. W. Budd, M. D.

UNIO DUNKERIANUS. Testā plicatā, transversā, subinflata, valdē inaequilaterali, posticē obtusē angulatū; valvulis subtenuibus; natibus prominulis, costis divaricatī; epidermis tenebro-fusca polita; dentibus cardinalibus longis compressī; lateralius prælongis, lamellatī rectis; margaritā cæruleo-alba et valdē iridescente.

_Hab._ River Macacio, Rio de Janeiro, Brazil, Prof. Dünker. New Grenada, Mr. E. Verreaux.

UNIO SHUTTLEWORTHII. Testā sulcatā, oblongā, transversā, valdē inaequilateralī, subcompressa, posticē obtusē biangulatā, ad latus planulatā; valvulis subcussis; natibus prominulis; epidermis bruno-nigrīcante; dentibus cardinalibus parvis; lateralius longis subcurvis; margaritā purpura et iridescente.

_Hab._ Australia. R. J. Shuttleworth, Esq. Berne, Switzerland.

UNIO NUCLEUS. Testā plicatā, quadratā, inflatā, subæquilateralī, posticē angulatā; valvulis crassī; natibus prominentibus, perpendicularīs; epidermis virido-fusca, minutissimē perstriatā; dentibus cardinalibus crassis brevis; lateralius crassis, brevis, duplicis in uterque valvis subcurvis; margaritā cæruleo-alba et iridescente.

_Hab._ Siam. S. R. House, M. D.

UNIO WHEATLEYANUS. Testā laevi, ellipticā, inflatā, inaequilateralī; valvulis crassī; natibus prominulis, costis elevatis, epidermis tenebro-olivā, rugoso-striatī; dentibus cardinalibus magnīs, crassiusculīs, subdivisī; lateralius longis crassis; margaritā vel alba vel carnea et iridescente.

**Uxio Brownii.** Testa laevi, obovata, valde compressa, valde inaequilaterali; valvulis subcrassis; natibus prominulis, costis divericatis; epidermide tenebroso-viridi, striata; dentibus cardinalibus submagnis, in utraque valvis duplicis; lateralibus lamellatis, sublongis curvisque; margaritā albā.


**Uxio scaviicus.** Testa laevi, oblonga, subcompressa, valde inaequilaterali, antice rotundata, postice truncata, natibus subprominentibus, costis elevatis; epidermide luteo-olivā, minutae striata; dentibus cardinalibus parvis, compressis, crenulatis, in utraque valvis duplicis, lateralibus longis, lamellatis subrectis; margaritā caeruleo-alba et iridescente.

*Hab.* River Amazon. Mr. E. Verreaux, Paris.

**Uxio umerosus.** Testa laevi, elliptica, subinflata, inaequilaterali; valvulis subcrassis; natibus prominulis; epidermide castanea, polita, transverse fasciata; dentibus cardinalibus magnis, subelevatis; lateralibus longis, lamellatis subcurvis; margaritā vel purpureā vel roseā et iridescente.

*Hab.* Medellin River, Mexico. M. Burrough, M. D.

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**Description of a new Snake from Illinois.**

By Robert Kennicott.

**Regina Kirtlandii.**

The body of this species is somewhat trigonal in cross sections, (flattened on the abdomen,) and tapers gently from the middle to either extremity. There is no distinction of neck, and the very small head calls to mind that of the *Coluber amagnus* of Say. It is, however, much larger, and the scales are very strongly carinated. The carinae are found on all the longitudinal rows of scales, of which there are nineteen exclusive of the belly scales; the external row is almost as sharply keeled as those on the back, even to the tip of the tail. The dorsal scales are narrow and elongated, the sides nearly parallel except near the ends.

As already stated, the head is very small. The vertical plate is sub-hexagonal, the two anterior sides forming a very obtuse angle; the external edges are slightly convergent posteriorly. The nostrils in the middle of the two plates. There is one ante-orbital and two post-orbitals; there are six labials above and seven below, in addition to the rostrals.

The ground color of this snake is a light purplish brown, with four rows of large nearly circular blotches covering the whole back and sides. They are arranged so as to alternate; the outer blotches on the outer row are a little larger than those on the two central ones, and are of the width of four or five scales. The belly is of a pale brick red, (fading to brownish yellow in alcohol,) with a well defined blotch of black near the exterior of each scale. These give rise to a series of very well defined round black spots on either side of the abdomen; and there is also an obscure series of dark blotches on the anterior edge of the scales in the exterior dorsal row. The dots in this series are separated by intervals of two unmarked scales. The spots of this row alternate with those of the larger series immediately above.

On separating the scales, the skin is seen to be colored like the adjacent scales. It is black in the dark blotches and very light in the intermediate space, giving rise to the appearance of whitish edges to the scales.

There are thus four series of large spots on the back and sides, two on the belly, and two in the exterior dorsal rows, making eight in all. The last mentioned row is sometimes very obscure, the others are always distinct.

I refer this serpent to the genus *Regina* of B. and G., although it is different in some respects from the other known species. It is somewhat like the *R. rigido*, but is differently marked; the latter having the two abdominal rows close together on the middle of the belly, instead of being separated. Neither is there
any indication in R. rigida of the four series of dorsal blotches. In fact, there is no North American species more strongly marked than this.

Abdominal scales 133, the last one divided; subcaudal 59. Dorsal rows of scales 19. Length 19 ½ inches, of which the tail measures 4½ inches.

As yet, this species has only been detected in Northern Illinois, where it is rarely met with. The few specimens obtained have been found in the woods, generally under logs.

This snake is rather sluggish, and, like Regina Grahamii of B. and G., is not very pugnacious.

In giving to this serpent the name of Dr. Kirtland, as a slight token of the respect due him, to whose enthusiastic and untiring devotion to Science the West owes so much, I would also make some expression of my personal gratitude to the honored teacher, whose kind encouragement and instruction led me to study Nature, by dedicating to him his pupil's first contribution to Science.

_Description of several new genera and species of Fossil fishes, from the Carboniferous Strata of Ohio._

By J. S. Newberry, M. D.

MECOLEPIS Newberry.

Heterocercal lepidoids of small size. Body fusiform. Head obtuse. Tail elongated. Lobes very unequal. Fins small and provided with delicate fulcra. Dorsal opposite anal or nearly so, both set far back in body. Cranial surface ornamented by corrugations, tubercles or granulations. Opercular, maxillary and hyoid plates ornamented with convoluted corrugations of the surface in various patterns.

Scales smooth, or ornamented; posterior margin of lateral scales all or in part serrated. Scales of median line above and below characteristically angled or crenulated. Two rows of scales on sides extending back to near anal fin, remarkably high, vertical 2 to 5 times longitudinal diameter.

Lateral line nearly straight, passing the upper part of lower row of high scales.

Teeth conical, short, en brosse.

The peculiar group of fishes to which I have given the generic name of Mecoelops, apparently represents the Paleoniscë in the ichthyic fauna of the locality where they occur. From Amblypterus and Eonichthys they may readily be distinguished by their small fins all bearing fulcra. With Paleoniscë their affinities are closer, but the ensemble of characters presented by the large number of specimens which I have examined, seem to separate them from that genus. Among these diagnostic characters the most conspicuous are their small size, posterior position of dorsal fin and especially the high lateral scales.

1. M. corrugatus Newb. Body fusiform, robust. Length 3 in. 4 lines; breadth 10 lines. Length of head 8 lines. Anterior lateral scales 2½ times as high as long. Cranial plates ornamented by convolutions of fine, thread-like corrugations. Maxillary bones, opercular and hyoid plates corrugated much as superior surface of head. Scales smooth, except a few on the anterior dorsal surface, which are finely striate and punctate. Posterior margins of lateral scales as far back as anal and dorsal fins serrated. Scales of tail, like most of those of the dorsal and ventral surfaces, plain on surface and margins. Anterior margin of anal fin opposite centre of dorsal fin; longest rays of anal fin when collapsed just reaching base of caudal fin.


Surface of all the scales of the body smooth, except a few on the anterior
dorsal and ventral surfaces, which are sometimes finely punctate. Lateral scales nearly 5 times as high as long. Posterior margins of lateral scales bearing a few serrations.

Anal fin opposite dorsal.

Radial formula,
D. 5; C. 14; A. 8?; V. 6; P. ?


Head tubercled above, tubercles elongated, with granulations between. Opercula, maxillaries and hyoid plates threaded.

Scales apparently thinner and more delicate than those of any other species. Those on anterior portion of body granulated, and having a faint double waved line along anterior margin. Posterior border serrated.

Lateral scales 4 times as high as long.

Radial formula,
D. 6; C. 14; A. 8; V. 5?; P. 9?


Cephalic bones all ornamented with thread-like lines, as in M. corrugatus, and without tubercles.

Scales of anterior portion of abdomen covered with concentric thread-lines. Margins of lateral scales ornamented in the same manner.

Lateral scales lower than in any other species yet discovered, greatest vertical diameter only twice longitudinal.

Scales of abdomen twice as long as broad.

5. M. ovoides Newb. Fish small, robust. Body ovoid. Length 1 inch 6 lines; breadth 6 lines. Length of head 4½ lines.

Cranial surface corrugated and finely granulated; opercula and lower parts of head ornamented by thread-like corrugations.

Scales of anterior portion of abdomen granulated, of sides serrated.

Lateral scales 3½ times as high as long.

6. M. ornatissimus Newb. Fish small, fusiform, slender. Length 2 inches; breadth 5 lines.

Cranial surface sparsely tubercled, tubercles somewhat radiated. Spaces between tubercles finely granulated. Opercula, maxillaries and hyoid bones granulated and corrugated. All the scales of the body and tail ornamented with granulations, striæ or denticles.

Lateral scales 4 times as high as long, with a double line of appressed denticles on anterior border, and acute serrations of posterior margin.

Fins all relatively longer than in other species. Dorsal fin nearly opposite anal.

7. M. insculptus Newb. Body fusiform, slender. Length 2 in. 6 lines, breadth 5 lines.

Cranial plates ornamented with elongated tubercles, spaces between tubercles granulated. Sides and under surface of head marked by raised lines and fine granulations.

Scales on anterior half of body highly ornamented. Lateral scales 3½ times as high as long, and having a doubled wave line along anterior margin, with acicular denticulations of posterior border.

Scales of abdomen having entire surface covered with appressed denticles. Scales of tail and posterior portion of body plain.

Dorsal fin opposite anal.

8. M. serratus Newb. Small, robust. Length 1 in. 6 lines. Head 4 lines. Tail 5 lines. Breadth of body 5 lines.

Head finely tubercled above. Opercula, maxillaries and hyoid plates marked by fine linear corrugations.
Highest scales of sides 3 times as high as long. All lateral scales quite into the tail, strongly and sharply serrate on posterior margin. Surface of anterior scales wrinkled from the serrations forward.

Anterior margin of anal fin opposite posterior margin of dorsal.

ELONICHTHYS Giebel.

E. Peltigerus, Newb. Body short, compressed. Length 5 inches. Height 1 in. 6 lines. Breadth 1 inch. Cephalic bones all ornamented by parallel convolutions of thread lines. Scales all covered by similar raised lines, which cross them diagonally downward and backward, terminating in serrations of the posterior margins.

About the middle of the interval between the occiput and dorsal fin, on the median line, begins a row of oval scales, four times as large as the scales of the sides; ornamented in the same manner, extending in a single row along the median line to the dorsal fin, and behind the dorsal fin to the tail, where they are transformed into the large striated fulcra, which overlie the prolongation of the vertebral to its termination.

These abnormal scales of the dorsal line are a striking peculiarity in the species, and have suggested the name given it.

CELACANTHUS Agass.

1. C. robustus Newb. Body robust, 1 foot 6 inches in length. Upper surface of cranium covered with small closely approximated tubercles; maxillaries and opercula threaded with fine parallel, sometimes interrupted lines. Margins of opercula in mature specimens wavy.

Scales elliptical, thin, 7 to 9 lines in length, nearly half the surface exposed; exposed portion covered with thread-like lines similar to those of the opercula and maxillaries, and which converge toward the posterior angle of the scale.

C. ornatus, Newb. Body fusiform, slender, scarcely wider than head. Size small, not exceeding 4 to 5 inches in length. Upper surface of head ornamented with tubercles, which are much larger and more remote than in preceding species. Opercula and maxillaries threaded, and like the scales having stronger markings than in the larger species.

Radial formula,
A. D. 8; P. D. 5; C. 24?; A. 6; V. ?; P ?

C. elegans Newb. Body fusiform, robust, 6 to 8 inches in length. Cranial surface covered with closely approximated tubercles. Surface of opercular and maxillary bones threaded. All the ornamenting of head relatively stronger than in C. robustus, but less so than in C. ornatus. Scales similar in form and markings to those of both these species, but more delicate than either. Anterior dorsal fin slightly in advance of ventrals. Posterior dorsal as much forward of anal fin.

Radial formula. A. D. 7?; P. D. 5; C. 22; A. 6; V. 9

PYGOPTERUS Agass.

P. scutellatus Newb. Body fusiform, slender, 15 to 18 inches in length. Head depressed. Snout pointed. Both jaws thickly set with conical, slender, acute, striated teeth of unequal size. Scales very small and thick, higher than long. Head and anterior portion of body covered with articulated plates ornamented with strong, radiating, raised lines. None of my specimens show the form of the caudal fin.

This fish presents such striking differences in its scales and plates from all described species of Pygopterus, that I have hesitated about placing it in that genus. It would seem, however, to have much in common with P. Greenocki Agass., not yet fully described.
RHIZODUS Owen.

R. LANCIFER Newb. Teeth striated below. Section elliptical, smooth toward the summit, where they are very much compressed, with a lenticular section and cutting edge on both sides. Form of summit of tooth like that of a lance head. Near the apex of the tooth the cutting edge of one side is slightly gibbous, an apparent tendency toward a barbing of the point, as in some species of Lepidosteus.

As usually found, the plicated base of the tooth has mostly disappeared, the solid point alone remaining; this is about an inch in length. The entire tooth was more than twice that length.

R. INCURVUS Newb. Head massive. Superficial bones strongly tuberculated. Tubercles elongated, vermicular, sometimes becoming elevated lines of a line in breadth, and having a radiated arrangement. Jaws strong, both thickly set with strong ancipital curved teeth. These teeth are striated below, elliptical in section, and toward the summit curved backward toward the throat. They are of different sizes, as in all allied fishes. The smaller teeth are 6 to 9 lines in length and thickly set; the larger ones are much fewer in number, and more than twice as long. One of the larger teeth is placed near the extremity of the lower dentary bone of each side, as in R. gracilis McCoy.

R. ANGUSTUS Newb. Laniary teeth elongated, slender, finely striated at base, smooth above, with cutting edges. Subordinate teeth half the length of the larger ones. Conical, acute, striated at base, with a circular section throughout. Surface of jaw coarsely tubercled.

In this diversity of form in the teeth, this species differs from R. gracilis McCoy and from R. Hibberti Ag., as well as from the other species I have found in Ohio. In R. incurvus N., however, the teeth have a section so nearly circular that there seems no good reason for separating them by generic distinctions.

Of all the species of Rhizodus, which I have found, I probably have scales and perhaps vertebrae and cranial plates, but as yet have been unable to find these organs connected with the teeth.

DIPLODUS Agass.

D. COMPRESSUS Newb. Teeth of moderate size, base small. Lateral denticles unequally spreading, compressed, with acute points and strongly crenulated edges. Central denticate very small, acute, compressed, finely crenulated on margin.

D. GRACILIS Newb. Tooth as large as D. gibbous Agass. Base very small. Lateral denticles long, curved, slender, divergent towards the points, much less compressed than in preceding species, less acute, and less conspicuously crenated on margins. Median denticate small, subulate, scarcely crenulate on margins.

D. LATUS Newb. Teeth very large and very robust. Lateral denticles nearly straight, and on the same plane, divergent, \( \frac{4}{9} \) to \( \frac{2}{9} \) as broad at base as long, compressed. Each margin strongly crenulated. Middle cone obsolete, or reduced to a simple knob. Base of tooth large, under surface flat.

All the specimens of Diploodus from Ohio which have come under my observation, numbering some hundreds, have crenulated margins, in that respect presenting a striking difference from the species described by Agassiz.

CLADODUS Agass.

C. ACUMINATUS Newb. Central denticate elongated, conical, acute; lateral denticles very acute, compressed. Base small and thin.

CHIRODUS McCoy.

C. ACUTUS Newb. Teeth as long as C. per-ranae McCoy, but more slender throughout. Denticles more acute.
CLIMAXODUS McCoy.

C. BREVIS Newb. Teeth oval, in form, shorter than C. imbricatus McCoy. Ridges which cross the surface more remote, with sharp crests and sinuous outline.

PLEURACANTHUS Agass.

P. BISERIALIS Newb. Spine straight, strong, tapering rapidly to a moderately acute termination. Length four inches; diameter at base 4 lines. Anterior face rounded; posterior face nearly flat. Entire surface finely striated longitudinally. Sides flattened, joining posterior surface at right angles. At angle on each side a double row of small, closely set, acuminate, depressed hooks. On the upper part of the spine the hooks are arranged in a single row. Side of spine at base of the hooks marked by a distinct longitudinal furrow.

P. ARCTATUS Newb. Spine slightly curved backward, rapidly tapering to an acute point. Anterior surface rounded; posterior face nearly flat. At angle formed by the junction of sides with posterior face is, on each side, a single row of closely set, acuminate, depressed hooks. Anterior surface marked with fine longitudinal striae.

P. DILATATUS Newb. Spine short, robust, one inch six lines long, straight, acuminate at summit, largest near middle, contracted at base. Anterior face rounded; posterior face flattened, and bearing at the angles on either side a row of minute depressed hooks. Surface smooth.

COMPSACANTHUS Newb.

Spines of small size, very neat in form and finish. Section at all points circular. A single row of relatively large, remote, depressed hooks is set along the posterior median line. Of this genus I have probably but one species.

C. LEVIS Newb. Spine slender, curved, acuminate, having a circular section at all points; upper two-thirds furnished with a single row of depressed acuminate hooks remotely set along median line of posterior surface.

On motion of Mr. Cassin, a Committee was appointed to prepare a list of Correspondents for publication. The following compose the Committee: Mr. Cassin, Dr. Le Conte and Dr. Leidy.

ELECTION.

Dr. R. A. Penrose and Mr. Wm. H. Patterson, of Philadelphia, were elected Members, and Mr. F. B. Meek, of Albany, was elected a Correspondent.
May 6th, 1856.

Vice-President Bridges in the Chair.

Mr. Durand presented for publication in the Journal a paper, entitled, "Plants Kaneanae Arcticæ et Polaris. An Enumeration of the Plants collected by Dr. E. K. Kane, U. S. N., in his first and second voyages to the Polar Regions, with descriptions and remarks;" which was referred to a Committee consisting of Drs. Zautzinger, Bridges, and Uhler.

Dr. Hallowell remarked that the most abundant of the urodèles in the neighborhood of Philadelphia, is the Plethodon (Desmognathus, B.) niger, which may be said to exist by thousands. It is found under stones along the borders of rivulets near the banks of the Schuylkill, and is very quick in its movements, its capture demanding close attention and much activity. It appears to be endowed with a higher degree of vitality than the other caducibranchiates with which it is associated. Its transformation is sooner effected; specimens one inch and a half in length, being without gills, while the larvæ of Pseudotriton ruber are found more than three inches in length.

The Salamandra quadrimaculata of Prof. Holbrook is identical with this animal; the red spots are observed in quite young specimens as well as those more mature, but disappear with age. It is very abundant, a large proportion of the specimens being thus spotted.

The urodèles most frequently met with in the neighborhood of Philadelphia after the niger are Pseudotriton ruber and Plethodon erythronotus. The former occurs in the same localities with the niger, but is much less active, though perhaps more tenacious of life. The young are of a bright red color spotted with black; as age advances the color deepens, resembling Spanish brown (maculata, Green,) and in very old specimens is of an almost purple color; the younger larvæ are white, the older olive colored with dark spots.

At the present time, April 28th, 1856, the females of both Plethodon niger and Pseudotriton ruber are distended with eggs,* as many as seventy being counted in the ovaries of the former. They are of a yellow color, about a line in diameter; none are to be seen in the oviducts; the number of eggs is not always the same in both ovaries, being sometimes considerably greater in one than the other. The eggs in many of the specimens of Pseudotriton ruber are immature, perfectly white and quite small. In the stomach of one of the latter a large lumbricus was found, in another the remains of a coleopterous insect, and in a third the tail and posterior extremities of a Salamander, probably a young Plethodon niger.

Spelerpes (Cylindrosoma, Tsch.) bilineata, is found in the same neighborhood, and also Plethodon erythronotus, the latter under stones, at some distance from the water, associated with Plethodon cinereus. In one specimen the stripe along the back was of a beautiful pink color.

May 13th.

Vice-President Bridges in the Chair.

Letters were read—

From Mr. F. B. Meek, dated Albany, 10th May, 1856, acknowledging his election as a Correspondent of the Academy.

From Mr. Edward Tuckerman, dated Amherst, 3d May, 1856, transmitting the collection of Plants acknowledged at the last meeting.

From E. Billings, Esq., dated Ottawa, West Canada, 6th May, 1856,

* June 26th, females of niger in same condition.
transmitting the first numbers of the "Canadian Naturalist and Geologist," and desiring exchange. This letter was referred to the Committee on Proceedings.

From Mr. Abraham Sager, dated Ann Harbor, Michigan, 5th May, 1856, transmitting for publication in the Proceedings, a paper, entitled, "Descriptions of Articulata, supposed to be new," which was referred to a Committee consisting of Drs. Leidy, Hallowell, and Bridges.

Mr. Isaac Lea presented a paper for publication in the Proceedings, entitled, "Descriptions of four New Species of Exotic Uniones," which was referred to a Committee consisting of Drs. Wilson and Bridges, and Mr. Hanson.

Mr. Charles E. Smith remarked in relation to the specimens of iron ore presented by himself this evening, that the three leading varieties of the ore, known as the Baltimore ore, were shown in the specimens. The bed lies on the west side of Chesapeake Bay, runs parallel with it, and is about fifty miles long. It is of white clay underlying the Eocene deposit. The ore lies in nodules like the brown haematite. In the most valuable bed, this ore is associated with large quantities of mineral charcoal, which seems to be always in broken masses. Mr. S. had never seen any traces of plants. There is no other deposit of iron ore in the neighborhood. The iron made from this ore is remarkable for its great strength. Mr. S. considered the deposit as remarkable, being the only one of which he was aware, in which the lithoid carbonate of iron exists out of the coal measures.

May 20th.

Mr. Ord, President, in the Chair.

Dr. Bridges, referring to the specimens of lithoid carbonate of iron exhibited at the last meeting, gave the following as the probable theory of the formation of this ore. Iron pyrites by exposure would be converted into a sulphate of the protoxide with some sesquioxide of iron. By contact with lime these oxides would be precipitated, the protoxide rapidly becoming sesquioxide. The contact of organic matter would reduce the se:quioxide again to protoxide, which would combine with the carbonic acid evolved during the fermentation of the organic matter.

Mr. Cassin announced the arrival in this country and the presence this evening of the Baron Von Müller, who proposes to visit Texas, Mexico, and Central America, and who is desirous of affording to the Academy any aid in his power.

Dr. Leidy remarked that he had just returned from a visit to St. Louis, and thought that the members would be gratified to learn that an "Academy of Science" had been organized in that city, whose objects were similar to our own. The Academy commences under the most promising prospects; and it occupies a highly favorable position in our country for the formation of a cabinet of natural history. It has recently received a large and very valuable collection of fossils, obtained by Dr. F. V. Hayden from the region of the Upper Missouri.
The collection consists of numerous remains of Mammalia and Chelonia from the Mauvaises Terres of Nebraska, a large number of mollusca from the cretaceous beds, and an extensive series of plants from a tertiary formation. Dr. C. A. Pope, with his usual liberality, has granted the Academy the use of a large hall furnished with cases, for the purposes of a museum, in the Medical College. The president of the Academy, than whom none could be more worthy, is Dr. George Engleman. In conclusion, Dr L. offered in furtherance of the objects of the new Academy the following:

Resolved, That this Academy present to the Academy of Science of St. Louis the second series of the Journal and the Proceedings.

Mr. Lea announced the death of Dr. John C. Warren, of Boston, a Correspondent of the Academy, æt. 79 years.

Dr. Leidy offered the following resolution which was adopted:

Resolved, That the State Medical Society, shortly to hold its session in this city, be invited to visit the Museum of the Academy on the last Wednesday of this month.

May 27th.

Vice-President Bridges in the Chair.

The Committee on Mr. Durand's paper, read 6th inst., reported in favor of publication in the Journal.

The Committee on Mr. Lea's paper, read 13th inst., reported in favor of publication in the Proceedings.

Description of four New Species of Exotic Uniones.

By Isaac Lea.

Unio Coloradoensis. Testa laevi, elliptica, inflata, valde inaequilaterali; valvulis crassis; natibus elevatis magnisque; epidermide luteo-castanea, obscurè radiata et polita; dentibus cardinalibus magnis, duplicis, acuminatis crenulatisque; lateralibus magnis praelongis, lamellatis subcurvisque; margarita purpurea et iridescente.

_Hab._ Rio Colorado, Texas. B. W. Budd, M. D.

Unio Nuttallianus. Testa laevi, elliptica, subinflata, inaequilaterali; valvulis tenuibus; natibus prominulis; epidermide olivacea, eradiata, valde polita; dentibus cardinalibus parvis, rectis, compressis crenulatisque; lateralibus subcurtis, subrectis lamellatisque; margarita salmonis colore tincta et iridescente.

_Hab._ India. Prof. Thomas Nuttall.

Unio Cambodiensis. Testa laevi, elliptica, subinflata, inaequilaterali; valvulis subtenibus; natibus prominentibus, ad apicem undulatis; epidermide castanea, eradiata, polita; dentibus cardinalibus longis, rectis lamellatisque; lateralibus sublongis, lamellatis subrectisque; margarita alba et iridescente.

_Hab._ Takrong river at Korat, Cambodia. S. R. House, M. D.

Unio Newcombians. Testa corrugata-sulcatà, rotundata, subcompressa, inaequilaterali; valvulis crassis; natibus elevatis prominentibusque; epidermide tenebroso-olivacea, corrugatà; dentibus cardinalibus submagnis, duplicis subcompressisque; lateralibus subbrevis, crassis subcurvisque; margarita alba.

_Hab._ Lake Nicaragua. W. Newcomb, M. D.
The Report of the Corresponding Secretary for the last month was read and adopted.

June 3d.

Vice-President Bridges in the Chair.

Letters were read—

From the Imperial Society of Naturalists of Moscow, dated August 13th, 1855;

From the Royal Imperial Geological Institute of Vienna, dated 23d September, 1855;

From the Senckenberg Natural History Society, dated February, 1856; and

From George Frauenfeld, dated Vienna, 12th December, 1855, severally announcing donations.

From Prof. Karl Koch, Secretary of the Society for the Advancement of Horticulture, dated Berlin, 6th February, 1856, acknowledging the receipt of the Proceedings, transmitting donations, and desiring exchange. Referred to the Publication Committee.

From the Royal Academy of Sciences of Amsterdam, dated 15th January, 1856; and

From the K. L. C. Academy of Sciences of Breslau, dated 30th January, 1856, severally acknowledging the receipt of the Journal and Proceedings.

From the Royal Bavarian Academy of Sciences, dated Munich, January 20th, 1856, acknowledging the receipt of the publications of the Academy, and requesting a duplicate set.

From the Senckenberg Natural History Society, dated February, 1856, acknowledging donations.

From the Academy of Science of St. Louis, dated 24th May, 1856, requesting donations of works on Natural History.

Mr. Isaac Lea read a paper, entitled, "Description of thirteen species of Exotic Peristomata;" which was referred to a Committee consisting of Drs. Hallowell, Corse, and J. A. Meigs.

June 10th.

Vice-President Bridges in the Chair.

A letter, dated September, 1855, was read from Jas. R. Eckert and Frederick S. Eckert, Executors of the Estate of the late James Read, presenting his herbarium and certain botanical works.

A paper was presented for publication in the Journal, entitled, "A Commentary on the 'Synopsis Fungorum in America Boreali media gentium, by L. D. de Schweinitz.' By the Rev. M. J. Berkeley, M. A., F. L. S., and the Rev. M. A. Curtis, F. A. A. A. S.;" which was referred to a Committee consisting of Dr. Zantzinger, Mr. Durand, and Dr. Bridges.
A paper was presented for publication in the Proceedings, entitled, "Descriptions of New Species of Acephala and Gasteropoda from the Tertiary formations of Nebraska Territory, with some general remarks on the Geology of the country about the sources of the Missouri river. By F. B. Meek and F. V. Hayden, M. D."; which was referred to a Committee consisting of Dr. Leidy, Mr. Lea, and Mr. Charles E. Smith.

Dr. Leidy announced that the skeleton of the White Bear presented by Dr. E. K. Kane, had been mounted and placed in the Museum.

Dr. Leidy observed that A. Vogt, a frog and leech catcher, who frequently accompanied Dr. Hallowell and himself when in pursuit of objects of Natural History, informed them that the severe cold of the previous winter had destroyed great numbers of frogs and turtles. Dr. L. also expressed the opinion that the house-flies were much less numerous this season than last; a fact which he was inclined to attribute to the destruction of their larvae by the severe and protracted cold of the preceding winter months.

Dr. Bridges thought that the shade trees of our city suffered less than usual from the span-worm.

On leave granted, Dr. Leidy offered the following, which was unanimously adopted:

Resolved, That casts in plaster of the skulls of Bootherium cavifrons and Megalonyx Jeffersonii, be presented to the Boston Natural History Society, the British Museum, and the Zoological Museums of the Jardin des Plantes, Paris, and of Berlin, Prussia.

June 17th.

Mr. Lea, Vice-President, in the Chair.

A letter was read from Mr. George Gibbs, dated Fort Steilacoom, Washington Territory, May 6th, 1856, acknowledging his election to membership.

A paper was presented for publication in the Proceedings, entitled, "Contributions to the Ichthyology of the Western Coast of the United States, from specimens in the Museum of the Smithsonian Institution. By Charles Girard, M. D."; which was referred to a Committee consisting of Drs. Wilson and Hallowell, and Mr. Vaux.

A paper was presented for publication in the Proceedings, entitled, "Ceratites Americanus. By Prof. L. Harper, of the University of Mississippi"; which was referred to Dr. Leidy and Messrs. Lea and A. H. Smith.

A paper was presented for publication in the Proceedings, entitled, "Examination of the Meteoric Iron from Xiquipilco, Mexico. By W. J. Taylor"; which was referred to a Committee consisting of Mr. Vaux, Dr. Genth, and Mr. S. Ashmead.

Dr. Hallowell presented for publication in the Proceedings, a paper, entitled, "Description of two New Species of Urodèles from Georgia;" which was referred to a Committee consisting of Major Lo Conte, and Drs. Bridges and Leidy.
Dr. Hallowell remarked that we had recently received through Mr. Vogt, a large collection of living specimens of Sternothorax odoratus, Haib., from the neighborhood of Philadelphia, more than thirty in number. Many of them present important characteristics not hitherto noticed. The larger as well as a number of the smaller specimens, are of a chocolate brown or olive color above upon the carapax, with numerous black spots, the sternum brown, mingled with yellow; iris golden; upper part of head olive, with numerous small dark colored macule; two yellow vittae, passing one above, the other beneath the eye; barbels in both sexes. The differences between the male and the female are strongly marked, and may be presented as follows:

**Male.**

Sternum more narrow and more concave; tail much larger; shell more depressed, especially in its posterior half; portion of sternum behind abdominal plates, more quadrangular in shape.

**Dimensions.** Length of carapax 4 ½ inches (Fr.); breadth at middle 3 inches; length of sternum 3 inches; greatest breadth 2 inches.

Posterior part of sternum slightly moveable in both, much less moveable than the anterior; both male and female provided with scales upon the posterior part of the hinder extremities; carapax of both sexes spotted.

**Habitat.** Found abundantly near Philadelphia.

**Young. Differences between male and female.**

**Male.** Carapax of male more tectiform; narrow in front, broader posteriorly; outline of shell less distinctly oval; portion of sternum posterior to abdominal plates more quadrangular, tail much larger.

**Dimensions.** Length of carapax 3 inches 7 lines; greatest breadth 2 ½ inches; length of sternum 2 ½ inches; greatest breadth 2 inches 5 lines; greatest length of posterior part of carapax behind abdominal plates 1 inch 1 line; distance between posterior margin of anal scutes and posterior margin of marginal plates 7 ½ lines.

Both sexes ash color, brown or olive above, with numerous dark colored spots; sternum yellow, or black, or brown mingled with yellow; soft parts beneath ash mingled with white, yellowish or reddish mingled with yellow; head olive colored; two yellow vittae, one passing above, the other beneath the eye; iris golden; barbels in both sexes and scales upon the posterior part of the hinder extremities.

**Habitat.** Same as former; hybernate in great numbers together, Mr. Vogt having turned out 239 from one hole. They are associated in hybernating with Tropidonotus sipedon and ordinatus, and Lina pipiens or Bull frog; never with the Chelonura serpentina, or snapper, which is always found alone.

**Female.** Carapax much depressed at its middle; more rounded at the sides and broader anteriorly; snout of female more acute; sternum longer; anal scutes longer.

**Dimensions.** Length of carapax 3 ½ inches; greatest breadth 2 inches 7 lines; length of sternum 2 inches, 7 lines; greatest breadth 2 inches 5 lines; greatest length of portion of carapax behind abdominal plates 1 inch 3 ½ lines; distance between posterior margin of anal scutes and posterior margin of marginal plates 6 lines.

Both sexes ash color, brown or olive above, with numerous dark colored spots; sternum yellow, or black, or brown mingled with yellow; soft parts beneath ash mingled with white, yellowish or reddish mingled with yellow; head olive colored; two yellow vittae, one passing above, the other beneath the eye; iris golden; barbels in both sexes and scales upon the posterior part of the hinder extremities.

**Habitat.** Same as former; hybernate in great numbers together, Mr. Vogt having turned out 239 from one hole. They are associated in hybernating with Tropidonotus sipedon and ordinatus, and Lina pipiens or Bull frog; never with the Chelonura serpentina, or snapper, which is always found alone.

**Younger specimens.** Shell strongly carinated and marked with dark colored radiating lines resembling in form those of Unio radiatia; no spots; contour of shell in females oval; specimens 2 ½ inches and 2 lines in length.

The varieties indicated above may be described as follows:—

**Type.** Predominating color, dusky ash above, with marblings of yellow, more especially along the sides; head olive, with a few small yellow spots; no yellow
lines above or beneath the eyes; pupil black; iris golden; sternum black, several of the plates tipped with yellowish; marginal scutes narrow, except the four posterior, which are broad (Adult.) In younger specimens the yellow lines above and below the eyes are manifest; shell ash, spotted with black; sternum yellow, mingled with black, sometimes without spots; very young specimens with radiating lines of black upon the carapax; length of shell 3 inches 10 lines.

Var. a. Carapax olive, with numerous black spots; posterior terminal marginal plates larger than the others; an orange-colored line above and one below the eyes; iris golden; sternum yellow and black mingled; soft parts ash-colored, with a tinge of red and yellow; younger specimens presenting the same general appearance; shell inclining to brown above; sternum yellow. (K. guttatum, LeConte.)

Length of shell 3 inches 7 lines.

Var. b. Shell dark Spanish brown above, with numerous dark colored spots; sternum black, mingled with yellow; soft parts greyish.

Length of shell 4 inches 4 lines.

The Cinosternum guttatum of Major LeConte appears to be a variety of Staurotypus odoratus, var. a. Dr. Holbrook's plate represents a young ash-colored female. Schoepf's figure is also that of a female more advanced but not fully grown. (Tab. 24, b.) Hist. Testudinum. Erlange, 1752.*

We believe Duménil and Bibron to be right in putting the animal above described in the genus Staurotypus.

Cinosternum penusylvanicum differs from Staurotypus odoratus in the much greater mobility of the posterior portion of the sternum, the animal being able to close itself up, almost like a box tortoise, in the greater extent therefore to which the sternum covers the ventral surface, in the marked differences in the shape of the sternal scutes, which, with the exception of the abdominal, are more or less triangular in penusylvanicum, in the larger size of the inguinal plates, in the shape and coloration of the head, in the form and arrangement of the posterior marginal plates, and in the configuration of the carapax.

Staurotypus† belongs to the family of Elodites of Dum. and Bib., or Paludine Turtles, which are placed immediately after the Chersites or Land Tortoises. These are subdivided into two subfamilies—the Cryptoderes and Pleuroderes—the first having the power of withdrawing the neck under the middle of the carapax. It comprises seven genera, viz.: Cistuda, Emys, Tetrayx, Platysternon, Emysaurus, Staurotypus and Cinosternon.

The second sub-family, or that of the Pleuroderes, which have the power of withdrawing the neck to one of the sides of the anterior opening of the carapax, and never completely between the arms and under the middle of the carapax, as in the Cryptoderes, comprises also seven genera, viz., Peltocephalus, Podocemis, Pentonyx, Sternotherus, Platemyx, Chelodina, Cheyls. It will be observed, therefore, that Staurotypus and Sternotherus belong to different subfamilies, for which reason we prefer to designate this animal as Duménil and Bibron have done by Wryler's name of Staurotypus, the latter being a Cryptodere; besides, Sternotherus has no nuchal plate, and is destitute of axillary and inguinal plates. The marginal scutes are 24 in number. The sternum is not cruciform, as in Staurotypus, the anterior valve (the only one) and the abdominal plates enclosing the animal leaving the posterior parts more or less exposed, the posterior part of the sternum being immovable, or nearly so, as in Staurotypus. Duménil and Bibron also point out an anatomical difference of importance between the Cryptoderes and Pleuroderes, viz., that in the latter the pelvis is solidly fixed to both the sternum and carapax; whereas, in the former, it is "articulated to the internal face of the carapax by a cartilaginous symphysis, corresponding to the sacral bone, being entirely free towards the sternum, permitting several of

* Mr. Gray, Major LeConte and the Prince de Canino, place it in Cinosternon; Prof. Holbrook and Mr. Bell, in Sternotherus.
† Στάυρος, cross, and τυττως, type—sternum cruciform.
these Chelions to move slightly this portion of their bony apparatus." The celebrated authors above mentioned describe but two species of Staurotypus, viz., triporcatus and odoratus. Of the former we have a specimen from the river Medelin, in Mexico, the carapax of which, measures 11 inches (Fr.) in length and 7 in breadth, being much larger than the specimen in the Jardin des Plantes. The sternum is cruciform and has but 7 plates, there being eleven in odoratus. But when we consider that these animals correspond in the shape of the head, the general configuration of the shell, and the form of the sternum, these differences may be considered specific, and not generic. The following are the characters of Staurotypus, Cinosternon and Sternothærus, as given by Dumeril and Bibron, (Tome 11, pp. 354, 361 and 396.)

Sub-Fam. CRYPTODERIDÆ.

Gen. STAurotypus, Wagler.

Head subquadrangular, pyramidal, covered in front by a single, very thin plate; jaws more or less hooked; barbels under the chin; 23 marginal scutes; sternum thick, cruciform, moveable in front, provided with eight or eleven scuta; the axillary and inguinal plates contiguous, placed upon the sterno-costal sutures; anterior feet with five nails, posterior with four only. Two species.

CINOSTERNON, Wagler.

Head subquadrangular, pyramidal; a single rhomboidal plate upon the cranium; jaws slightly hooked; barbels under the chin; scales of the shell slightly imbricated; 23 marginal scutes; sternum oval, moveable in front and posteriorly upon a fixed piece, provided with eleven scales, with short, narrow, subhorizontal wings; a very large axillary, an inguinal still larger; tail long, (in the males,) unguiculated. (Staurotypus with a larger sternum, and the posterior part of the sternum movable.) Three species.

Sub-Fam. PLEURODERIDÆ.

Gen. STERNOThærus, Bell.

Head depressed, provided with plates; jaws not denticulated; no nuchal plate; sternum large, with very narrow lateral prolongations; anterior portion of the plastron rounded, moveable; five nails to each extremity. (Three species, all from MADAGASCAR. We have three shells of this genus from W. Africa.)

On leave granted, Dr. Le Conte offered the following, which was unanimously adopted:

Resolved. That a special vote of thanks be presented by the Academy to Dr. E. K. Kane, U. S. Navy, for his numerous and valuable donations to the Museum of the Academy.

June 24th.

Vice President Bridges in the Chair.

The Committee on Messrs. Berkeley and Curtis’ paper, read 10th inst. reported in favor of publication in the Journal.

The Committees on Mr. Sager’s paper, read May 13th; on Mr. Lec’s paper, read June 3d; on Messrs. Meek & Hayden’s paper, read 10th inst.; on Prof. Harper’s paper, read 17th inst. ; and on Mr. Taylor’s and Dr. Hallowell’s papers, read same date, severally reported in favor of publication in the Proceedings.
Descriptions of three Myriapoda.

By AB. SAGER.

CRASPEDOSOMA D.E., Gray.


Sp. R. spinosa, Nob. Body consists of sixty or sixty-one segments, exclusive of the head and ultimate bivalve scale. Segments all marked with sharp longitudinal ridges, the size of which vary considerably. On each side and between the mesial line and stigmata, are seven nearly equal ridges, that border the mesial line somewhat lower than the rest. On the sides are three larger ones terminated with spines, between which there are two smaller and spineless ones; the superior spinous ridge is semi-double and connected with the stigmata; below these are nine or ten smaller ridges, gradually diminishing as they approach the basis of the feet; anterior and posterior segments about equal to the adjoining ones, head glabrous; eyes a black triangular patch at the outer base of the antennae; body cylindrical, chestnut brown, with a paler dorsal line covering the two dorsal ridges, and a pale lateral line covering the series of the stigmata; feet and antennae Rufous. Differs from the Reasia of Gray in eyes, in a triangular instead of a linear spot, and from the Cylindrosoma of the same author in the distinctness of the ridges and not having a reniform eye spot.

Nearly allied to the Julus lactarius of Say.

Gen. Stenonia, Gr.

Sp. S. hispida, Nob. Body composed of seventeen double segments, distinctly divided on the dorsal mesial line. Body depressed, margins of segments quite prominent and curved forwards near the head, in the middle and posteriorly transverse or curved slightly backwards. Surface of each segment covered with five rows of distinct tubercles, arranged somewhat in quincuncial order. From the direction of the tubercles the lateral and posterior margins of each segment appear serrated. First cervical segment smaller than the next, rounded anteriorly, straight and narrower behind, and obliquely truncated on the sides. The posterior segment about equal to the next in length, is triangular, the apex armed with a stiff hair. Color pale red above, feet and ventral surface flesh colored.

Length 6". Under decayed logs.

Gen. Strigamia, Gr.

Sp. S. fulva, Nob. Body somewhat depressed, slightly narrowed towards the extremities, smooth above, rough and villous on the sides and beneath; feet hairy; posterior pair equal in length and twice as large as the next; antennal segments obconical, except the last, which is elliptical, and as long as the two preceding ones. Alternate dorsal scutae form a slight, obtuse, lateral process. Color fulvous above, fawn colored on the sides and beneath.

Approaches closely to the Geophilus rubens of Say.

Description of Thirteen New Species of Exotic Peristomata.

By ISAAC LEA.

PALUDINA HAINESIANA. Testa ventricoso-conoideâ, subglobosa, ponderosa, solidâ, viridi-pallida, arctissimé umbilicata, levi ; spirâ obtusâ, ad apicem carneaâ ; suturâs valde impressis ; anfractus senis, convexis, ultimo amplio ; apertura magnâ, subrotundata, intus albidaâ ; columellâ albaâ, crassa, incurvataâ.  
Hob. Siam.  S. R. House, M.D.

PALUDINA UMBILICATA. Testa carinata, obtusâ conoideâ, viridi-bruncâ, subtenui, umbilicata, levi ; spirâ obtusâ, babylonicaâ ; suturâs linearibus ; anfractus senis, carinatis, superne planulatis ; apertura subrotundata, intus albidaâ ; umbilico spiraliter carinato ; columellâ incurvataâ.  
Hob. Takrong River, Siam.  W. A. Haines.
PALUDINA CHINENSIS. Testa carinata, pyramidata, rufo-castanea, subcrassae, anfractibus umbilicata, striata; spirā elevata; suturis impressis; anfractibus septenis, planulatis, in medio carinatis, superfē geniculata; apertura subrotundā; incurvata; labro angulato.

_Hab._ China. W. A. Haines.

PALUDINA SWAINSONIANA. Testa globosa, subsolidā, tenebroso-viridi, arctissimē umbilicata, levē; spirā obtusa; suturis validē impressis; anfractibus instar quinis, convexēs; apertura rotundatā, intus albidā.

_Hab._ Siam. T. R. Ingalls, M.D.

PALUDINA INGALLSIANA. Testa carinata, obtusē conoidēa, tenebroso-viridi, tenni, umbilicatā, nitidā; spirā obtusa; suturis linearibus, anfractibus senis, subplanulatis, minutissimē et transversē striatis; apertura rotundato-ellipticā, infernā subangulatā, intus corneo-albā.

_Hab._ Siam. T. R. Ingalls, M.D.

BITHINIA SIAMENSIS. Testa ovato-conoidēa, palido-olivaceâ, tenni, diaphanā, nitidā, levē, arctissimē umbilicatā; spirā subelevatā; suturis linearibus; anfractibus instar senis, convexēs; apertura ovato-rotundatā, incrasatā, superfē angulatā, intus albidā.

_Operculo calcareo, extrinsecūs striis concentricis, intus granulatū._

_Hab._ Takrong River, Siam. S. R. House, M.D.

BITHINIA GLOBULA. Testa globōsa, palido-olivaceā, tenni, diaphanā, levē; imperforatā; spirā depressā, ad apicē obtusā; suturis impressis; anfractibus quadrernis, ventricosis; apertura rotundatā, incrasatā, subreflexā, superfē angulatā, intus albidā; columellā incrasatā.

_Operculo calcareo levē, marginatā._

_Hab._ India. W. A. Haines.

PALUDOMUS MACULATUS. Testa ovato-conicā, virido-luteā, brunneo-maculatū, crusā, imperforatā, levē; suturis validē impressis; anfractibus instar quinis, convexēs; apertura subrotundā, intus albā; columellā per albā, callosā.

_Hab._ Ahmednugger, India. S. Shurtleff, M.D.

AMPULLARIA AUROSTOMA. Testa subglobōsa, luteā, transversim viittatā, crusā, arcte perforatā, levē; spirā obtusa; suturis vix profundis; anfractibus instar senis, convexēs; apertura rotundo-ellipticā, subreflexā, intus aurantiatē et obsolete viittatā; umbilico arctē compressō; columellā crusätā.

_Operculo corneo, pellucidō, subtriangularē._


AMPULLARIA TURBINATUS. Testa elongato-globōsa, tenebroso-fuscā, transversim viittatā, tenni, pellucidā, latē umbilicatā, levē; spirā emersā; suturis validē profundis; anfractibus instar quinis, validē convexēs; apertura magnā, subrotundā, dilatatā, luteo-albidā, intus brunneo-viittatā; umbilico magnō; colunellā subcallosā.

_Hab._ —— M. Burrough, M.D.

AMPULLARIA GRACILIS. Testa regulariter ellipticā, luteo-olivaceā, transversim perviittatā, subtenni, arctē umbilicatē, levē, nitidē; spirā emersā; suturis paulisper impressis; anfractibus instar senis, subconvexēs; apertura ovatē, intus tenebroso-brun ēc et obsolete viittatā; labio acuto; umbilico actē compressō; colunellā levē.

_Hab._ Siam. S. R. House, M.D.

AMPULLARIA TURBINIS. Testa turbinatā, luteo-viridi, transversim viittatā, subcrassā, imperforatā, levē; spirā validē depressā; suturis paulisper impressis; anfractibus instar quinis, validē convexēs; apertura pergrandidē, elongato-ovatē, vel albā vel luteā, intus viittatā; labio acuto; colunellā valde incurvatā, incrasatā.

_Hab._ Siam. S. R. House, M.D.
Assiminea carinata. Testa regulariter conica, lutea, vittata, suberassâ umbilicatâ, levî; spirî ad apicem acuta; suturis paulisper impressâs, înfrâ lineatis; anfractibus instar septenis, planulatâs; apertura elliptica, subcaulicularatâ, intus vittata; umbilico spiraliter carinatâ; columnellâ incurvatâ ad basim subangulatâ.

Hab. Siam. S. R. House, M.D.

Descriptions of New Species of Acrophala and Gasteropoda, from the Tertiary formations of Nebraska Territory, with some general remarks on the Geology of the country about the sources of the Missouri River.

By F. B. Meek and F. V. Hayden, M. D.

That portion of the great Tertiary basin from which the fossils described in the following paper were obtained, occupies an extensive area of country near the head waters of the Missouri, chiefly between the 46th and 49th parallels of north latitude, and the 100th, and 108th degree of longitude west from Greenwich. According to the Barometrical measurements made by the party charged with the exploration of the proposed northern route of the Pacific railroad, this district varies in its elevation from 1800 to 2700 feet above the present flow of the tidal wave.*

In regard to the geographical, topographical, and physical features of this country, its native tribes, its botany, zoology, &c., much interesting information was long since laid before the public by the reports of Lewis and Clark's and Long's expeditions, by Mr. Catlin, the Prince of New Wied, Mr. Nuttall and others. More recently, much information of a similar nature has been added by the report of the Pacific Railroad Survey. All these enterprising travellers mention the occurrence of sandstones, clays, lignite, &c., but without giving us much information in regard to the age of these formations, the extent of country occupied by them, or as to the character of their organic remains.

In 1849 Dr. John Evans traced a great Lignite formation from below Fort Clark, along the Missouri to a point twenty miles below the mouth of the Yellow Stone; and in 1850 Mr. Thaddeus A. Culbertson, who visited this country under the patronage of the Smithsonian Institution, saw this formation at two or three points above Fort Union. In a map accompanying a highly interesting memoir on the geology of the Hudson's Bay Territories, published recently by Mr. A. K. Isbister, in the Journal of the Geological Society of London, a large area about the sources of the Missourii, is colored as Tertiary, but so as to convey an incorrect idea of the extent of country occupied by it. About the same time, Mr. Jules Marcou published in the Bulletin of the Geological Society of France, a memoir on the Geology of the United States and the British Provinces, accompanied by a map, on which he colors nearly all the country about the head waters of the Missouri as New Red Sandstone, surmounted along the west shore of that stream by Cretaceous outliers. Between this and the Black Hills he brings up to Cannon-ball River, from the White River basin, a continuous belt of Tertiary. West of this he places a belt of Jurassic, and along the supposed position of the Black Hills he runs a stripe of Eruptive and Metamorphic rocks, flanked on the east and west by Carboniferous formations. On the west side of the Black Hills he colors another extensive district of Jurassic. In all this Mr. Marcou is certainly mistaken, excepting in regard to the Eruptive and Metamorphic rocks of the Black Hills; there may also be Carboniferous formations there, but they have not yet been recognized as far north by two or three hundred miles, as laid down by him.

Leaving for a future occasion all local and other details, we now propose to give a brief general sketch of the extent and boundaries, as far as we can, of that portion of the great Tertiary lignite formation from which our fossils were collected, with a few remarks upon its probable age, and relations to the White river basin, as well as to the Cretaceous formations upon which it repose.

* Some points not crossed by these explorers may be a few hundred feet higher.
Ascending the Missouri from Fort Pierre, we find on reaching a point five miles below Heart river, about the 47th parallel north, that the Cretaceous formations which are so conspicuous for many hundred miles along the river below, pass by a gentle north or north-west dip beneath the water level, to be succeeded on both sides of the river by Tertiary. Although this is the first point where the Tertiary beds come down to the water level, they are known to occupy the higher country back from the river, on the west side, as far south as the vicinity of Saukanna or Moreau river, and still further west they go as far south as some of the north-west branches of the Cheyenne. Cannon-ball river, Watahoo, and other small tributaries, however, cut down to the Cretaceous beds some little distance back from the Missouri. On the east side of the Missouri the Tertiary is bounded on the south, nearly opposite the mouth of Cannon-ball river, by a range of upper Cretaceous hills bearing off to the north east. South of the Moreau, a similar range, known as Fox Hills, extends from near the Missouri to about the 102° of west longitude, where it is interrupted by a small tributary of the Cheyenne. West of this small stream, the same range of upper Cretaceous hills; known perhaps by other local names, bears round to the north-west, crossing the head branches of the Little Missouri so as to strike the Yellow Stone river about ten miles below the mouth of Powder river; forming nearly all this distance the south and south-west boundaries of that portion of the great Tertiary basin lying in the immense bend formed by the Missouri and Yellow Stone rivers. To comprehend how this range of hills could traverse the country in this way, it must be borne in mind that the Black Hills are laid down on most of the published maps of this country as extending a long distance too far north.

Returning to the point near Heart river, from which we first set out, we find on ascending the Missouri, that the Cretaceous strata again rise to view at a few points not far below Fort Clark, but even here the country on each side is composed of Tertiary. It was at one of these localities the Prince of New Wied collected a nearly entire skeleton of Mosasaurus Maximilianus (Gold.) From the vicinity of Fort Clark we know of no other place where the Cretaceous beds make their appearance until about twelve miles below the mouth of Milk river, (lat. 47° N. long. 104° W.) the country on both sides of the Missouri all this great distance being made up of Tertiary formations, the northern and eastern limits of which are unknown to us. Immediately along the margins of Milk river, Cretaceous beds are seen on both sides as far up as we have any knowledge of the country, though the higher country back from the river is Tertiary. From the point below the mouth of this stream on the Missouri, where the Cretaceous beds first make their appearance, they are seen to rise higher and higher as we ascend the Missouri, in consequence of their inclination to the east or north-east. On the north side of the Missouri, between it and Milk river, the higher portions of the country back from the Missouri, are also composed of Tertiary beds.

The same formations likewise occupy nearly all the country between the Missouri and Yellow Stone, as far west as the vicinity of Muskeleshell river, where they thin out on the summits of Cretaceous hills. The hills, however, near the Missouri, between Milk and Muskeleshell rivers, are also mainly Cretaceous, the Tertiary being for the most part worn away by atmospheric agencies.

On both sides of the Yellow Stone, only Tertiary strata are seen from near the mouth of Powder river as far up as the mouth of the Big Horn. How far beyond this they extend we do not know, though we have received Tertiary fossils from intelligent traders, collected as far up the Big Horn as one of its tributaries known as Little Horn river. From another point as far west on the Yellow Stone as Rose river, we received a few Cretaceous fossils. As to the limits of the Tertiary up Powder and Tongue rivers, we have no definite information. The traders say the same kind of lignite beds seen along the Yellow Stone, occur along the banks of the former as much as one hundred and fifty miles above its mouth.

The foregoing hasty sketch is given more with a view of showing the extent of country occupied by this great Tertiary lignite formation, than with any hope of conveying a definite idea of its precise limits. If it should prove to be
only a part of the same extensive fresh water lignite formation observed by Sir John Richardson on the Saskatchewan, of which we have little doubt, then it is highly probable the Lignite and Coal formations mentioned by Mr. Isbister as flanking the eastern slope of the Rocky Mountains, in the form of a continuous belt from the Saskatchewan to the Arctic Ocean, belong to the same epoch.

For the most part, these deposits in Nebraska consist of beds of gray, yellowish, whitish, and blue sand, sandstone, clay, &c., with alternating strata of lignite of variable purity, and carbonaceous matter mingled with much sand and clay. These beds of lignite often take fire spontaneously, from heat generated in the decomposition of iron pyrites, and burn for many years at a time, sending forth suffocating sulphurous vapors, and causing such an intense degree of heat as to fuse the contiguous clay and sand into masses presenting every degree of compactness, from that of obsidian to light vesicular lata. In some of the argillaceous beds, great numbers of beautiful fossil plants are found, a fine series of which was collected and placed for investigation in the hands of Dr. J. S. Newberry, the well known fossil botanist of Cleveland, Ohio. The remains of Mollusca collected from these formations, over a wide extent of country, present a remarkable uniformity of character, and as may be seen by the following paper, are all excepting a few land shells, referable to genera usually found in fresh and brackish waters. It is an interesting fact that the most nearly allied living representatives of many of these species are now found inhabiting the streams of Southern Africa, Asia, China, and Siam, apparently indicating the existence of a tropical climate in these latitudes at as late a period as the Tertiary epoch.*

Although there can be no doubt that these deposits hold a rather low position in the Tertiary System, we have as yet been able to arrive at no very definite conclusions as to their exact synchronism with any particular minor subdivision of Tertiary, not having been able to identify any of the Mollusca found in them with those of any well marked geological horizon in other countries. Their general resemblance to the fossils of the Woolwich and Reading series of English geologists, as well as to those of the great Lignite formations of the south east of France, would seem to point to the lower Eocene as their position. Yet it may be possible these resemblances have resulted from the action of precisely similar causes at a somewhat later period.

It is a little remarkable that these formations differ in many respects from those of the White river basin lying so near on the south. In the first place they generally contain more sand, are usually characterized by beds of lignite, and as yet have furnished no remains of Mammalia; while the White river basin is more argillaceous, appears to be destitute of lignite, and is well known to be one of the most remarkable repositories of extinct mammalian remains on the face of the globe. In addition to this, not one of the species of Mollusca in our collection from the Lignite formations, is identical with any of those described by Dr. Evans and Dr. Shumard from the White river basin.

* We are under many obligations to Dr. Isaac Lea, of Philadelphia, for the privilege of comparing our fossil species with analogous forms in his magnificent collection of recent shells.

forms; while the sea was gradually becoming more shallow, as is shown by the increase of *gasteropoda*. We even know from the presence of a few remains of *lycopodiaceous* plants, and an occasional unbroken leaf of some *exogenous* tree, that there was dry land at this time somewhere not very far away. Gradually, as we ascend in the series, the strictly marine animals disappear, and we meet with *Ostreus*, *Corbula*, and *Cerithium*, mingled in the same bed with *Melania*, *Patula*, *Phusa*, *Cyrena*, &c., all of Tertiary types; while a little higher in the series, we find at some places only the remains of land and fresh water mollusca.

From the above facts, especially the presence of *Pleuratoma*, *Fasciolaria*, and *Belemnitella*, in this upper member of the Cretaceous system of this country, we cannot think it represents any part of the Green Sand of English geologists. Numerous well marked Cretaceous forms show it cannot be Tertiary, consequently we think it must represent some portion of the true Chalk. We are by no means inclined, however, to adopt the views of M. Alcide D'Orbigny, who regards all the Cretaceous formations of the United States and Western Territories as referable to a later epoch than the Green Sand, as the next succeeding formation below that of which we have just been speaking, (No. 4 of the series), is characterized by numerous fossils of unquestionable Green Sand type. We think confusion has been created in tracing out the parallelism between American and European Cretaceous formations, by fossils from different positions in this country having been mingled together and described as if they occurred in the same bed.

**Formations at the base of the Cretaceous Series of this district.**

As previously stated, near the mouth of Milk river, Cretaceous strata which are not seen for a long distance below this on the Missouri, again rise to view. They consist of the upper two members of the series (No. 5 and No. 4) which, in consequence of their inclination to the east, are found to rise higher and higher as we ascend the river, so that nearly all the hills close to the Missouri, between Milk and Muscleshell rivers, consist of these formations. Some four or five miles below the mouth of Muscleshell river, a lower rock,—a sandstone,—rises above the water level. This is probably No. 1 of the series, No. 2 and No. 3 not being represented here. It is worthy of note that out of two species of *Mactra*, two of *Tellina*, two of *Inoceramus*, one of *Pholadomya*, two of *Natica*, and one *Bacculite*, found in this rock, not one is known to occur in any of the higher formations, and some of these species are not unlike *Noconites* forms.

In consequence of the increasing inclination of the strata, this last mentioned sandstone rises in the vicinity of North Mountain river as much as 250 feet above the Missouri. Here, or near this, begins a wild and desolate region, known as the *Mauvaises Terres* or Bad Lands of the Judith. At various places in these Bad Lands a sandstone similar to No. 1 was seen alternating with beds of clay and lignite, all of which are upheaved and much distorted. It was found impossible to devote to the examination of these formations time enough to determine their relations to the Cretaceous and Tertiary strata of this region, without running the risk of being cut off from the party and murdered by the Indians. Amongst a few fossils that were collected here, however, Prof. Leidy finds teeth which he refers to two or three genera of large Saurians allied to the *Iguanodon*, *Megalosaurus*, &c. There are also in the collection from some of these beds, one or two species of *Unio*, one or more of *Cyclus* or *Cyrena*, and a few crushed specimens of *Gasteropoda* like *Patula*, and *Melania*. From these facts, we are strongly inclined to think with Prof. Leidy, there may be here, at the base of the Cretaceous System, a fresh water formation like the Wealden. In as much, however, as there certainly are some outliers of fresh water Tertiary in these Bad Lands, we would suggest that it is barely possible these remains may belong to that epoch, though the shells appear to be all distinct species from those found in the Tertiary at all the other localities in this region.

We remember seeing in 1853, between the mouth of Big Sioux and Platt rivers on the Missouri, some exposures very similar to those of the Bad Lands of the Judith, excepting that there appeared to be no beds of Lignite. We saw
no fossils in these beds, but were at that time impressed with the opinion that they belonged to the lower part of No. 1, which is well exposed a little higher up the river at the mouth of the Big Sioux, but soon dips beneath the water level to be seen no more between there and the far distant point already mentioned, near the mouth of Muscles shell river.*

**DESCRIPTIONS OF SPECIES.**

**Cyclas formosa.**

Shell small, oval, oblique, scarcely ventricose; cardinal margin straight buccal end rounded; anal extremity obliquely truncate; basal margin semi-elliptical or broadly rounded; beaks obtuse, tumid, rising somewhat above the hinge, nearly touching, placed a little in advance of the middle; surface ornamented by very fine, regular, distinct, concentric wrinkles. Length .17 inch; breadth .08 inch; height .14 inch.

*Locality.* Three miles above Fort Union.

**Cyclas fragilis.**

Shell small, subcircular, slightly oblique, scarcely ventricose, very thin and fragile; extremities and base rounded; posterior end wider than the anterior; beaks moderately elevated, tumid, slightly in advance of the centre; surface apparently marked with fine indistinct lines of growth. Length .24 inch; breadth about .13 inch; height .22 inch.

All our specimens of this species being more or less worn, it is possible the lines of growth may be more distinct on perfect specimens. Sometimes the posterior slope, from a little behind the beaks, appear to have been obliquely subtruncated.

*Locality.* Same as last.

**Cyclas subellipticus.**

Shell small, elliptical-ovate, somewhat ventricose, thin and fragile; posterior end narrower than the anterior, both narrowly rounded; base semi-elliptical or semi-ovate; cardinal border apparently rounding gradually to both extremities; beaks not much elevated, pointed, incurved, not oblique, located near the middle; surface indistinctly marked with lines of growth. Length .24 inch; height .14 inch.

The beaks are so near the middle, and curved so nearly at right angles to the longitudinal diameter of the shell, that it is not easy to determine, especially from the examination of mutilated specimens, which is the posterior, or which the anterior end. As we have only seen imperfect specimens, we are not sure the surface markings are indistinct on unworn shells.

*Locality.* Three miles above Fort Union.

**Cyrena Moreauensis.**

Shell ovate, nearly elliptical, compressed, extremities rounded; anterior end narrower than the posterior, base semi-ovate, most prominent behind the middle; beaks not much elevated, placed a little in advance of the centre; surface marked with fine distinct lines of growth; cardinal edge rather thick, and having under the beaks three diverging central teeth in each valve, the anterior of which is the smallest; lateral teeth two, (in the left valve) long, parallel to the cardinal edge, and fitting into corresponding grooves in the other valve; muscular impressions deep. Length about .90 inch; breadth .36 inch; height .66 inch.

Each of the cardinal teeth has, in its upper end, a small notch which is occupied, when the valves are closed, by a small projection between the teeth of the other valve. The anterior lateral tooth appears to be larger and approaches the central teeth more nearly than the posterior. Our specimens are generally more or less worn, and thickly coated with firmly adhering sand.

* The foregoing remarks are based upon the observations and collections of Dr. Hayden.
Locality. Near Moreau river, in a sand bed, associated with bones of *Titanotherium*. Probably a distant outlier of the White river bone beds.

**Cyrena intermedea.**

Shell oval-ovate, compressed, rather thin; extremities rounded; base semi-elliptical; beaks moderately elevated, not gibbons, placed nearly half way from the middle to the anterior end; surface marked with fine lines of growth, occasionally rising into obscure concentric wrinkles; edge of the cardinal border thin; cardinal teeth close under the beaks, posterior one very oblique. Length .76 inch; breadth .22 inch; height .68 inch.

This species approaches some varieties of *C.pisum*, of Deshay’s (Coq, foss. page 117,) but is more inequilateral, the posterior end being comparatively longer, the beaks are also less elevated. From the last it will be distinguished by its shorter and more rounded form, more elevated beaks, and much thinner cardinal edge.

**Locality and position.** Same as last.

**Cyrena occidentalis.**

Shell sub-triangular, very thick, rather ventricose; anterior end and base rounded, posterior end sloping abruptly from the beaks, and ventrically sub-truncate at the extremity; beaks located a little in advance of the middle, and elevated, pointed, incurved, and approximate; surface marked with strong lines of growth. Length 1 inch; breadth .71 inch; height 1 inch.

Appears to be intermediate between *C. cordata* of Morris (Proceed. Geol. Society, vol. 10, pl. 2, figs. 7, 8, 9,) and *C. antiqua* of Perussac, (see Deshays’ Coq, foss., pl. 18, figs. 19, 20, 21) both of which are Eocene species. From the first, it differs in being relatively higher; its posterior end is also shorter, and more distinctly sub-truncate. From the latter, it differs in being less elevated, not so concave in front of the beaks, nor so regularly arcuate on the posterior slope from the beaks to the base. In front, it presents the same symmetrical cordate outline common to both these species.

**Locality.** Bad Lands of the Judith.

**Corbula subtrigonalis.**

Left valve sub-trigonal, very convex, obliquely truncate from the beaks to the extremities, the two slopes diverging at an angle of 95°; basal margin rounding up abruptly in front, and converging towards the posterior slope at an angle of about 48°; beaks elevated, located in advance of the middle; surface marked by faint lines of growth, and having below the middle three or four concentric wrinkles, which become stronger towards the extremities. The right valve is much more compressed, and without concentric folds. Length .74 inch; breadth .25 inch; height .55 inch.

The larger, or left valve of this species, has an obscure ridge passing from the beaks obliquely backwards and downwards to the posterior extremity, along which the valve is abruptly deflected towards the hinge margin. This and the following species may have possessed other surface markings not now preserved, the specimens being all considerably worn, as if they had been exposed to the action of waves on a beach.

**Locality.** Mouth of the Judith, associated with *Ostrea subtrigonalis* (Evans and Shumard), also *Melania, Paludina*, and other fresh water shells.

**Corbula perundata.**

Right valve sub-trigonal, rather compressed, obliquely sub-truncate from the beaks toward both extremities, the slopes diverging at an angle of about 82°; basal margin rounding up in front, straight towards the posterior; beaks small, much elevated, and placed a little in advance of the middle; surface ornamented by five or six strong, elevated, concentric folds, otherwise apparently smooth. Length .32 inch; breadth .13 inch; height .27 inch.

The left valve of this species is yet unknown to us.

**Locality and position.** Same as last.
CORBULA MACTRIFORMIS.

Shell subtriangular, scarcely ventricose; right valve a little larger, thicker and more gibbons than the left; extremities narrowly rounded; posterior end longer than the anterior, slightly truncate at the extremity, and having an obtuse ridge passing from the beaks obliquely backwards to the lower posterior edge; base semi-ovate, most prominent in advance of the middle; beaks considerably elevated, pointed, incurved, and directed forward; surface marked with fine lines of growth. Length 64 inch; breadth about 33 inch; height 50 inch.

The tooth of the right valve is thick, and located immediately under the beaks, while that of the left is flattened, and placed a little behind them. The lateral edges of the cardinal border of the left valve, as well as its basal margin, which are sharp and prominent, fit into a distinct groove in the edge of the opposite valve. The muscular impressions are indistinct, and the sinus of the palpeal impression triangular, very broad and shallow.

Locality. Fort Clark, where it is associated with Melania, Paludina, &c.

UNIO PRISCUS.

Shell ovate, rather compressed, very thin and fragile; anterior extremity short, rounded; posterior end narrower, contracting with a regular curve from above, and having at the extremity below a very obtusely rounded angle; cardinal border broadly arcuate; basal margin nearly straight behind the middle, rounding up in front; beaks very small, rising little above the hinge, located about one-sixth the entire length of the shell behind the front, and ornamented with small regular concentric wrinkles; surface of other portions of the shell smooth, or only marked with fine lines of growth. Length 2-78 inches; breadth unknown; height 1-63 inches.

Has much the aspect externally of an Anodonta, but a fragment in our collection shows enough of the hinge to prove it to be a Unio, without exhibiting the details of the teeth. Judging from the beaks, young specimens not more than half an inch in length must be beautifully ornamented with regular concentric wrinkles. It is usually found in a crushed condition between the laminæ of clay.

Locality. Yellowstone River, forty miles above the mouth.

BULIMUS? TEREUS.

Shell small, sinistral, much elongated, terete; volutions ten to ten and a half, narrow, closely wound, and increasing very gradually from the apex, slightly convex near the summit of the spire, but flattened lower down; suture very faintly impressed between the lower volutions, but becoming more distinct towards the apex; surface marked with fine, regular lines of growth, passing straight across the whorls at right angles to the suture; aperture ovate, acutely angular above, rounded below; lip thin. Length 76 inch; breadth 19 inch; apical angle slightly convex, divergence 18°.

A few dextral shells were found associated with the above, which, as far as we have been able to see, differ from them in no other respect. It is possible, however, they may belong to a distinct species, though we are now inclined to regard them as merely a variety of the same. This and the following species are evidently closely related to a shell described by M. Matheron, from the Tertiary limestones near the mouth of the Rhone, south-east of France. (See Melania acicula, p. 219, pl. 36, fig. 25; Catalogue Methodique, &c.) Like some of ours, his is a sinistral shell, and has much the same general appearance, but it is even more elongated, and has nearly twice as many volutions. We doubt very much the propriety of referring such forms to the genus Melania, as they appear to us to have much more the aspect of land shells. Unfortunately all our specimens have the aperture more or less broken or distorted, as was the case with those studied by M. Matheron. The spire looks very like Clausithia, but the aperture was evidently more like Bulimus or Achatina. It is not improbable they may
form a distinct group, holding an intermediate position between *Clausilia* and *Bulimus*.

**Locality.** Three miles below Fort Union.

*Bulimus? vermiculus.*

Shell small, sinistral, greatly elongated, cylindrical; volutions about thirteen, narrow, closely wound, increasing very gradually from the apex, somewhat convex near the summit of the spire, but flattened lower down; suture very faintly impressed between the lower volutions, but becoming more distinct above; surface marked with fine regular lines of growth passing straight across the whorls at right angles to the suture; aperture unknown. Length about .60 inch; breadth .13 inch; apical angle slightly convex, divergence 13°.

This is very near the last, and may be only a variety of the same. It differs, however, in being more nearly cylindrical in form; the volutions are more numerous, more closely wound, and do not increase so rapidly from the apex, while the suture is less oblique, especially between the lower volutions.

**Locality and position.** Same as last.

*Bulimus limneiformis.*

Shell narrow ovate, rather thick; spire conical, obtuse at the apex; volutions five to five and a half, convex; suture distinct; surface marked with faint lines of growth; aperture ovate, angular above, rounded below; outer lip apparently a little obtuse, or abruptly bevelled; inner lip very thin on the body whorl above, thicker and slightly reflexed below; columella regularly curved. Length .42 inch; breadth .20 inch; length of aperture .20 inch, breadth of do. .10 inch; apical angle convex, divergence 38°.

From the same locality and position we have a single specimen agreeing in all respects with the above, excepting that the volutions are much flatter and the suture less distinct. This may be another species, but without seeing more specimens we are unable to satisfy ourselves it is not a variety of the same.

**Locality.** Fort Clark.

*Bulimus Nebrascensis.*

Shell ovate; spire rather short, conical, obtuse at the apex; volutions four and a half, convex; suture distinctly impressed; surface polished and marked with nearly obsolete lines of growth; outer lip apparently sharp; inner lip very thin above, thicker and slightly reflexed below; aperture narrow ovate, acutely angular above, somewhat narrowly rounded below. Length .27 inch; breadth .13 inch; length of aperture .15 inch, breadth of do. .07 inch; apical angle convex, divergence 47°.

It is possible this may be only a variety of the last, which it resembles in many respects. It differs, however, in being a relatively thinner shell, has one whorl less, the spire is comparatively shorter, and the apical angle is considerably greater.

**Locality and position.** Same as last.

**Pupa helicoides.**

Shell very small, oval or ovate; spire moderately elevated, apparently obtuse at the point; volutions five, convex, increasing gradually from the apex; surface marked with strong lines of growth, which cross the whorls obliquely; suture distinctly impressed; aperture very oblique, subcircular, rounded on the lower and outer sides, nearly straight next the body whorl; lip slightly reflexed; umbilicus quite small. Length .12 inch; breadth .08 inch; length of aperture .05 inch, breadth of do. .04 inch.

So far as we have been able to see from examining distorted specimens of this species, it is without teeth. In this, as well as in many other respects, it appears to have been very much like the recent *P. simplex* (Gould,) but is about
three times as large, and differs in having stronger and more elevated lines of growth. It may be an elevated *Helix*.

**Locality.** Three miles above Fort Union.

**Limnea tenuicosta.**

Shell small, turrited, very slender; spire acutely elevated; volutions four to four and a half, vertically flattened, (or slightly convex,) increasing rapidly in the direction of the longitudinal axis of the shell, and, each so much smaller than the succeeding one below it, as to form a shoulder or offset at the suture; surface ornamented by sharply elevated, equidistant, linear folds parallel to the minute lines of growth; suture very oblique, rather strongly impressed; aperture unknown. Length .29 inch; breadth .08 inch; apical angle regular, divergence about 26°.

This exceedingly slender, delicate little *Limnea*, is not apt to be confounded with any other fossil or recent species with which we are acquainted. Its attenuated form, vertically flattened whorls, and peculiar linear folds, are characters by which it will be easily identified. None of our specimens show the aperture, though it must be narrow, and a little shorter than the spire. It is a very rare shell.

**Locality.** Three miles below Fort Union.

**Physa longiuscula.**

Shell elongate ovate; spire slender, rather elevated, acute at the apex; whorls about six, flattened or slightly convex; suture not very distinct; surface marked with fine, straight, nearly obsolete lines of growth, which cross the whorls at right angles to the suture; aperture apparently narrow; outer lip meeting the body whorl at an acute angle above. Length .59 inch; breadth .27 inch; apical angle regular, divergence 43°.

Our specimens are too imperfect to show the exact form of the aperture, though it appears to have been narrow, very acutely angular above, and narrowly rounded below. The lines of growth are faint, and the substance of the shell thin. This species quite closely resembles some varieties of *P. hypnorum* (Lin.,) but the body volution is relatively wider, the spire somewhat less elevated, and the aperture narrower.

**Locality.** Three miles above Fort Union.

**Physa rhomboidea.**

Shell small, oval, narrowing abruptly from the middle towards both extremities; spire rather short, conical, pointed; volutions four and a half, slightly convex, last one large, but scarcely ventricose; surface marked with fine lines of growth; suture distinct; aperture narrow, acutely angular above, narrowly rounded below; inner lip closely spread upon the body whorl above, and forming a fold below the deeply impressed umbilical region. Length .26 inch; breadth .16 inch; length of aperture .15 inch, breadth of do. .07 inch; apical angle nearly regular, divergence 57°.

The smaller size, less elongated form and shorter spire, will serve to distinguish this species from the last. From the same bed we have a few other specimens, which have a relatively wider and more oblique aperture, and a more ventricose body whorl, but they are so nearly identical in other respects with this, that we can only regard them as a variety of the same.

**Locality and position.** Same as last.

**Physa nebrascensis.**

Shell large, ovate, thin; spire rather short; whorls about five, flattened or slightly convex; suture very oblique, not strongly impressed; surface marked with coarse lines of growth; aperture narrow, acutely angular above, narrowly rounded below; columella impressed in the umbilical region, and having a kind
of fold at its junction with the outer lip below. Length about 1 inch; breadth .57 inch; length of aperture .55 inch, breadth of do. .26 inch.

It is probable the above description will have to be modified somewhat, when perfect specimens are obtained, as all those we have seen are more or less broken.

**Locality.** Three miles below Fort Union.

**Physa subelongata.**

Shell elongate ovate; spire elevated, acute at the apex; volutions about six and a half, nearly flat; suture oblique, linear, scarcely distinct; surface faintly marked with lines of growth; aperture unknown; columella twisted into a kind of fold below the impressed umbilical region. Length 1.16 inches; breadth .53 inch; length of aperture about .57 inch; apical angle very convex, divergence 49°.

This *Physa* belongs to the same type as two or three elongated species described by Matheron, from the Great Lignite formations of the south of France, *Catalogue Methodique*, &c., pl. 36.) It differs, however, from his *P. Gardanensis*, which it most nearly resembles, in having much flatter volutions, a less distinctly impressed suture, and relatively smaller body whorl. Our specimen is so much broken and worn, that if there were other markings than those preserved they would have been obliterated.

**Locality.** Bad Lands of the Judith.

**Planorbus subumbilicatus.**

Shell very small, subdiscoidal; spire flat; volutions two and a half to three, nearly cylindrical; surface marked with very fine, rather indistinct lines of growth; sutures strongly defined; umbilicus large, showing the volutions to the apex; aperture round or obliquely a little oval. Larger diameter .13 inch; smaller do. .14 inch.

**Locality.** Three miles below Fort Union.

**Planorbus convolutus.**

Shell large, discoidal, nearly equally concave, and exhibiting all the whorls on both sides; volutions slightly embracing, very strongly separated by the sutures, more broadly rounded on the right than on the left side; surface (of cast) having faint undulations parallel to the obsolete lines of growth, which pass round very obliquely forward from the right to the left; aperture ovate, narrower on the left than the right side, slightly concave within, for the reception of the succeeding whorl; right lip projecting considerably beyond the left. Greater diameter 1.01 inch; smaller do. .32 inch.

In its general appearance this species approaches *P. rotundatus* of Brong., but is much less compressed. It differs also in the form of the aperture, which is wider than high, while that of *P. rotundatus* is higher than wide (See Deshayes' *Coq. foss. pl. 9, fig. 7 and 8.*

**Locality.** Little Horn river.

**Vellelia (Ancylus) minuta.**

Shell minute, ovate or elliptical-pattiform, exceedingly thin and fragile; extremities rounded; anterior end apparently a little wider than the posterior; apex moderately elevated, obtuse, nearer the posterior end than the middle, turned to the left; front slope convex; posterior and postero-sinistral slopes concave, dextral convex; surface marked with fine concentric striae. Length .08 inch; breadth .06 inch; height .03 inch.

Resembles *Vellelia elegans* of Edwards, *Ancylus elegans* of Sowerby, Min. Conch. pl. 533) but is much smaller, and wants the radiating striae of that species.

**Locality.** Three miles below Fort Union.

**Puludina multilinata.**

Shell conical-ovate, rather thin; spire elevated; volutions six to six and a half, rounded convex, increasing gradually from the apex; suture strongly im-
pressed; surface ornamented by more or less distinct lines of growth, which are crossed by numerous small, thread-like, revolving lines; aperture comparatively small, obliquely-ovate; inner lip thin and reflexed below so as to partly cover the small umbilical perforation. Length 1 inch; breadth .71 inch; length of aperture .47 inch; apical angle convex, divergence 54 to 60°.

Sometimes the lower volutions, which generally forms less than half the entire length of the shell, is slightly flattened above the middle, so as to leave an obscure angle a little below the suture. On the upper half of the volutions the revolving lines are separated by spaces from two to five times their width, but decrease in size and become closely crowded on the lower part of the last whorl, excepting near the umbilicus, where they are again stronger, more distant, and minutely flexuous. On worn specimens the revolving lines are often obscure.

**Locality.** Fort Clark.

**Paludina vetula.**

Shell conical-ovate, not very thick; spire relatively small, moderately elevated; volutions about five and a half, convex, narrow, increasing gradually from the apex, last one large and ventricose; surface marked with fine lines of growth, which are crossed by obscure revolving lines; suture strongly impressed, very slightly oblique; aperture narrow ovate; umbilical perforation closed or very small. Length about .81 inch; breadth .60 inch; length of aperture .40 inch; breadth of do. .24 inch; apical angle nearly regular, divergence 60°.

Associated with this species a few specimens about one third larger were found, which have a more elevated spire, in consequence of which the divergence of the apical angle is some four or five degrees less. The revolving lines also appear stronger. It is very difficult to determine, without a larger number of individuals in a better state of preservation, whether they are a variety of this species or whether they may not be identical with the last. It is even possible a more extensive collection may prove both these to be only varieties of the last, though as we now see them, they present quite a different aspect, especially the smaller variety, which has a more slender and much less elevated spire, with more depressed whorls, smaller umbilical perforation, and much less distinct revolving lines. The body whorl is also relatively larger and much more extended below.

**Locality.** Bad Lands of the Judith.

**Paludina Leal.**

Shell conical-ovate, oblique; spire not much elevated, pointed at the apex; volutions five and a half to six, convex, sometimes ventricose, last one obscurely angular below the middle; suture well defined; surface marked with fine lines of growth, which are crossed by extremely fine, nearly obsolete revolving strike, and at regular intervals by revolving rows of minute, shallow punctae; aperture broad ovate, obtusely angular above, rounded below; outer lip thin; inner lip thin above, thicker and slightly reflexed below the small umbilical pit; columella deeply arcuate. Length .97 inch; breadth .75 inch; length of aperture .47 inch; breadth of do. .40 inch; apical angle convex, divergence 65° to 80°.

This shell varies so greatly in the elevation of its spire, and the divergence of its apical angle, that its varieties might be mistaken for three or four distinct species. We have satisfied ourselves, however, by examining a large number of specimens, that all these varieties are connected by a regular series of intermediate forms. In some individuals the upper volutions are slightly flattened on top immediately below the suture, in others they are rounded convex, while in a few instances all the whorls are more or less depressed, so as to give the shell a subtrochiform aspect. Generally the fine revolving strike and rows of minute punctae are nearly obsolete, and they are never visible without the aid of a good lens.

It is an interesting fact that this species is so nearly allied, both in form and surface markings, to a *Paludina* now inhabiting the streams of Southern Asia, (*P. Bengalensis*, of Lea) as to give rise to a doubt whether or not they really are
distinct. By comparison, however, with authentic specimens of the latter in the cabinet of Dr. Lea, at Philadelphia, we find his species is generally larger and slightly more elongated than ours, and the body volutions more rounded and less extended below.

We name this species after Dr. Isaac Lea, the well known conchologist, who first made known one of its nearest living representatives.

Locality. Fort Union.

**Paludina retusa.**

Shell obliquely obovate; spire depressed conical, obtuse at the apex; volutions four and a half to five, convex, last one large, obliquely depressed above, and obscurely angular below; suture well defined; surface marked with distinct oblique lines of growth, and faint traces of extremely fine revolving striae; aperture (broad ovate?) obtusely angular above, rounded below; pillar lip thin above, thicker and closely folded back upon the deeply arcuate columella below. Length .84 inch; breadth .64 inch; apical angle very convex, divergence about 90°.

It is barely possible this may be one of the extreme varieties of the last; it differs however from any of the forms we have considered referable to that species, in having a much less elevated and more obtuse spire. The lines of growth also pass round the volutions much more obliquely, and the body volutions are relatively larger. None of our specimens have the aperture entire.

Locality. Three miles below Fort Union.

**Paludina Conradii.**

Shell elongate-trochiform, thick; spire rather elevated, acute at the apex; volutions apparently about six, flat, last one more or less angular below the middle, and obliquely extended below; surface marked with fine lines of growth, crossed by delicate, nearly obsolete, revolving lines; suture sub-circular, or broad ovate, obtusely angular above, (broadly rounded below?); columella profoundsly depressed in the umbilical region; umbilicus none. Length about 1 inch; breadth .70 inch; length of aperture .44 inch; apical angle slightly convex, divergence 54°.

In young specimens the angle on the lower part of the body whorls is quite distinct, and modifies the form of the aperture, but is more obscure in older shells. Like *P. Lea* (of this paper), this species also has its near living representatives amongst Asiatic species, of which *Francisci* (Turbo Francisci of Wood) is an example. We name it in honor of Mr. T. A. Conrad, of Trenton New Jersey.

Locality. Bad Lands of the Judith.

**Paludina peculiars.**

Shell trochiform, rather thin, oblique; spire conical, acute at apex; volutions (five and a half?) flattened convex, last one distinctly angular a little below the middle; surface marked with fine, rather indistinct lines of growth, crossed by nearly obsolete, exceedingly fine revolving striae; suture moderately defined; aperture round ovate, or sub-quadrate.

Our specimens of this species are imperfect at both extremities; some of them have a breadth of .53 inch, and indicate a length of about .70 inch. The apical angle of a specimen consisting of the lower two whorls is 47°; but as it was probably greater near the apex, the mean may have been as great as 50°. In form and general appearance it is very much like the last, and may possibly prove to be only a variety of that species; it is, however, a thinner shell, and the volutions are more convex.

Locality. Fort Clark.

**Paludina trochiformis.**

Shell trochiform, thin; spire conical, pointed at the apex; volutions five and a half to six, nearly flat, and ornamented by two slightly elevated revolving ridges; last whorl strongly angular below the middle; surface marked with very fine lines of growth, and exceedingly slender, raised, revolving lines; suture linear, scarce-
by distinct; aperture sub-quadrate, or rounded ovate, more angular above, broadly rounded below; lip thin, reflected on the columnar side below, but leaving a small umbilical groove; columella strongly arcuate. Length .86 inch; breadth .73 inch; apical angle convex, divergence 73° to 77°.

This interesting shell is so unlike the usual forms of *Paludina*, that we would have referred it to that genus with much doubt, had it not been for the fact that we have from the same bed some intermediate gradations between it and the usual typical forms of the genus. One of these, *P. Leidy* of this paper must be (judging from the upper volutions,) in its young state, almost exactly like this, both in form and surface markings, yet at maturity, its last volutions loses almost entirely the angular outline characterizing this species at all stages of its growth. We have seen fragments of this species indicating a size at least three times as great as that of the specimen from which the above measurements were taken.

*P. cingulata* of Matheron (see Catalogue Methodique, &c., p. 223,) from the Lignite formations near the mouth of the Rhone, resembles this more than any fossil species with which we are acquainted, but differs in the surface markings. Amongst recent species it has two or three closely allied representatives, now inhabiting the rivers of China and Siam, of which *P. pyrimidata* (Phillippi) is an example.

**Locality.** Ten miles below Fort Union.

**Paludina Leidy.**

Shell very large, conical-ovate, oblique, thin; spire elevated; upper volutions flattened, and ornamented by two indistinct revolving ridges; lower ones more rounded, last rather ventri-rose, and obscurely angular below; suture linear and scarcely distinct above, but well defined between the lower whorls; surface marked with distinct lines of growth, crossed by very fine, elevated revolving lines, generally obsolete on the lower volutions; aperture apparently ovate; inner lip spread upon the body whorl, but leaving partly uncovered a small, deep, oblique umbilical pit. Length about 186 inches; breadth 132 inches; apical angle convex, divergence 65°.

The most remarkable features about this fine *Paludina*, are its large size, and the peculiarity of having the lower volutions smoothly rounded, or more or less convex, while those nearest the apex are flattened and ornamented by two obscure revolving ridges. The angle on the lower part of the last whorl is very obscure near the aperture, but becomes more distinct higher up, and must be quite conspicuous on young shells. Unfortunately we have no specimens with the aperture entire. Our best specimen consists of four volutions, and judging from the appearance of the broken apex, it must have had about two more.

We name this species after Prof. Joseph Leidy, of the University of Pennsylvania.

**Locality.** Ten miles below Fort Union.

**Valvata Parvula.**

Shell very small, much depressed or subdiscoidal; spire rising little above the body whorl; volutions about three, nearly cylindrical, and having near the middle, on the upper and lower sides, a distinct linear carina; surface marked with strong regular lines of growth; sutures distinct; umbilicus wide and deep, showing all the volutions to the apex, aperture round or transversely oval. Height .05 inch; breadth .10 inch.

From *V. tricarinata* (Say,) some varieties of which this resembles more than any species known to us, it differs in having a wider umbilicus, less elevated spire, and much stronger lines of growth.

**Locality.**—Three miles below Fort Union.

**Melania Minuta.**

Shell minute, elongate conical; volutions seven to seven and a half, convex, increasing gradually from the apex and flattened obliquely outward from above, near two-thirds of the way down, whence they round abruptly in to the suture
below, so as to form an obscure angle below the middle; suture very distinct; surface faintly marked with fine lines of growth; aperture ovate or sub-rhomboidal, angular above, widest near the middle, very narrowly rounded and obscurely sinuate on the inner side below; columella somewhat less aruncate than the outer side of the aperture; lip thin and slightly reflexed at its junction with the lower part of the columella. Length .15 inch; breadth .05 inch; length of aperture .04 inch, breadth do. .03 inch; apical angle regular, divergence 20° to 23°.

This beautiful little *Melania* approaches very near in size as well as in form, *M. spina*, a Miocene species described by M. Gratacapou (Conch. Melan. 10, t. 5, fig. 6 and 7,) but differs in having fewer and more convex volutions.

**Locality.** Three miles below Fort Union.

**Melania Anthony.**

Shell very small, conical-ovate; spire not much elevated; volutions five to five and a half, slightly convex, increasing somewhat rapidly from the apex, last one rather large and obtusely angular below; surface marked with fine, indistinct lines of growth, crossed by extremely fine, nearly obsolete, revolving striae; suture well defined; aperture ovate, angular above, widest a little below the middle, narrowly rounded and very faintly sinuate on the inner side below; lip thin, slightly reflexed on the lower and inner side, but leaving open a small umbilical perforation; columella regularly aruncate. Length .18 inch; breadth .10 inch; length of aperture .06 inch; breadth of do. .01 inch; apical angle slightly convex, divergence 41°.

Without a very careful examination with a good lens, in a favorable light, the extremely fine revolving striae on this neat little shell would be overlooked. In form it is almost an exact miniature of *M. Nebrascensis* of this paper, but a careful comparison with the young of that species of its own size, shows it to be quite different. In addition to this, it occurs in great abundance at localities where no authentic specimens of that species were met with. We have no doubt of its being an adult shell. We name it after Mr. John G. Anthony, of Cincinnati, Ohio, to whom we are under obligations for suggestions in regard to it and two or three other species described in this paper.

**Locality.** Yellow stone river, thirty miles above the mouth.

**Melania multistriata.**

Shell small, elongate-ovate; spire conical, somewhat elevated, acute at the apex; volutions five and a half to six, convex; surface marked with fine indistinct lines of growth, and exceedingly fine, closely arranged revolving striae; suture well defined; aperture narrow-ovate, or ovate, contracted, but scarcely sinuous below; columella regularly curved. Length .23 inch; breadth .12 inch; length of aperture .10 inch; breadth of do. .06 inch; apical angle regular, divergence 39°.

This may be distinguished from the last by its more elevated spire, and more elongated body whorl, which is never angular below. The aperture is also narrower, and the columella imperforate. From the young of *M. Nebrascensis* of its own size, it differs in being more elongated, and in having one or two more whorls. The revolving striae are also more uniform, and so very fine as to be only visible by the aid of a strong magnifier.

**Locality.** Ten miles above Fort Union.

**Melania Nebrascensis.**

Shell elongate-ovate; spire conical, not very much elevated, acute at the apex; volutions about six, flattened convex; surface marked by fine lines of growth, crossed by numerous more or less elevated revolving lines, some of which, on the middle of the whorls, are sometimes so much larger than the others as to form distinct carines; suture strongly impressed; aperture ovate, angular above, narrowly rounded and very faintly sinuous below; outer lip prominent below the middle; columella regularly curved. Length .78 inch; breadth .12 inch; length
of aperture 37 inch; breadth of do. 21 inch; apical angle convex or nearly regular, divergence (variable) 44°.

This species presents numerous varieties of form, apparently dependent upon age. In younger individuals the spire is relatively less elevated, the whorls more rounded and the aperture larger and more oblique. In its surface markings it also varies greatly, even in specimens of the same size. The carina formed by the larger revolving lines being in some specimens quite distinct, while in others they are scarcely larger than the finer revolving lines which may be seen by the aid of a lens to form, with the lines of growth, a delicate sub-cancellate surface on all parts of the shell. On other specimens, all these surface markings are almost entirely wanting.

**Locality.** Ten miles above Fort Union.

**Melania convexa.**

Shell rather large, much elongated, sub-cylindrical or terete; volutions (about ten?) flat, closely wound, and increasing very gradually from the apex; surface ornamented by fine lines of growth, crossed by distinct, regular, thread-like, revolving lines, and extremely fine, nearly obsolete revolving striae; suture generally indistinct; aperture apparently ovate; lip thin, having a broad very shallow sinus below the suture, and another near the base of the columella. Length about 1.60 inches; breadth .48 inch; length of aperture .45 inch; apical angle convex, divergence 21°.

Our best specimen of this interesting species consists of seven volutions, and appears to have lost two or three others from the apex; the aperture is also distorted. The larger revolving lines, about seven of which may be counted on the second revolution, are quite distinct, and near one-third as wide as the spaces between, while the finer revolving striae are closely crowded, and so small as to be only seen by the aid of a good lens. The divergence of the apical angle, below the middle of an adult shell, is not more than 13°, while above, (and in young shells,) it is as much as 28° to 30°.

In the last number of the Proceedings of the Academy, we described a shell resembling this very closely in form, from the Yellow Stone river, where it was found associated, in a loose mass, with fragments of an Ostrea and a small Cretaceous species of Cardium, (C. rarum, Evans and Shumard). Our specimens being worn and imperfect, we supposed, from its associates, it must be a marine shell, and referred it to the genus Turritella, under the name of T. convex. We now think it may possibly be a specimen of this species, from the junction of the Cretaceous and Tertiary beds.

**Locality.** Bad Lands of the Judith.

**Cerithium Nebrascensis.**

Shell elongate-conical, very slender, whorls (nine?) convex, and ornamented by three revolving rows of sharply elevated granules, placed upon obscure vertical folds; surface marked with very fine lines of growth, crossed by much stronger, elevated, thread-like, revolving lines, two, three, or more of which may be counted between each row of granules, suture distinct; aperture apparently nearly circular, but terminating below on the inner side, in a small notch. Length about 1 inch; breadth .29 inch; apical angle regular, divergence 19°.

On the lower part of the body whorl there are three or four small revolving lines, two of the upper of which are sometimes granular, making on this whorl five rows of granules. Between these and the next row above, one of the revolving lines is also minutely granular. In form and general appearance, this resembles two or three species described by Deshayes, from the Paris basin, but on close comparison, we find it quite distinct from them all. Amongst existing species, it appears to be nearest C. granulosum, and estuary species from the Western coast of Africa.

**Locality.** Near head waters of Little Missouri.
We are under obligations to Prof. James Hall, of Albany, New York, for the free use of his extensive collection of books on Palaeontology, as well as for occasional suggestions while investigating the Nebraska fossils, described in this and our former papers.

Correotion.

In a paper communicated by us to the Academy in March last, and published in the preceding number of the Proceedings, we referred to the genus Pyrula a shell (P. Bairdi, page 60), which we have since satisfied ourselves belongs more correctly to the genus Busycon of Bolten; we now change the name to Busycon Bairdi.

Ceratites Americanus.

By Professor L. Harper, University of Mississippi.

The Ceratites, a Cephalopod, mollusk, subgenus of Ammonites, has been discovered in Europe long ago. All the European species, without any exception, belong to the new red sandstone or Triassic formation. Twenty-one species have, according to Bronn, been placed in the St. Cassian formation in Tyrol, to which the lowest place in the Trias has most probably to be assigned. One species is found in the St. Cassian rocks and also in the Muschelkalk; one in the Bunter sandstein and the Muschelkalk, and of the remaining eight species, three belong certainly and five probably to the Muschelkalk of the Trias. The Ceratites were therefore considered as characteristic, and belonging exclusively to the new red sandstone formation, and exclusively a European fossil, until a few years ago L. V. Buch, the late great German Geologist, discovered a Ceratites in the cretaceous rocks of the Caucasus, which he called Ceratites Syriacus. No species of the Ceratites has heretofore been found on the continent of America.

About three years ago, in summer, 1853, when I was in the State of Alabama, I examined the bed of the Tuscaloosa or Black Warrior River, near the little village of Erie in Greene County, about 12 miles above the confluence of the Tombigbee and Black Warrior rivers, between the 32d and 33d degrees of north latitude, where the river cuts through the lowest part of the cretaceous formation of our southern States, corresponding most probably to the Turonien of D'Orbigny. The bluff of the river consists here entirely of different strata of green sand, divided in several parts by thin seams of a hard conglomerate of peroxide of iron and green sand, and is from 50 to 95 feet high. The river was then unusually low, and more than one-half of its bed perfectly dry and accessible.

On a sand-bank in the middle of the river, immediately below a very deep place, were found, among other evidently cretaceous fossils, three specimens of a small Ammonite, which, after a careful examination, I immediately recognized to be a species of Ceratites, in which opinion I was later confirmed by as high an authority as Prof. L. Agassiz, of Cambridge, who pronounced it to be a new species of Ceratites, closely allied to Ceraticus Syriacus of L. V. Buch.

This being the first Ceratites ever found on the continent of America, I propose for it the name of

Ceratites Americanus.

Testa compressa, disco unda dissimili, paulisper densata ad aperturam, valdeque attenuata ad apicem, et propinqu sublime accrescens a medio, usque ad aperturam; adsactibus duabus, secundo amplicate primi ventre, et tangunt in stratum posito; apertura semi-ovata; loborum numero, in vita, sex, totidemque ad line, loborum ventrali attamen nonnulli indistincto; lobis dentibus tribus munitis, qui magnitudinis causa etiam lobi secundarii vocarentur; septis angulatis direo retrorsum flexis; siphunculo dorsali.

The two specimens, still in my possession and here represented, are both very
much water-worn. They are both flat and discoid, No. 2 more so than No. 1; both taper very much towards the apex, and increase especially rapidly from the middle towards the aperture. Both consist of at most two whorls, the dorsal part of the second being more than half overlapped by the ventral part of the first, and lying, as it were, in a groove. They have apparently six lobes and as many saddles, the lobes being provided with three teeth, which, on account of their size, might rather be called secondary lobes. The septa are angular and bent backwards on the back. The siphuncle is dorsal, as seen on fig. A, where it is broken out and has left a groove. In No. 1 the latter half of the second whorl is broken out and a hole is left. The size of both specimens is very nearly the same. No. 1 measures in length 58.3 millimetres, in width 50.8, and in thickness 31. No. 2 measures in length 51.8 millimetres, in width 46, and in thickness 26.

No. 2.

No. 1.

No. 2.

I was first inclined to recognize in the three specimens two different species, but the somewhat different appearance seems to have been caused by the attrition which they have undergone.

The question arises here, from which formation these Ceratites come? The circumstances that they have been found in the lower cretaceous formation, that carbonate of lime is the fossilizer, and that they are closely allied to Ceratites Syriacus of the cretaceous formation of Asia Minor, are indeed strong reasons to pronounce them to be cretaceous fossils, but this seems to me still somewhat doubtful.
When I first saw them, I was not aware that Ceratites had ever been found in any other but in the Triassic formation, and the discovery astonished me in a high degree. I was indeed induced to believe that they indicated the presence of the Trias somewhere not very far from the place where they were found, until I saw that L. V. Buch found Ceratites in the cretaceous rocks.

It is true the specimens alluded to were found on a sand-bank in the Black Warrior River, where it cuts through the lowest part of the cretaceous formation of our southern States, just below a very deep place of the river; but are they not marked out of a formation underlying the upper secondary and reached by the water of the river in that deep place? If these Ceratites were a fossil belonging to the cretaceous formation, even to the very lowest part of it, specimens of them must and would have been found before and after my finding them. There are a great many places in Alabama, as well as in Mississippi and Tennessee, where the lower part of the cretaceous rocks crops out, where it is cut through by rivers and gullies, and where it has often and carefully been examined and searched for fossils, but never, neither before nor afterwards, have specimens of Ceratites been found.

I have myself carefully examined a good many such outcrops in Alabama, even the one where the Ceratites were found; as State Geologist of Mississippi, and for more than two years engaged in the geological survey of this State, I have examined very nearly all the outcrops of the lower cretaceous formation, which is here still better developed than in Alabama; I have made it a particular point to search carefully for Ceratites, but never again have I succeeded to find another specimen of the Ceratites; nor have I ever heard that any one of the many amateurs that collect fossils has ever seen or found one.

That the above described specimens of Ceratites have been washed out of a formation underlying the cretaceous rocks in Alabama, seems to me the more probable, first, as there is in that State between the carboniferous and cretaceous formation an area occupied by an intermediate, undetermined formation, extending from Autuga County through parts of Bibb, Tuscaloosa and Pickens to Fayette County, which has been laid down in the geological chart of that State of 1849 (by a typographical error, as I understand,) as tertiary, but which, although in many places covered by drifted tertiary sands and clay, is by no means tertiary. It goes under the lower cretaceous rocks and is overlapped by them, is clearly visible, not only in the northern part of the town of Eutaw, but also at Finch's Ferry, on the Black Warrior, in Greene County. What formation this is seems difficult to decide, it being devoid of fossils. It must, of course, be one of the older formations, intermediate between the coal and the lime, and I should not at all be astonished if a careful examination should give the result of its classification among the Poikilitic rocks, to which its variegated clay bears indeed great resemblance. Another reason which renders it more probable that the Ceratites have been worked out of a formation underlying the cretaceous formation, is that nearly all the Artesian wells in Greene County, in Alabama, contain a great deal of chloride of sodium and give really salt water. It is not very probable that this chloride of sodium, very seldom, if ever, comes from the salt-bearing cretaceous formation.

Examination of the Meteoric Iron from Xiquipilco, Mexico.

By W. J. Taylor.

The meteoric iron from Xiquipilco, Mexico, appears to have been first mentioned in the Gazeta de Mexico in 1784. It is stated there that small pieces of native iron, from a few ounces to fifty pounds in weight, were very numerous, which were sought for by the Indians after heavy rains, who used them for manufacturing agricultural implements.

In a dissertation on metallic meteorites by Prof. W. S. Clark, the following notices of its literature are given: Ann. des Mines t. 2, ser. 1, p. 337. Gazeta de Mexico 1784—85, vol. i., pp. 146, 200. Klaproth Beiträge zur chemischen
To the kindness of W. S. Vaux, Esq., I am indebted for the material for this investigation; Mr. Vaux has in his magnificent cabinet the principal portion of a mass which weighed over ten pounds. It was originally about six inches long, with an average diameter of three inches; the lump was oblong with rounded ends, the whole being covered with a thin crust of limonite.

A cross section cut from this lump has been carefully polished and etched by strong nitric acid, which gives a most beautiful surface of about three and a half inches in length by two and a half in breadth, covered with the greatest complexity of widmannstættian figures which almost defy description.

The surface is crossed by bands about one-tenth to one-sixteenth of an inch in breadth; these apparent bands are cross sections of different planes, as is readily perceived by their different refractive powers.

On changing the position of the specimen those that are a bright silvery-white in one direction, become a dull gray in another, and vice versa.

There are several systems of bands, which preserve a parallelism among themselves and cross other systems at various angles, forming trapezoids, rhombs and triangles. These several fields and their characteristic etchings will be described in detail at some future time. Along the bands or planes thin laminae of schreibersite have been observed, as in other meteoric irons.

Imbedded in one side of the large lump (just described) was a globule of pyrrhine, which looks as if it had been dropped into the iron when it was in a semi-fluid state. This globule appears to have been about an inch in diameter; it was in part decomposed, but a small portion of the mineral was separated sufficiently pure for the determination of its specific gravity and analyses. On dissolving it in hydrochloric acid, thin laminae of schreibersite separated with minute portions of chromic iron.

Through the kindness of Dr. F. A. Genth, I have been permitted to make the following analyses in his laboratory:

Pyrrhotine dissolved in nitric acid, gave

<table>
<thead>
<tr>
<th></th>
<th>Sulphur</th>
<th>Iron</th>
<th>Nickel</th>
<th>Cobalt</th>
<th>Silicon</th>
<th>Phosphorus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
<td>33.76</td>
<td>57.95</td>
<td>6.70</td>
<td>0.56</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99.27</td>
<td></td>
<td></td>
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</tr>
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</table>

No. 2. Dissolved in hydrochloric acid, gave—

<table>
<thead>
<tr>
<th></th>
<th>Iron</th>
<th>Copper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
<td>58.25</td>
<td>0.12</td>
</tr>
</tbody>
</table>

A residue remained, which was dissolved after being treated with hydrochloric acid and chloride of potash; it consisted of—

Copper, 0.12 per cent.

The remainder consisted principally of chromic iron, with a small portion of schreibersite.

The specific gravity was found to be 4.822. The ratio of sulphur to the metals was found to be

Sulphur, 2.102

Iron, 2.066 / 2.301

Nickel and Cobalt, 0.245 / 1.391

It will be seen that the composition corresponds with that of pyrrhotine, considering its formula to be FeS, if we disregard the few impurities which were found with it.

The meteoric iron was first treated in a flask with hydrochloric acid, and the
gas evolved was passed through a solution of ammonia chloride of copper, but not a trace of sulphur could be detected in this manner.

In the 5th supplement to Rammelsberg's Handwörterbuch der Chemischen Mineralogie, this meteoric iron is mentioned as passive, experiments having been made by Prof. Wöhler; but the piece belonging to Mr. Vaux is evidently active, throwing down metallic copper from a neutral solution of its sulphate. This experiment was repeated with great care with confirmatory results.

No. 1 was dissolved in hydrochloric acid, and a slight precipitate was obtained by hydrosulphuric acid, which, on a careful examination before the blow-pipe, was found to be copper with a trace of tin.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Quantity (g)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
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<td>90.72%</td>
</tr>
<tr>
<td>Nickel</td>
<td>-</td>
<td>8.49%</td>
</tr>
<tr>
<td>Cobalt</td>
<td>-</td>
<td>0.44%</td>
</tr>
<tr>
<td>Schreibersite, chromic iron</td>
<td>-</td>
<td>0.38%</td>
</tr>
<tr>
<td>Silicon</td>
<td>-</td>
<td>0.25%</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>-</td>
<td>0.18%</td>
</tr>
</tbody>
</table>

The phosphorus was estimated in a separate portion, which was first oxidized by nitric acid and fused in a platinum crucible with carbonate of soda.

No. 2 was dissolved in nitric acid. It gave—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Quantity (g)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>-</td>
<td>90.37%</td>
</tr>
<tr>
<td>Nickel</td>
<td>-</td>
<td>7.79%</td>
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<tr>
<td>Insoluble residue</td>
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<td>1.91%</td>
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**Description of two new species of Urodèles, from Georgia.**

**By Edward Hallowell, M.D.**

**Sub-Fam. BOLITOGLOSSIDÆ.**

**PSEUDOTRITON MARGINATUS, new.**

*Char.* Head small, depressed, rounded in front; eyes lateral, oblique, not prominent, looking upward and outward; gape of the mouth extending a short distance behind the posterior commissure of the eye; maxillary teeth small, internal nares small and circular; a transverse row of vomerine teeth on each side passing behind the internal nares, continuous with several rows of longitudinal palatine teeth diverging posteriorly, so as to leave a wide interspace in the shape of the letter V reversed; tongue small, circular, bolitoglossal, free at the edges, and supported upon a small central pedicel; body slender, cylindrical; extremities slender; toes 4-5; tail somewhat compressed, longer than body.

*Color.* Dark ash color above, almost black, shaded obscurely with yellow; a lateral band of dusky white margined with black on each side near the abdomen, extending from the anterior to the posterior extremities; under parts dusky white, very minutely spotted or blotched with black.

*Dimensions.* Length of head 3 lines; greatest breadth 2 lines; length of neck and body to vent 1 inch 4 lines, (Fr. ;) length of tail 1 inch 4 lines. Total length 2 inches 11 lines.

*Habitat.* Liberty County, Georgia. One specimen in Mus. Acad. Nat. Sc., presented by Major Le Conte.

**PSEUDOTRITON FLAVISSIMUS, new.**

*Char.* Head of moderate size, rounded above; snout truncate; eyes rather prominent, latero-superior, oblique, looking upward and outward; tongue small, circular, mushroom-shaped, supported upon a central pedicel, the edges free; internal nares rather small, ovoid or subcircular in shape; maxillary teeth minute, sharp-pointed, the points directed backward; vomerine and palatine teeth as in marginatus; body more robust than in the former species, more or less compressed upon the sides; extremities slender; tail compressed, of nearly same length as body, (about a line longer.)
Color. Yellow above, inclining to brown, with very numerous small black spots; under parts of a brighter yellow throughout, without spots.

Dimensions. Length of head 4 lines; greatest breadth 3 lines; length of neck and body 1 inch 2½ lines, (Fr.) of tail 1 inch 5 lines; total length 3 inches 2 lines.

Habitat. With the preceding in Georgia. One specimen in Mus. Acad. Nat. Sc., presented by Major Le Conte, U. S. A.

Contributions to the Ichthyology of the Western Coast of the United States, from specimens in the museum of the Smithsonian Institution.

By Charles Girard, M. D.

Two years have scarcely elapsed since I communicated to the Academy descriptions of various fishes collected upon different points of the Pacific coast of North America. During that period the indefatigable researches of several officers of the U. S. Army, and naturalists attached to the surveys made under orders from the General Government, have brought to light many new and interesting members of that class of animals, and of which I propose now to give a brief account, extracted from final Reports, made to the officers in charge of these surveys.

It has also been deemed advisable to mention such changes as have been made in the generic position of several species previously described, either by me or others, in order to give a more correct idea of the Reports just alluded to.

It will be remembered that while I was engaged in those investigations of our Western fishes, two naturalists, Drs. W. O. Ayers and W. P. Gibbons, both residents of San Francisco, Cal., had (without any knowledge of what I was doing,) described a certain number of species, some of which we already know have proved identical with my own. The law of priority in their publication will decide upon the names to be finally adopted in the nomenclature. So far I have been unwilling to settle upon any identifications without the specimens to go by, in order to avoid confusion as well as complicate the synonymy. Drs. Ayres and Gibbons, both, have shown an earnest desire to furnish me with authentic specimens of the species which they have described, and I am happy to say that from the former I have been favored by a good many up to this day, as will be seen further on.

For reference to the species described by Prof. Agassiz, some of which have appeared in my papers, it is but just to say that such identifications as were attempted by me, were made from the accounts published at that time. As far as genera are concerned I feel confident that no error was committed; in regard to the species I entertain certain doubts which can not be removed by the documents at our command. I have sought to do justice to the subject from the very beginning, and rather than introduce any changes in their present nomenclature I send them before the world as they now stand.

With the above preliminaries I proceed into the subject.

The species formerly described by me under the genus Labrax were found, upon further examination, to constitute a genus by itself, the relationship of which being more those of Serranus than of Labrax, and it is in the vicinity of the former that it ought to be placed in the ichthyic method. From Serranus it may be distinguished by the outline of the spinous dorsal fin, and the relative development of the canine teeth, which are so small as to have suggested the idea that the species belonged to Labrax.

The new genus we will henceforth call PARALABRAX,

and characterise as follow: "General physiognomy that of Labrax, but the first dorsal fin is contiguous to the second as in Serranus. The profile of the body is subfusciform the caudal fin subtruncated or slightly emarginated posteriorly."
The head is subconical, the lower jaw a little longer than the upper, the mouth rather large; card-like teeth upon the premaxillaries, dentaries, vomer and palatines, with a row of small canine teeth along the edges of the jaws. Tongue smooth. Small and homogenous spines upon the outer curve of the preopercle. Two small and inconspicuous spines upon the margin of the opercle. Edge of suborbital, entire; humerus denticulated; opercular apparatus and cheeks covered with scales, smaller on the cheeks than on the opercles. Gill openings continuous under the throat; branchiostegals rays, six in number. Scales minutely serrated posteriorly."

**Paralabrax nebulifer** and **P. clathratus**

are the two species.

Dr. Ayres's *Centrarchus maculosus* is my *C. interruptus*.

A new and interesting member of the group *Trachinidae*, we inscribe into the method under the appellation of

**HOMALOPOMUS**, "The general aspect of which is elongated, the mouth large, the lower jaw longest; upper and lower jaws provided with canine teeth; card-like teeth on the vomer. Palatines toothless; tongue smooth. Dorsal fins separated; anterior, small and subtriangular; posterior, extending mostly to rest of space towards the caudal. Anal fin longer than deep, situated far back. Opercular apparatus spineless and scaly; cheeks smooth and scaleless. Upper surface of head covered with minute scales. Scales covering the body of moderate development with posterior margin entire, and smooth. Gill openings continuous under the head; branchiostegals, six in number."

A single species is known, several specimens of which were examined, all of which were collected at Astoria, Oregon Territory, by Lt. W. P. Trowbridge, U. S. A., to whom I take pleasure in dedicating it.

**HOMALOPOMUS TROWBRIDGE**

has the "snout pointed, the mouth deeply cleft, and the posterior extremity of the maxillaries extending to the vertical line of the posterior edge of the pupil. The eyes are large. The tips of the pectoral fins reach as far as the anterior margin of the anal fin. The color is greyish brown above, and silvery grey beneath."

In the Cottoid group there are glorious additions. In the first place I have had the great satisfaction of identifying, from actual specimens, the *Coltellus asper* of Sir John Richardson, and to describe it comparatively with the other members of the same genus.

Amongst the truly marine representatives I will first introduce a type which seems to bear much closer allinities to the fresh water genera than was anticipated.

In naming it

**OLIGOCOTTUS**, allusion is made chiefly to its diminutive size. We have full evidence that the specimens before us are adults, and consequently have not hesitated in the selection of that name. We are aware, however, that further search might bring to notice other species not quite so small and still of the same generic stamp. On the other hand, the etymology of a name is of but little avail towards elucidating the history of the object it designates. The natural characters of the genus will read as follows: "Head smooth, with the exception of a few spines upon the preopercle and snout. Upper jaw slightly the longest. Teeth upon the premaxillaries, dentaries, front of vomer and palatines. Gill openings continuous under the throat; branchiostegals six. Dorsal fins contiguous. Caudal posteriorly rounded. Insertion of ventrals backwards the base of pectorals. Origin of anal fin in advance of the anterior margin of second dorsal. Skin smooth, lateral line continuous for the whole length of the body."

[June,
OLIGOCOTTUS MACULOSUS.

being the only species known at present, we will characterize it by saying: "that the mouth is moderately cleft; the posterior extremity of the maxillary extending to a vertical line intersecting the pupil. A stantish bicuspid processus on the convexity of the preopercle. Two acute nasal spines. Anterior dorsal lower than the second or posterior. Yellowish brown above, mottled or variegated with blackish: along the dorsal region a series of blotches of a deeper hue: lower half of the sides vermiculated. Abdomen of a bright saffron or yellow hue in the male. Inferior surface of head with traces of black markings; throat and abdomen unicolor, as also the ventrals and anal. Dorsals, caudal, and pectorals transversally barred."

It has been observed on several points of the coast between the bay of San Francisco, Cal., to Puget Sound, W. T. In 1854, a few dried up specimens were taken near Presidio by Lt. W. P. Trowbridge, but their precarious state of keeping did not permit us to classify them. The same was the case with those collected at Fort Steilacoom by Dr. Geo. Suckley. It is but very recently that well preserved specimens, collected by E. Samuels, in Tomales Bay, Cal., having reached us, we have been prepared to determine their position in the ichthyic method.

The fish mentioned by Dr. Ayres under the name of Leptocottus inermis proves to be my LEIOCOTTUS ARMATUS.

Next in order is another and entirely new genus, for which the name of LEIOCOTTUS, has been selected, more particularly in reference to its smooth aspect. Its characters are: "head perfectly smooth; spines upon the preopercle only. Mouth moderately cleft: jaws equal. Teeth upon the premaxillaries, dentaries and front of the vomer; none on the palatines. Barbules upon the maxillaries. Gill opennings continuous under the throat; branchiostegal rays five. Dorsals nearly contiguous upon their bases. Ventral inserted backwards of the base of the pectorals. Caudal posteriorly subtruncated. Skin perfectly smooth, bearing neither prickles nor scales. Lateral line well marked and continuous from head to tail."

The species which has come under my observation has so much of the aspect of Trigla that the specific name of LEIOCOTTUS HRUNDO suggested itself for it." The snout is declivous and rather pointed; the posterior extremity of the maxillary is provided with two or three barbules and reaches a vertical line drawn a little beyond the anterior rim of the orbit. Superior regions blackish brown; abdomen whitish beneath; inferior part of tail yellow."

It was collected by Lt. W. P. Trowbridge, U. S. A. at the island of San Miguel, Cal.

Dr. Ayres' Hemitriprerus marmoratus, is my SCORPENICHTHYS MARROMATUS,

Clypeocottus robustus of the same author, is my ASPICOTTUS BISON.

The species described by me as Scorpanichthyis lateralis was subsequently referred by Dr. Ayres to a new genus of his under the denomination of Calycicliipidopnus lateralis, together with another species at that time unknown to me, under the name of C. spinosus. On a former occasion Dr. Ayres had announced the presence of two species of hemilepidotii in the Bay of San Francisco, for which he proposed the names of II. nebulosus and II. spinosus. My Scorpanichthyis lateralis was subsequently identified by himself to his II. nebulosus, and it was then that the genus Calycicliipidopnus appeared with two species: C. spinosus and C. lateralis:

C. spinosus I have carefully examined, and I am satisfied that its proper place is in the genus Hemilepidotus, as characterised by Cuvier. In order, however, to furnish reliable data to go upon, I must be permitted to offer a diagnosis of that genus as it now stands.
Hemilepidotus.

"Head rough and prickly, with membranous flaps on various parts; opercular apparatus spinous. Mouth moderately cleft; jaws equal. Teeth upon the premaxillaries, dentaries, front of vomer and palatines. Gill openings separated beneath an isthmus; branchiostegals, six on either side. Dorsal fins contiguous. Caudal rounded posteriorly. Insertion of ventrals opposite the base of pectorals. Longitudinal bands of scales alternating with naked areas; scales themselves finely denticulated."

Hemilepidotus spinosus

"has membranous flaps on the upper surface and sides of the head. The eyes are quite large. The posterior free extremity of the maxillary extends to a vertical line drawn at the posterior rim of the pupil. Dorsal band of scales composed of six rows or series; lateral band of seven, five below and two above the lateral line. Ground color dark reddish brown, with darker transverse bands and blotches."

Specimens labelled by Dr. Ayres were collected in the Bay of San Francisco, Cal., by Dr. John S. Newberry; others in Humboldt Bay, by Lt. W. P. Trowbridge, U. S. A.

So much for Calyceilepidotus spinosus: it is a true Hemilepidotus.

As to C. lateralis, the second species of Dr. Ayres' genus, a careful study has convinced me that it is not specifically identical with my Scorpenichthys lateralis. Subsequent investigations of more perfect specimens have convinced me of the propriety of removing the latter from the genus Scorpenichthys, and since I had no specimens of Hemilepidotus nebulosus, Ayres, (Calyceilepidotus lateralis, Ayres, non mili) by which to determine its generic affinities, I have been compelled to institute, under the name of

Artedius,

a new genus to receive two species, the one above referred to, and formerly described by me as Scorpenichthys lateralis, and another which so far had remained unnoticed. The following are its characters: "Head rough, with supraorbital membranous flaps. Spines upon the preopercle only. Mouth moderately cleft; lower jaw slightly overlapped by the upper. Teeth upon the premaxillaries, dentaries, front of vomer, and palatines. Gill openings continuous under the throat; branchiostegals five on either side. Dorsal fins separated. Caudal subtruncated posteriorly. Insertion of ventrals opposite the base of the pectorals. A dorsal band of pectinated scales."

Artedius lateralis.

Scorpenichthys lateralis, Grd., has the "surface of the head smooth. Preopercle armed with a flat bicuspid spine. Band of dorsal scales narrow, originating at the thoracic arch and extending to the terminus of the base of the second dorsal. Anterior margin of first dorsal situated in advance of the thoracic arch. Deep chestnut brown above, maculated with yellowish; beneath yellowish."

Specimens collected at San Luis Obispo, Cal., by Lt. W. P. Trowbridge, U. S. A.

Artedius notospilolus

is characterised by the "surface of the head being subtuberculous and scaly. Preopercle armed with a flat tricuspid spine. Anterior margin of first dorsal situated in advance of the beginning of the dorsal band of scales, which is broad and extends from the thoracic arch to near the terminus of the base of the second dorsal. Olivaceous, with a series of saddle-like black patches. Abdomen dull yellow or white."

Collected by E. Samuels in Tomales Bay, Cal.

Sebastes ruber, Ayres, is my Sebastes rosaceatus.

Sebastes nebulosus, Ayres, is my Sebastes pasciatus.

Sebastes variabilis, Ayres (not Cuvier) is my Sebastes auriculatus.
Sebastes melanops,
is a species hitherto undescribed, and which we thus characterise: "Upper surface of head generally spineless. Posterior extremity of maxillary reaching a vertical line drawn interiorly to the posterior rim of the orbit. Origin of dorsal fin opposite or else slightly in advance of the base of the pectorals. Upper regions blackish brown; sides brownish, spotted with black; beneath greyish brown."

Specimens were collected at Cape Flattery, W. T., and at Astoria, O. T., by Lt. W. P. Trowbridge, U. S. A.

A fine addition to the group of Heterolepids instituted in 1854 with two genera, Chirus and Ophiodon, is the new genus Oploptoma, characterised by an "elongated body, membranous flaps above the orbits, and spines on the preopercle. The snout is conical; the mouth large, and the lower jaw the longest. Canine teeth upon the premaxillaries, dentaries, front of vomer and the palatines. Gill openings continuous; branchiostegals six on either side. Dorsal fins contiguous. Caudal posteriorly subcrescentic or else concave. Insertion of ventrals a little posterior to the pectorals. Body covered by small cycloid scales."

Oploptoma pantherina, the only species hitherto known, has the "upper surface and sides of the head granular. The preopercular spines are few, small and blunt. Posterior extremity of maxillary extending beyond the orbit. Origin of anterior dorsal situated in advance of the convexity of the preopercle. Scales extending over the base of both the caudal and pectoral fins. Blackish brown above, reddish brown beneath. Dorsal and lateral regions spotted with black."

Specimens of this species were collected by Lt. W. P. Trowbridge, at Cape Flattery, W. T.

Gasterosteus serratus, Ayres, I have investigated carefully, and found specifically distinct from its congeners.

I describe another species akin to it and G. plebeius.

Gasterosteus intermedius having the "body plated all over; the peduncle of the tail keeled. Dorsal spines three, moderate in development and inconspicuously serrated upon their edges; anterior one inserted immediately behind the base of the pectorals. Insertion of ventrals under the second dorsal spine; their own spine being serrated upon both edges, more conspicuously above than below, and their extremities not extending as far as the tips of the ossa innominata. Posterior margin of caudal concave."

Inhabits Cape Flattery, W. T., where it was collected by Lt. W. P. Trowbridge, U. S. A.

Finally, under the name of Gasterosteus pugetti,

I introduce a new species in which the "body is only plated in part. Dorsal spines three, slender, not serrated upon their edges; anterior inserted immediately behind the base of pectorals. Insertion of ventrals in advance of the second dorsal spine; their own spine being slender, crenated upon its edges and extending beyond the tips of the ossa innominata. Posterior margin of caudal slightly emarginated."

Fort Steilacoom, Puget Sound, W. T.; collected by Dr. Geo. Suckley, U. S. A.

Leiostomus lineatus, Ayres, has come within my observation. The species is characteristic. Specimens of it were brought home by Dr. J. S. Newberry.

Leptocephalus gracilis, Ayres, I have likewise examined on specimens collected by Dr. Newberry and labelled by Dr. Ayres.
Gobius newberryi

is a small and very graceful species of Goby, hitherto undescribed. The average size of many specimens observed is about two inches or less, the head forming the fourth of the total length. The first dorsal is contiguous to the second at its base, and is considerably lower than the latter. The mouth is deeply eleft, the posterior extremity of the maxillary extending to a vertical line passing posteriorly to the orbit. The origin of the anal is situated a little behind the anterior margin of the second dorsal: both fins terminate evenly, as far as concerns the tips of the posterior rays. The caudal forms the fifth of the total length. The ground color is olivaceous, but the upper regions appear blackish with isolated spots of the ground color; the inferior regions are unicolor. *Atherina storeri, Ayres*, is my *Atherinospis Californiensis*.

Rhacochelus toxotes, Agass., was identified on a specimen collected by E. Samuels in Tomales Bay.

Hysterocephalus traski, Gibbons, could be recognized on a specimen collected at Fort Reading by Drs. J. F. Hammond and John S. Newberry. Another specimen from the same locality had no irregular transverse bands of black, but was almost unicolor.

Another species of viviparous fish,

Embiotoca argyrosoma,
is easily distinguished from its congener by the brilliant argentine tint of its entire body, though made a little darker along the dorsal region by a greyish or pinkish hue. The general form is elongated; the head rather small, subcircular, rounded anteriorly, and contained four times and a half in the total length. The caudal is deeply forked. The posterior extremity of the anal extends a little more posteriorly than the dorsal. The tips of the pectorals reach a vertical line passing beyond the origin of the anal. Specimens were collected at San Francisco, Cal., by Lt. W. P. Trowbridge, U. S. A.

Osmerus elongatus, Ayres, has been collected at San Francisco, Cal., by Dr. John S. Newberry. The specimens were identified by Dr. Ayres.

A most important (I was almost going to say unexpected) discovery of a white fish was made by the party on the R. R. Survey of California and Oregon, commanded by Lt. R. S. Williamson. And since it is different from its hitherto known congener, we will call it *Coregonus williamsoni*,
as commemorative of that Survey. Its head is rather small, being contained about five times in the total length, which measures eleven inches. The mouth is very small and the posterior extremity of the maxillary does not extend as far back as the anterior rim of the orbit. The scales are large; eighteen rows of them may be counted between the anterior margin of the dorsal and the insertion of the ventrals: nine above the lateral line, and eight below it. The lateral line, itself, is perfectly straight. The caudal fin forked as usual. The pectorals are rather small. I have alluded to the color in saying it was a white fish; add to it a bluish grey hue along the back. It was collected by Dr. Newberry in the Des Chutes river, a tributary of the Columbia.

In adding a second species to the genus Platichthys, the diagnose of this genus must be modified so as to read: "eyes on either the right or left side," for

Platichthys umbrosus,

which is the new species referred to, has its eyes on the right, whilst in the species formerly described, they are on the left. It can also readily be distinguished from its congener in having the body completely covered with scales, on the surface of some of which prickles or asperities are observed. The specimens before us measures seven inches and a half, is of a uniform blackish brown hue on the right side and light brown on the left. It was collected by Lt. W. P. Trowbridge, U. S. A., at Cape Flattery, W. T.
I have likewise a second species to add to my genus Pleuronichthys, taking this opportunity of correcting a lapsus linguae which occurred in the diagnosis of its generic characters: "teeth very inconspicuous, occupying the colorless side of the jaw." Instead of both sides of the jaw. That this was a mere accident will appear obvious by reading the characters given to Parophrys, in which an allusion is made to the true state of things in Pleuronichthys.

**Pleuronichthys guttulatus,**
appears to be a smaller species than its congener; it is also deeper, less elongated, hence more of a subcylindrical general form. The eyes are situated on the right side. The origin of the dorsal fin is not quite even with the anterior margin of the orbit, and in that respect the generic diagnosis will undergo a slight modification. The largest specimens observed measure a little over three inches. The ground color appears greyish black, over which are scattered light spots appearing like as many drops irregularly dispersed. Specimens were collected in Tomales Bay by E. Samuels.

A specimen of *Ophidium,* in a too precarious state of preservation to be determined specifically, was found by Lt. W. P. Trowbridge, at S. Farallones, near San Francisco. Another was collected by Dr. Suckley at Shoalwater Bay, W. T., apparently of the same species.

We have also to mention a Sandlaunce, under the name of

**Ammodites personatus,**
the general aspect of which is shorter than its congeners, although the form and outline of the body are not materially different. We perceive no teeth on the palate. The posterior extremity of the maxillary extends to a vertical line which intersects the anterior rim of the orbit. The origin of the dorsal fin is situated anteriorly to the tips of the pectorals. The base of the caudal fin is black. Specimens were collected at Cape Flattery, W. T., by Lt. W. P. Trowbridge. U. S. A.

**Sygnathus californiensis,** Storer,
was received from Monterey, Cal., through the care of A. S. Taylor. The specimen is somewhat imperfect; it is the largest of those which we have examined from the Pacific coast.

**Acipenser acutirostris,** Ayres,
was brought home by Dr. Newberry, the specimen having been labelled by Dr. Ayres in San Francisco, where the specimen was procured.

**Acipenser medirostris,** Ayres, was received in the same manner as the preceding.

**Acipenser transmontanus,** Rich., from the Columbia river, has been collected by Dr. Suckley.

We conclude by referring to a ray of a remarkable genus,

**Rhinoptera vespertilio,**
which was caught in Tomales Bay, by E. Samuels. The specimen before us measures nineteen inches and a half from the extremity of the mouth to the tip of the tail, six inches and three quarters being the length of the body and head together. The width from the tip of one pectoral fin to the other is twelve inches. There is a small dorsal fin situated upon the anterior portion of the tail, followed by a flattened spear shaped spine, serrated upon its edge. The tail is very attenuated, flagelliform, tapering into a filiform extremity. The cephalic region is as long as the rest of the body. Its anterior outline is rounded. The eyes are very prominent and somewhat raised above the surface of the head. The respiratory apertures, five in number are transversally elongated and arranged upon an open curve. The lips are fringed. The color is of an uniform bluish slate above; dull whitish beneath.
Mr. Ord, on behalf of the Committee appointed to procure subscriptions to the Wilson Monument Fund, reported that he had received and transmitted in the name of the President and Members of the Academy, the sum of $280. From persons not members, he had received and transmitted the sum of $35. The report was adopted and the Committee discharged.

Mr. Cassin, on behalf of the Committee appointed to prepare a correct list of the Correspondents of the Academy, reported progress and requested a continuance; which request was granted.

The Corresponding Secretary presented his report for the last month.

**ELECTION.**

Dr. Charles S. Boker, Mr. John McAllister, Jr., and Dr. Samuel S. Garrigues, all of Philadelphia, were elected Members.

Dr. Morris* stated that Alexis St. Martin, on whom Dr. Beaumont performed his celebrated series of experiments, is now in town, and has been submitted to some experiments at the Pennsylvania College by Dr. F. G. Smith, in the presence of a few physicians. On Monday last, after breakfasting on bread and butter and coffee, he partook at 10½ A.M., of beefsteak; at the expiration of two hours the fluid contents of the stomach were withdrawn by means of a catheter. They had a decidedly acid reaction, but whether from chlorohydric or lactic acid, I was unable to ascertain from the small quantity forwarded to me for examination. The meat was rapidly being converted into chyme; small floculi floated in the fluid and collected at the bottom, much paler than natural. On being subjected to the microscope, the cellular tissue had nearly all disappeared, while the muscular fibres exhibited all stages of disintegration; some were found nearly of the usual color, some paler and with the transverse striae beautifully marked. As the latter became less evident, longitudinal striation exhibited itself, while a minute punctation took the place of the transverse striae. As the digestive process advanced, the whole fibril became granular, but the longitudinal striation remained as long as there was any evidence of the structure. This goes to confirm the view of the minute anatomy of the muscles maintained by Kölliker, in opposition to Todd and Bowman's disc theory. The nuclei of the ruptured gastric cells, epithelium from the mouth, esophagus and stomach, with numerous fat granules, completed the microscopic appearances. This morning, at 10½ A.M., he partook of bread, and the fluid being withdrawn as before at the end of two hours, presented the following appearances: The supernatant fluid resembled a starch solution, but on close examination gave the faintest possible evidence of starch by the iodine test, which I am disposed to regard as due mainly to the dextrin present. Trommer's test gave abundant proof of the presence of the latter, or of grape sugar, or both, and also indicated by the purplish hue of the liquid, on the addition of sulphate of copper and potassa to the fluid, the presence of a protein body. The remnants of the bread, fully disintegrated, subsided to the bottom, and showed abundant evidence of starch. So far as this experiment goes, it confirms the views generally held as to the action of the saliva upon amylaceous bodies, in contravention to those advanced by Lehmann, as to the active part played by the intestinal fluid (the secretion of the intestinal mucous membrane) in digestion. The greater part of the bread had disappeared, giving place to grape sugar, in consequence of the almost momentary action of the saliva, and leaving mainly the function of absorption to be performed by the intestinal mucous membrane.

*This communication being mislaid, could not be introduced into its proper place, under date of May 6th.
July 1st, 1856.

Dr. J. Carson in the Chair.

A letter was read from Rudolph C. Burlag, Consul of the Netherlands, dated New York, June 26th, 1856, enclosing a letter from The Society for the Success of Drowned Persons, of Amsterdam, dated March 21st, 1856, transmitting their publication acknowledged this evening.

Dr. Uhler remarked, that the specimen of Deweylite presented by himself this evening, has exactly the composition of the precious serpentine and resembles chaledony.

On leave granted, Dr. Rand moved that the Committee on Mr. Girard’s paper, entitled “Contributions to the Ichthyology of the western coast of the United States,” be allowed to present their report. The motion was adopted. The Report of the Committee in favor of publication in the forth-coming number of the Proceedings, was then received and adopted.*

July 8th.

Dr. Bridges, Vice President, in the Chair.

Letters were read—

From Dr. E. K. Kane, acknowledging the receipt of the special vote of thanks of the Academy.

From H. G. Bronn, dated Heidelberg, 5th January, 1856, acknowledging the receipt of the Journal of the Academy, (N. S. Vol. iii., No. 1,) and a copy of Dr. Leidy’s paper on the Extinct Sloth Tribes of North America; also transmitting donations.

From the Zoologische Botanischen Verein of Vienna, dated 12th December, 1855, transmitting donations.

From the Imperial Society of Naturalists of Moscow, dated March 29, 1856, acknowledging the receipt of the Proceedings, (Vol. vii., No. 1,) of the Academy.

A paper was presented for publication in the Proceedings, entitled “On a new Genus and Species of Urodela, from the collections of the U. S. Exploring Expedition, under Com. Charles Wilkes, U. S. N., by Charles Girard, M. D. ;” referred to a Committee consisting of Mr. Cassin, Dr. Brinton, and Dr. Bridges.

Mr. Lea presented for publication in the Proceedings, a paper entitled “Description of fifteen new species of Exotic Melaniana, by Isaac Lea;” referred to a Committee consisting of Mr. Vaux, Dr. Leidy and Mr. Gliddon.

Dr. Leidy mentioned that the skin of the Musk Ox, deposited by Dr. E. K. Kane, the skeleton of an Owl, presented by the same, the skin of the Llama, presented by Dr. Ruschenberger, and the skeleton of the large specimen of Chelonura serpentina, presented by Mr. Tiffany, of Cape May co. N. J., had been mounted and placed in the collection.

* See page 131.

PROCEED. ACAD. NAT. SCI. OF PHILADELPHIA, VOL. VIII. NO. IV. 11
Mr. Ord transmitted a letter from Matthew Barr, dated Paisley, 21st June, 1856, acknowledging the receipt of £64 11s. 7d. as a contribution to the Wilson testimonial fund.

Dr. Leidy stated, that in consequence of the unsatisfactory results of his investigations, which had formed the subject of "A Memoir on the Extinct Dicotylinae of America," from the time of writing that memoir he had been collecting material, both recent and fossil, towards a more positive determination of the number of extinct species of Dicotylinae. The results of his subsequent investigations appear to be as follows:

1. The extent of variation in the characters of the skull, and especially of the teeth, is as great in different individuals of the recent Dicotyles torquatus, as it is in all the extinct genera and species heretofore indicated by Dr. Le Conte and himself.

2. The evidence, so far as it has been derived from osteological characters, appears to refer all the extinct genera and species of North American Dicotylinae, as heretofore indicated, to one single species.

The name of the latter and its synonyma are as follows:

**Dicotyles compressus**, Leidy.

Syn. Platigonus compressus; Hyops depressifrons; Protochoerus prismaticus; Dicotyles depressifrons; Dicotyles costatus, Le Conte. Euchoerus macrops, Leidy.

**July 15th.**

**Dr. Bridges, Vice President, in the Chair.**

A paper was presented for publication in the Proceedings, entitled "New species of Hyla, by John Le Conte," which was referred to a Committee consisting of Dr. Hallowell, Mr. Cassin and Dr. J. A. Meigs.

**July 29th.**

**Vice President Bridges in the Chair.**

The Committee on Dr. Girard's paper, read 8th inst., reported in favor of publication in the Proceedings; which report was adopted.


**By Charles Girard, M. D.**

A species of this group was collected in Oregon by the U. S. Exploring Expedition, showing such a striking external resemblance with *Aneides lugubris*, that upon a first examination we referred it to the latter genus. A closer examination of its structure made us acquainted with an ensemble of characters which has induced us to establish a genus distinct from *Aneides*: by the shape of the mouth, which is linear, instead of being undulating; by the maxillary teeth, which are exceedingly minute, and the disposition of the vomero-palatine teeth, upon a double ogee, instead of an obtuse angled triangle.

**HEREDIA.**

Head subelliptical, broader than the body; snout blunt and rounded, protruding beyond the lower jaw. Cleft of the mouth oblique and rectilinear. Maxillary teeth exceedingly minute, scarcely perceptible. Vomero-palatine teeth dis-

* Trans. Am. Phil. Soc. x, 323.
posed upon a double ogee extending from the middle line of the palate along the anterior inner edge of the orbit. Sphenoid teeth forming two elongated patches. Tongue large, elliptical, attached by an elongated central pedicel, and free upon its posterior third. Eyes large. Limbs slender, anterior ones longest; four fingers; five toes, all free and tapering. Tail subcylindrical, slightly compressed, tapering towards the tip. Skin exteriorly smooth and soft.

**Heredia oregonensis.**—Tail longer than the body and head together. Fingers and toes slender and free, inner one very small. Skin smooth, uniform dark brown above, lighter beneath.

The Secretary read a note from Dr. Wm. S. Zantzinger, dated 29th July, 1856, stating that he was about to remove from the city, and consequently tendered his resignation as Librarian of the Academy. The resignation was accepted.

**Election.**

Baron John William Von Müller, of Stuttgart, was elected a Correspondent, and Mr. Alfred Cope and Dr. Wm. H. Gobrecht, both of Philadelphia, were elected members of the Academy.

**August 5th.**

Vice President Bridges in the Chair.

Dr. Hallowell presented for publication in the Proceedings, a paper entitled "Notes on the Reptiles in the collection of the Academy of Natural Sciences of Philadelphia, by Edward Hallowell, M. D.;" also a paper entitled "On several new Reptiles in the collection of the Academy of Natural Sciences of Philadelphia, by Edward Hallowell, M. D." Both these papers were referred to a Committee consisting of Dr. Leidy, Mr. Cassin and Mr. Schafhirt.

Dr. Hallowell exhibited numerous specimens of the larvae of Bufo Americanus. These were caught by Dr. Leidy on the 16th of June, along the banks of the Schuylkill, near Philadelphia. They are nine lines in length, including the tail, of a slate color above, with dark colored spots; the under parts are whitish mingled with gray. The reason why the tadpoles of the toad are not more often seen, is probably on account of their small size. Specimens of the perfect animal were also exhibited; these were six lines in length, of a grey color above, with numerous small dark colored spots, containing each one or more minute reddish colored ones; these smaller spots were also distributed over the body; under parts whitish; the perfect specimens were found July 7th, 1856, among stones quite close to the river.

Dr. Hallowell also exhibited a number of specimens of Rana halecina, Kalm, found in the neighborhood of Philadelphia, both male and female. The females appear to be of a somewhat lighter color than the males, and have fewer spots. The latter are all provided with a vocal sac, one on each side, communicating with a small circular opening, not quite a line in diameter, beneath the lower jaw near its angle, nearly opposite the eustachian foramina.

Duméril and Bibron, in their Erpetologie Générale, tom. viii., p. 353, remark, that in comparing the Rana esculenta of Europe, and the Rana halecina, the first thing to be observed is, that the Rana halecina is not provided at the angles of the mouth with those slits which permit the males to extend their vocal sacs,
which is the case in the common frog of Europe. Dr. Holbrook also states, in presenting the distinctive characters between the two animals, that in Rana halecina "there are no openings on the sides of the jaws, at the angle of the mouth, out of which the vocal vesicles pass when distended with air, as in the Rana esculenta." So far from this being the case, it is the only frog in the United States which appears to possess the sexual characters above mentioned. Both authors quote among the synonyms of halecina, the Rana utricularia of Harlan, which is the male halecina with distended vocal vesicles. The error has arisen from the fact, as stated to me by Dr. Holbrook, that the males of a species found in the Southern States resembling the halecina, do not possess the vocal vesicles. We have lately received from Florida a male specimen, found by our fellow member, Mr. Ashmead, in a sulphur spring, near the St. John's River, about three hundred miles from Key West, which is totally destitute of these vesicles. It resembles very much the halecina, but differs from it, in having a more acute snout, with a much more slender body and extremities; the general color is darker, the black spots more numerous, and the markings upon the thighs are different; it should be remembered however, that this description is based upon a single specimen. A more important character exists in the presence of a broad and very distinct and well marked row of pores along the upper part of each flank, in the true halecina, and their presence also above the orbits, upon the back part of the head and neck, and various parts of the body; these all appear to be wanting in the Southern species. Duméril and Bibron very consistently place the animal they describe in the second division of the Ranidae, including those "without pores about the neck, upon the belly, and none upon the flanks." We do not observe, however, in the specimen before us, that the thumbs are decidedly truncate.

We would propose the name of Rana oxyrhynchus for the Southern species.

**Rana oxyrhynchus, Nob.**

*Char.* Head narrow, acute, longer than broad; body and extremities slender, the posterior quite long; four or five palatine teeth on each side, very distinct, between the internal nares; the patches near to each other, but a considerable distance from the former; tympanum rather small; eustachian foramina of moderate size; tongue narrow; scarcely a trace of webs to the anterior toes; posterior reaching just beyond the proximal extremity of the third phalanx of fourth toe; third finger the longest; fourth toe much longer than either of the others; thumbs not remarkably swollen at their base; subarticular tubercles not very distinct; no rows of pores upon the sides, and none visible upon the head or other parts of the body.

*Color.* Dark olive, inclining to black above; two black bands on each side reaching from the eye to the extremity of the snout; a narrow white band extending from the latter on each side beneath the tympanum, in contact with it, and terminating just above the shoulder; another narrow white line, the cuticle here being slightly elevated, passing from the posterior margin of the eye to the upper part of the thigh, near the middle; two dark oval spots upon the head between the eyes, and upon the back; fifteen or sixteen black oval spots, each surrounded by a narrow white margin, between the lateral dorsal vitæ; anterior extremities black spotted above; posterior presenting upon their upper surface several transverse bars of black margined with white, the posterior surface mottled with the same colors; legs and tarsi spotted with black; ground color greyish above; sides of body greyish, marbled and spotted with black and white spots and markings; under surface of animal white throughout; (from a specimen in spirits.)

*Dimensions.* Length of head 11 lines; greatest breadth 7; length of head, neck and body 1 inch 10 lines; length of thigh 1 inch; of leg 1 inch 1 line; of tarsus and foot to extremity of largest toe 1 inch 7 lines; total length 5 inches.

*Habitat.* Florida.

It is a subject of doubt, whether the animal figured in Prof. Holbrook's work be the true halecina or not; for in his description he says "a second line of yel-
lowish white extends from the nose to the shoulder; the latter is less extensive in the male animal, ending at the vocal sac"—Vol. iv. p. 91. And yet, at the end of the chapter on Rana halecina, it is stated as above mentioned, that "there are no openings at the sides of the jaws, at the angle of the mouth, out of which the vocal vesicles pass when distended with air." Except that the sacs are not represented, the figure would correspond sufficiently well with the R. halecina of Kalm. There can be no doubt that the R. esculenta (R. viridis, Roezl, fluvialtilis, Rondeletius) is different from halecina, although resembling it very much.

One of the most important differences consists in the presence in the former, upon the back, of numerous tubercles, each penetrated by one or more pores, giving it a somewhat toad-like appearance; another is the absence in the esculenta of the conglomerated pores upon the neck and other parts of the upper surface of the animal. Of the latter we have at least fifty specimens in the collection of the Academy.

On leave granted, Mr. Cassin offered the following Preamble and Resolutions, which were unanimously adopted:

Whereas, The resignation of William S. Zantzinger, M. D., as Librarian of this Academy, has been presented on account of his removal from this city:

Resolved, That in accepting the resignation of Dr. Zantzinger as Librarian, the members of the Academy of Natural Sciences of Philadelphia are deeply sensible of the loss the Society has sustained in thus parting with an esteemed associate, and an efficient and faithful officer and member.

Resolved, That the thanks of the Academy be presented to Dr. Zantzinger, as a testimony of his valuable services as Recording Secretary, Librarian and Member of the Committee on Proceedings.

Resolved, That the Committee on Proceedings and the Publication Committee of this Academy, be directed to present in the name of the Academy complete sets of all its publications, or so much thereof as he may require to complete copies that he may have, and to continue to send the same to him as published, gratuitously.

August 12th.

Vice President Bridges in the Chair.

Mr. A. H. Smith exhibited a specimen of amygdaloidal trap from Lake Superior, in which the zeolitic matter filling the cavities is crusted and partially replaced by green carbonate of copper.

Dr. Bridges suggested that the zeolitic matter might have been dissolved by a solution of carbonic acid; and the oxide of copper dissolved by the same agent, and, impregnating the soil, would more or less replace the mineral.

Dr. Rand announced the death of J. Madison Rush, late Lieutenant U. S. N., and member of this Academy, in the 35th year of his age. Lieut. Rush was drowned in the Red Lake River, Minnesota Territory, on the 20th of July.
August 19th.

Mr. Cassin in the Chair.


Mr. Cassin also announced the reception of a collection of Mammals, Birds and Shells from Mr. P. B. Duchaillu, who had begun his labors in Western Africa.

August 26th.

Vice President Bridges in the Chair.

The Committees on Mr. Lea's paper, read July 8th; on Major Le Conte's paper, read July 15th; on Dr. Hallowell's papers, read August 5th; and on Mr. Cassin's paper, read August 19th, severally reported in favor of publication in the Proceedings.

Description of Fifteen new species of Exotic Melaniana.

By Isaac Lea.

MELANIA VERRBAUIANA. Testa levì, pyramidatà, crassà, tenebroso-castaneà, spirà valdè elevatà; suturis linearibus; anfractibus planulatis; aperturà subgrandi, ovatà, intus paulisper brunneà; columellà albà incurvàque.


MELANIA FRATERN A. Testa plicatà, pyramidatà, subcrassà, tenebroso-brunneà; spirà elevatà; suturis irregulariter impressis; anfractibus subplanulatis, transversim lineis impressis, regulariter cinctis, costellis verticalibus; aperturà parvà, subovatà, intus albidà; labro acuto; columellà contortà, supernè incrassatà, infernè subemarginatà.

Hab. ———

MELANIA HAINESIANA. Testa levì, pyramidatà, subtenui, cornèa; spirà subelevatà; suturis lineariibus, impressis; anfractibus planulatis, in medio angulatà; aperturà subgrandi, subrhomboideà, ad basim angulatà, intus coruleo-albidà; labro acuto, angulato; columellà albidà tortaque.

Hab. India. W. A. Haines, New York.

MELANIA HOUSEI. Testa levì, acuto-conoideà, tenui, cornèa, flammis longitudinalibus ferrugineis ornatà; spirà subelevatà; acuminatà, suturis impressis, canaliculatísque; anfractibus planulatis, instar duodecim; aperturà parvà, ovatà, intus albidà; columellà albidà tortaque.

Operculo tenebroso-fusco.

Hab. Korat, Takrong River, Siam. S. R. House, M. D.

MELANIA NINGPOENSIS. Testa perplicatà, striis transversis erebris decussatà; conoideà, tenui, pallidì corneà, subdiaphanà; spirà subelevatà; suturis valdè impressis; anfractibus instar novem, subconvexis, inferne transversim costatis; aperturà parvà, subtortundatà, intus albà; columellà albà.

Operculo tenui, pallido-corneo.

Hab. Ningpo, China. S. R. House, M. D.
MELANIA MYERSIANA. Testâ plicâtâ, conoïdeâ, tenui, disphanâ, rufo-corneâ; spirâ subelevâtâ; suturis impressis; anfractibus instar octo, subconvexis, striis exiliissimis impressis; apertura ovâtâ, superne angulâtâ, ad basim unifasciâtâ; labro acuto; columellâ albîdâ. 

Hab. Fegee Islands. S. R. House, M. D.

MELANIA BULLATA. Testâ striâtâ, obtuso-conoïdeâ, valdê inflâtâ, crassâ, nigrà; spirâ curtâ, truncâtâ; suturis paulisper impressis; anfractibus convexis, striis transversis subdistantis, impressis; aperturâ grandi, subovatâ, superne angulatâtâ et incrassâtâ, intus albidâ; labro acuto; columellâ incurvâ tortaque. 

Hab. Brazil. W. A. Haines.

MELANIA LYRÆFORMIS. Testâ plicâtâ, conoïdeâ, subcarrassâ, tenebroso-fuscâ; spirâ curtâ; suturis irregulariter impressis; anfractibus convexiusculis, superne regulariter costâtâ, inferne transversim striatât; apertura parvâ, ellipticât, intus albidât; labro acuto; columellâ ukvâ et incurvâ.

Hab. Manilla. W. Newcomb, M. D.

MELANIA AFFINIS. Testâ crebri-striató, conoïdeâ, subtenui, tenebroso-fuscâ; spirâ subelevâtâ; suturis impressis; anfractibus convexis, ad apicem plicâtâ apertura parvâ, ellipticât, intus albidât; labro acuto; columellâ alvâ tortaque.

Hab. Manilla. W. Newcomb, M. D.

MELANIA AUSTRALIS. Testâ crebri-plicâtâ, attenuâtâ, tenui, nigracant; spirâ elevâtâ; suturis impressis; anfractibus planulâtis, superne angulâtâ, intus tenebroâtâ; labro acuto; columellâ albâ tortaque.

Hab. Manilla. W. Newcomb, M. D.

MELANIA NEWCOMBI. Testâ striâtâ, acuto-conoïdeâ, tenui, corneâ; spirâ subelevâtâ; suturis impressis canaliculatisque; anfractibus instar novem, subconvexis, striis exiliissimis impressis; apertura parvâ, ellipticât, intus albidât; labro acuto; columellâ albîdâ.

Operculo tenebroso-fusco.

Hab. Oahu, Sandwich Islands. W. Newcomb, M. D.

MELANIA MAUENSIIS. Testâ cancellâtâ, inferne transversât striatât, conoïdeâ, acuminatâ, subcarrassâ, cornèâ; spirâ elevâtâ; suturis irregulariter impressis; anfractibus denis, planulatis, ad apicem crebri plicâtâ; apertura grandi, ovâtâ, superne angulâtâ, intus coeruleâ alvâ; labro expanso, acuto; columellâ tortât.

Hab. Maui, Sandwich Islands. W. Newcomb, M. D.

MELANIA BONINENSIS. Testâ cancellâtâ, conoïdeâ, tenui, tenebroso-corneâ; spirâ subelevâtâ; suturis paulisper impressis; anfractibus planulatis, instar septenis; apertura parvâ, ovâtâ, superne angulâtâ, intus albidât; labro acuto; columellâ tortât.

Hab. Bonin Islands. M. Burrough, M. D.

MELANIA RUBIDA. Testâ striâtâ, conicât, crassât, ferrugineât; spirâ subelevâtâ, acuminâtâ; suturis impressis; anfractibus undenis, planulatis, ultimo inflatis, ad apicem carinatis; apertura subgrandi, rotundât, intus rubicundulât; labro acuto; columellâ incrassâtât.


PACHYCHILUS PARVUM. Testâ striâtâ, obtuso-conoïdeâ, crassât, ferrugineât; spirâ curtât; suturis impressis; anfractibus senis, convexis, striis transversis exiliissimis impressis; apertura grandi, subrotundât, intus alvâ; labro expanso, valdê incrassatô; columellâ incrassâtât.

Operculo diaphano, ellipticô.

Hab. Siam. S. R. House, M. D.
Description of a new species of Hyla from Georgia.

By John Le Conte.

During the last spring, whilst I was residing in the lower country of Georgia, it was my good fortune to meet with three specimens of the animal described below. One of them was taken in the water of a pine barren pond, another was found in a cavity of a sand pit, and the third upon a tree in the forest.

This Hyla is remarkable for its size, approaching in this respect to those found in tropical regions. Two of them were of a greenish dusky; the second, who had concealed himself in a hole in the sand, was of a bright pea green, but in the space of half an hour changed to the color of the others, thus showing a complete possession of the faculty of changing color at will, so remarkable in many of the Batrachia.

There yet remain undiscovered and undescribed, in Georgia, three species of this genus, which have as yet eluded my search. The notes of these are remarkably distinct from those of others; I may hereafter be fortunate enough to obtain them.

Hyla GRATIOSA.

Coarsely granulate both above and beneath. Color above varying at the will of the animal from bright green to cinereous and to greenish dusky, with roundish spots or irregular blotches of darker, or speckled with variously shaped dots of the same, all of them with some few small yellow irregularly disposed spots on the back and sides. Beneath whitish, more or less inclining to yellow or orange. Upper lip white, or white varied with green or dusky; lower lip sometimes whitish, at others of the color of the back; in some a white line extends from the upper lip along the side to the insertion of the hind leg, in others the sides are variegated with rounded spots of darker, and no line visible. Iris black varied with golden; tympanum copper-colored, a considerable depression between the nostrils and the eyes. Chin varied with dusky or green, with a slight fold at the bottom; transverse space between the arms smooth, without any granulations. Arms and legs barred, with darker, yellowish or reddish on the under side, the former smooth beneath, the latter granulate on the posterior half; the under side of the posterior half of the thighs is smooth. Disks of the toes very large.

Length of head and body 2-5 inches; humerus 6; antibrachium 6; hand 75; femur 1-2; tibia 1-15; foot 1-6.

Notes on the Reptiles in the collection of the Museum of the Academy of Natural Sciences.

By Edward Hallowell, M. D.

It is not surprising that, among the reptiles of the Academy, which it has required more than forty years to bring to its present although incomplete condition, and which is now for the first time in process of classification and arrangement, there should be many new species that do not appear to exist even in the large European collections. It is possible, however, that some of these may be mere varieties, or they may be already known; but after careful inquiry, I have not been able to make them out as such, and the interests of science, it appears to me, will be best subserved by their publication, even should the account of them hereafter be found to contain a few errors.

Fam. CAMELEONIDÆ.

Lézards Caméléoniens ou Sauriens Chélopodes, Dum. et Bib.

Among the Cameleoniæ in the collection of the Academy, we find two which differ from any of those described in the work of Duméril and Bibron, and in the Memoir of Prof. Aug. Duméry, in the Archiv. du Museum, tome vi., p. 210. Neither are they found in the Catalogue of the Lacertians of the British Museum,
HYLA GRATIOSA, Le Conte

En Stone by Wm E. Hitchcock.

Lith of J T Bowen, Phil
by Mr. Gray. They may be new species, or only varieties of those already determined. Future and more extended observation will settle this point.

CHAMELEO GRANULOSUS, Nob.

This Chameleon is much larger than any of the specimens we have of dilepis or of gracilis from W. Africa, resembling somewhat in size the Ch. pardalis of Madagascar, but it is not so stout.

Char. Outline of head above oval, somewhat narrower in front than posteriorly; lateral crests not meeting in front; central keel very low, hardly perceptible; spaces on each side, between it and the lateral crest, depressed, slightly rounded, occupied with polygonal tubercles of unequal size; supraciliary ridge high, subcircular; back and upper part of tail denticulated, the denticulations larger near the neck, having there the form of a crest; a crest upon chin, throat and abdomen, none under the tail. Scales upon sides unequal, tubercular; four or five rows of flat quadrangular scales between the dorsal denticulations and the lateral tubercles.

Description. The outline of the head above resembles that of Chamaeleo senegalensis, but is less narrow in front; the supraciliary crest is also much more elevated; it differs from gracilis in having a trace only of the bifurcations of the central keel, and in being covered with tubercles and smooth polygonal scales; the scales, both upon the head and sides of the body, are larger and more tubercular than in Senegalensis, the general shape of the head is different, and the present species is considerably larger. It may, however, be only a variety of Senegalensis, or perhaps the male. Color greyish, with a tinge of blue upon the abdomen.

Dimensions. Length of head 1 inch 7 lines; breadth above, between the supraciliary crests, 7 lines; length of neck and body to vent 4 inches; of tail 5 inches; total length 10 inches 7 lines.

Habitat. West Africa. One specimen presented by Mr. Cassin.

CHAMELEO BURCHELLI.

Char. Rather larger than C. dilepis. Outline of head above resembling somewhat that of Chamaeleo pardalis, but less narrow, prolonged, with lateral crests much more depressed and the interspace more shallow; central keel very low, interspace between it and lateral crests occupied with flattened polygonal scales of unequal size; supraciliary ridge low, the lateral crests not in contact anteriorly; scales upon the sides of the head rather large, flattened, with a slight elevation in the centre, polygonal; back denticulated, more slightly posteriorly; a few spines upon neck; throat and abdomen denticulated; scales of body unequal, tubercular, general shape subrubomboidal, interspersed with very small granules.

Color. In specimen examined greenish, with a lateral yellow stripe.

Dimensions. Length of head 1 inch 5 lines; breadth between supraciliary ridges 6 lines; length of neck and body to vent 3 inches 7 lines; length of tail 4 inches 9 lines; total length 9 inches 9 lines.

Habitat. Fernando Po. One specimen presented by Dr. Burtt, U. S. N.

GECKOTIDÆ.

LÉZARDS GECKOTIENS, ou Sauriens Ascalabotes, D. & B.

The family Geckotidæ are divided by Dumeril and Bibron into seven genera—
1. Platydactylus; 2. Hemidactylus; 3. Ptyodactylus; 4. Phylodactylus; 5. Sphaeriodactylus; 6. Gymnodactylus; 7. Stenodactylus. The Geckotians described in this paper belong to the genera Hemidactylus and Gymnodactylus, the former thus characterized:

HEMIDACTYLUS, Cuvier, Gray, Wagler, Weigmann.

Char. Base of the four or five fingers of each extremity enlarged into a disk.
The Hemidactyles are divided by Duméril and Bibron into two sections. 1, the Dactyloperes, with thumbs, as it were, truncated, of which there are two groups—A, with entire subdigital laminae, and B, with divided (echanchréées) subdigital laminae; and 2d, the Dactyloteles, or with five complete fingers narrowed at the point. These are also divided into two groups—A, the D. fissipedes, and B. the D. palmipedes, the latter only having palmed fingers, and comprising but two species, viz.: H. marginatus and H. sebae; the former, or the fissipeds, thirteen, inhabiting Malabar, (triædrus.) Phillipines, Isle Maurice, Bombay, (maculatus,) border of the Mediterranean, Toulon, Rome, Sicily, Greece, Senegal. Trebizonde, Chili, Vera Cruz, Buenos Ayres, (vermiculatus,) W. Indies, Cayenne, Brazil, Carthagena, Martinique, (mabouia,) Ceylon, (Leschenaultii,) Bengal, Bombay, (Coctsei,) S. Africa, Indian Archipelago, Madagascar, Isle of France, Ceylon, Amboina, Java, Timor, Marianne Islands, (frenatus,) Otaheite, (Garnotii,) and Peru (Peruvianus.)

Sect. Dactyloteles fissipedes, D. & B. (Five nails, fingers and toes free.)

**Hemidactylus formosus, nob.**

**Char.** Nine inferior labial plates, the two first the largest; mental plate broad, triangular, immediately behind it two quadrangular plates, much smaller than the mental; ten superior labials; 17 femoral pores on each thigh in the males; a broad dark colored blotch bordered with white, upon the back, extending in the form of a crescent to the posterior margin of the orbit; three broad quadrangular brownish blotches, margined with white, upon the back; tail banded with brown; 9 or 10 rows of circular tubercles on each side of the median line of the body.

**Description.** The head of this remarkable species is large, swollen at the temples, presenting a marked depression along its middle. The nostrils are situated immediately behind the rostral plate, a little above the first labial, and are somewhat triangular in shape; between them, and in contact, are two small narrow plates, behind the rostral, with a smaller one intermediate; the head is covered with small granulations superiorly, the front with tubercles; of the ten superior labial plates, the first is the largest; the inferior margin of the eyelid passes beneath the globe of the eye, the superior above it, and is covered with small granulations and rhomboidal scales, its external border denticulated; body and extremities robust, the former covered with granulations, with nine or ten longitudinal rows on each side of the median line of circular tubercles; elbows and posterior surface of forearms covered with granulations, arms anteriorly and beneath with scales; the fingers and toes are each provided with a nail, free; eight subdigital laminae beneath the fourth finger; no lateral membranes to the body or tail. Chin and throat covered with granulations; abdomen and under part of extremities with quadrangular scales; 17 to 19 pores along the under part of each thigh, in the males, none in front of the anus; tail long and tapering, much longer than body, (1½ inches,) presenting beneath a well-defined central row of hexagonal scales, much broader than longer, bordered on each side with smaller scales irregularly disposed.

**Coloration.** Ground color above dusky white, with a tinge of reddish brown, the brownish red tints predominating; a large dark brown blotch upon the neck bordered thinly with white, with crescentic prolongations reaching to the posterior margin of the eye; three broad transverse brown blotches (3 to 3½ lines) upon the back, bordered with white, and separated from each other by interspaces of about the same length as the blotches; tail banded with brown above and upon the sides.

**Dimensions.** Length of head 7 lines; greatest breadth 7; length of neck and body to arms 2 inches 1½ lines; length of tail 3 inches 4 lines; total length 6 inches 4½ lines.
Habitat. Liberin, west coast of Africa. Three specimens presented by Dr. Savage.

The young is of a very light straw color above, with three transverse bands about two lines in breadth, of a beautiful yellow color; blotch upon neck similar in form to that of adult, but of a beautiful light yellow color; under parts straw color; no minute black points upon the scales.

Dimensions of a young specimen. Length of head 6 lines; greatest breadth 3 1/2; length of neck and body to tail 1 inch 3 lines; (tail mutilated.)

The Gymnodactyles are separated by Duméril and Bibron into two divisions, viz., the Gymnodactyles homonotes, in which the scales of the back are equal, and into Gymnodactyles heteronotes, in which the upper parts of the body are sprinkled with tubercles more or less developed. The species now described belongs to the latter division.

Gen. GYMNODACTYLUS.

Char. Five nails not retractile to all the feet; toes not dilated transversely, nor denticulated upon their edges; the fifth of the posterior toes versatile, or capable of being removed from the others at a right angle. (Duméril et Bibron. tome 3, p. 408.)

Gymnodactylus tenuis, var. ob.

Char. Head rather long, front depressed; nine inferior labial plates, the four first broader than the others; two plates behind the mental, followed by three others in contact with the labials, not so large; ten superior labials; rostral broader than long; two quadrangular oblique plates posterior to it, with a smaller one between them; nostrils circular, their inferior border in contact with the first labial, the anterior margin formed by the quadrangular plates above described, the posterior by a small semi-circular scale, the superior by a small irregularly shaped plate; head covered with smooth granulations, somewhat larger upon the sides; the eyebrow presenting numerous quadrangular scales, forms a complete circle around the eye; auricular openings oval, without denticulations; extremities quite slender; fingers and toes slender, each provided with a small recurved nail, with the exception of the thumb; scales beneath the fingers and toes single; body slender; tail longer than body, tapering to a point, with a row of broad scales beneath.

Coloration. Brownish above, upon the body, lighter beneath; tail yellowish, banded with brown.

Measurements. Length of head 7 lines; greatest breadth 4; length of body 1 inch, (Fr.) of tail 1 inch 2 1/2 lines.

Habitat. Manilla. One specimen presented by Dr. Burroughs.

Fam. VARANID.E.

Lizards Varaniens of Saurians Platynotes, D. & B.

We do not find among the Varanians in the collection of the Academy any which appear to be new, with the exception of the specimen now described, presented several years ago by Dr. Kane. The Museum at present contains the following species, viz., V. niloticus, (10 specimens,) V. Bengalensis, (3 sp.,) V. bivittatus, (4 sp.,) V. Piquii, (2 sp.,) V. arcuarius, (1 sp.) V. ocellatus; (1 sp.) the two last from the Garden of Plants in exchange. The specimen presented by Dr. Kane is the largest, by far, in the collection, and of greater dimensions than those of any of the Varanians, with the exception of the gigantic lace lizard of N. Holland, (Hydrosaurus giganteus, Gray,) described by Mr. Gray in the "Zoology" of the Erebus and Terror, part vi., Feb., 1845, 61 feet in length.
VARANUS OLIVACEUS, nob.

Char. The head is large, pyramidal, broad posteriorly, slender and somewhat obtuse in front; the scales above the orbits are flattened, polygonal, several rows of unequal size, much larger than the rest, and three intermediate between the orbits and in front, still larger; the largest, however, are situated at the extremity of the snout above, and are placed in two transverse rows; the scales upon the back part of the head are more uniform in size; those upon the temples small; the nostrils are two oblique openings placed about midway between the extremity of the snout and the anterior canthus of the eye, their inferior extremity in a line with the latter; scales upon neck and body small, oval, surrounded with two rows of small granules, those upon the back more distinctly carinated, especially in its posterior part towards the tail, where the carinations are strongly developed; the scales upon the extremities are considerably larger than those upon the body, and likewise carinated, the posterior much more distinctly than the anterior; scales upon chin and throat smaller than the others, those upon under surface of extremities smooth; those upon abdomen slender, quadrangular, two lines in length, and about half a line in breadth, in transverse rows; tail circular, much longer than head, neck and body, surrounded with transverse rows of carinated elongate scales, with a slightly developed crest tapering gradually toward the end, where it is somewhat compressed; extremities well developed; fingers and toes provided with strong and powerful claws, third and fourth fingers of nearly equal length; transverse rows of large quadrangular scales beneath the fingers and toes, 16 rows beneath the second finger, 24 beneath the fourth.

Coloration. Ground color olive above, lighter below, with obscure dark colored spots and markings.

Dimensions. Length of head 5 inches, (Fr.) greatest breadth 3 inches; length of neck and body 1 foot 6½ inches; length of tail 5 feet; of arm 3 inches, of forearm 3 inches 4 lines; of thigh 3½ inches; of legs 3½ inches; of longest finger, including nail, 3 inches 1 line. Total length 5 feet 2½ inches; circumference 1 foot 5½ inches.

Habitat. Manilla. One specimen presented by Dr. Kane, U. S. N.

Gen. Remarks. The species above described approaches nearest the Hydrosauroidea giganteus of Mr. Gray, but is destitute of the transverse rows of ocellated spots upon the back, and the spots upon the extremities and tail. In Mr. Gray's species the shields over the orbits are very small and granular, but in the one just described there exist above the orbit several rows of polygonal scales, some of them a line in diameter, succeeded by several larger rows, and between these, four or five rows of broad hexagonal plates.

The Varanidae, divided into two sections by Duméril and Bibron, the terrestrial and aquatic, the former with a round tail and slightly developed crest, comprise two genera only, viz., Varanus and Heloderma, the former containing twelve, the latter but one species (horridum.)

None of this family exist in Europe, and but one is found in America, viz., Heloderma horridum, which inhabits Mexico. Of the others, four inhabit Asia, three Africa, and four Oceanica; of the latter, two New Holland, (Bellii and varius,) one the Japan Islands, (chlorostigma,) one Timor, (Timoriensis.) In Asia there are four species, viz., Bengalensis, nebulosus, Diardii and bi-vittatus. Three inhabit Africa, viz., arenarius, (Egypt,) niloticus, (Nile, rivers of Cape of Good Hope, Sierra Leone, Liberia and Gaboon country,) and ocellatus. (Abysinia and Senegal.) With the exception of bi-vittatus and olivaceus, all these have small scales or granulations over the orbits.

Fam. IGUANID.E.

Sauriens Enotes, Duméril et Bibron.

Gen. Holotropis.

Char. "Head in the form of a quadrangular pyramid; cephalic plates of moderate size, angular, almost equal; a very small occipital; supra-ocular scutella
dilated transversely; the other plates oblong; neck smooth below, folded irregularly upon the sides; an oblique fold of the skin before each shoulder; anterior edge of the ear denticulated; trunk subtrijugal, covered with imbricated scales of medium size, provided with canines, terminating in an acute point, and forming oblique lines converging towards the middle region of the back. A denticulated crest extending from the nucha to the extremity of the tail; the latter long, compressed; exterior edge of the two or three posterior fingers denticulated; no pores either in front of the anus or upon thighs.” (D. et B.) Of this genus two species are described by Duméril and Bibron, viz., Hermannieri and Microlophus; the first with a well developed crest and carinated ventral scales, the second with a very small crest and smooth ventral scales. In the first species the tail is strongly compressed, in the second very slightly. The species described in this paper was deposited in the Museum some time ago by Dr. Morris, and differs considerably from the last of the before-mentioned species, although resembling it in several important particulars, viz., the low crest and smooth ventral scales.

**Holotropis vittatus, Nob.**

*Char.* Crest low, as in Microlophus, much more developed upon the tail; ventral scales smooth; nasal plate quite different in shape from that represented in the figure of Microlophus in de la Sagra, tab. vii., fig. A., (Reptiles,) being almost as broad as long; the nostril is situated immediately at its posterior edge, and not at some distance from it, as represented in the figure above mentioned; the plates upon the head are all *very strongly* carinated; the canines upon the dorsal scales are not situated in the middle, but a little to one side; the five middle rows of abdominal scales larger than the others.

*Coloration.* Probably altered by alcohol; crest greenish; ground color dark green, with reflections of bronze; a large black blotch upon each temple; a whitish colored vitta immediately beneath, extending upon the neck; another beginning above and in advance of the shoulder, extending along the sides of the body as far as the thighs; two transverse parallel bands of black across the chin; the interspaces and under parts of jaw whitish; throat greenish; abdomen, under parts of extremities and tail of a much lighter color than upon the back.

*Dimensions.* Length of head 1 inch, greatest breadth 9 lines; length of neck and body 2 inches 9 lines; of tail 4 inches 4 lines; total length 8 inches 1 line.

*Habitat.* Cuba. One specimen in Mus. Acad., deposited by Dr. Morris.

Ord. **OPHIDIA.**

Gen. **Tropidonotus,** Kuhl.

*Char.* “Jaws long, teeth of the upper forming a continuous longitudinal series, although the last or posterior are generally stronger and longer by nearly one-half, and never channelled; scales of the back, and more often those of the sides, presenting a saillant line or sort of carina; tail of moderate length.”—Duméril and Bibron, T. vii., p. 549.

The Tropidonotes belong, in the arrangement of Duméril and Bibron, to the second section or sub-order of Ophidians, viz., the Aglyphodont or Azimipodid serpents, which are characterized as having recurved, conical, rounded, full and smooth teeth, without canulation at their points, and implanted in both jaws.—T. H. p. 19. Twenty species are described by them, existing in Europe as far north as Norway, N. Africa, Greece, N. America, Seychelles, Java, borders of the Caspian Sea, E. Indies, Japan, Manilla, N. Guinea and Australia. The greater number appear to inhabit N. America. It is very remarkable that, although so numerous in the U. States, they should not be found in the Southern portion of the American continent.

**Tropidonotus annularis,** Nob.

*Char.* Nostrils between two plates; internasals long and narrow; a frenal; one antocular, three postocular plates; eight superior labial, the eye resting on
the fourth; praeanal scute bifid; scales very distinctly carinated, except the three inferior rows, which are smooth; color above ash; beneath yellow, with transverse dark colored blotches, arranged for the most part alternately, extending upon the sides; these blotches extend about half way across the abdomen; the broadest occupy two scales, the most narrow usually but one, and occasionally unite in the middle; 19 rows of scales; 159 abdomen. scuta; 33 bifid sub-caudal.

**Dimensions.**—Total length 2 ft. 6½ inches, (Fr.:) length of tail 3 in. 8 lines.

**Habitat.**—Ningpo, China. One specimen, in excellent preservation, in Mus. Acad., presented by Dr. McCartee.

**Gen. Coronella.**

The genus Coronella, established by Laurenti in 1768, is placed by Duméril and Bibron with the Tropidonotes in the family of Synaceratiers, having “all the teeth smooth, distributed in the same line, but with the last longer, without a free interspace in front of them.” T. vii. p. 525. The genus is thus characterized:

“Serpents with superior maxillary teeth longer and upon the same line with the others, without interval; trunk elongated; tail moderate; scales smooth; snout rounded and a little elongated.” Dum. et Bib., tom. vii. p. 607.

Seven species only are described by them, which inhabit Central and Southern Europe, Cape of Good Hope, (cana,) U. States, (getulus, Sayi, doliata, Californica.) To these may be added one formerly described by me from W. Africa, (Proc. Acad. Nat. Sci.;) C. triangularis, and the present species from China. Others will no doubt be determined hereafter.

**Coronella striata**, Rob.

**Char.** Head short and thick, rostral plate large and slightly prominent, more extended transversely; internasals two in number, somewhat quadrangular, smaller than prefrontals; prefrontals large and quadrangular, frontal broad and short; occipitals large; nostrils between two plates, a long quadrangular plate reaching from the posterior nasal to the eye, with a small quadrangular plate above it, between the eye and the prefrontal; two posterior orbitals; eight superior labials, the four first narrow, the remainder broad, with the inferior margin of the orbit formed by the fourth and fifth; scales smooth and quadrangular, 17 rows; body long and robust; head thicker than neck; tail of moderate length, pointed.

**Coloration.** Head brown above, the margins of the plates edged with white; jaws and throat white; a brown blotch behind the eye extending to near the commissure of the mouth; a broader one upon the occiput bordered posteriorly with white; behind the white stripe on either side, which commences near the posterior extremity of the occipital plate, a large brown blotch; upon the back a row of 47 quadrate brown blotches, the interspaces white; sides spotted with brown; abdomen straw color, immaculate; thirteen blotches upon the tail extending upon the sides, with intervening white bands as upon the body; under part of tail brown spotted.

Abdom. scuta 193; praeanal single; subcaudal 70.

**Dimensions.** Length of head 1 inch 6 lines, greatest breadth 1 inch, (Fr.;) length of body 2 feet 11½ inches; greatest circumference 3 inches 3 lines; length of tail 8 inches. Total length 3 feet ten lines; greatest circumference 3 inches 3 lines.

**Habitat.** Ningpo, China. Two specimens in Mus. Acad., presented by Dr. McCartee, one fully grown, another younger, and the head and neck of a third. In one of these specimens there is a distinct anterior orbital plate, with a long quadrangular loreal between it and the posterior nasal.

**Grytodidae.**

We have also two specimens of Trigonoccephali from Ningpo, China, presented by Dr. McCartee, which correspond with the description of Duméril and Bibron,
and Siebold and Schlegel's excellent drawing of Trigonoccephalus Blomhoffii, and are no doubt the same. 141 abdom. sc.; 39 subcaudal; 21 rows of scales, (25, according to Schlegel.) Total length of one specimen 1 foot 4 1/2 inches, (Fr.) length of tail 1 inch 7 lines; length of another specimen 1 foot 7 inches; of tail 2 inches 4 lines. The tail, therefore, appears to be somewhat shorter than is indicated by the description of Professors Duméril and Schlegel, who make it one-sixth of the whole length of the animal. They state that the Trigonoccephalus Blomhoffii is the only venomous serpent found in Japan.

RANIDÆ.

Among the reptiles recently sent to the Academy by M. Duchaiilu, are four fine specimens of Chamaeleo dilepis, and a large serpent formerly described by me in the Proceedings of the Acad. N. S., Vol. vi. p. 205, (Dendrophis flavigularis.) The only reptiles in the collection of M. Duchaiilu that are not new, are four frogs, all belonging to the same species. Two of this family are already known to the collection, viz., Rana Bibronii, nob. (abundant,) and Hyla punctata, of which we have but one specimen.

RANA·ALBOLABRIS, NOB.

Char. Head triangular, depressed above; snout slightly rounded; eyes prominent; nostrils latero-superior, two lines apart; openings for the internal nares small and subcircular; between them two converging lines of vermiform teeth; eustachian foramina larger than the openings of the internal nares; tongue obcordate, attached in front, free at the sides, notched posteriorly; back more or less granulated; a raised and well marked lateral fold on each side, extending from the posterior margin of the eye to the extremity of the coccyx; tympanum circular, of moderate size, fingers free; subarticular tubercles distinct; base of toe much swollen; toe and first finger of equal length, third about a line longer than the fourth; anterior extremities moderately robust; posterior also webbed, extending to the distal extremity of the antepenultimate phalanx in all the toes except the fourth, in which it extends to the proximal extremity of the same phalanx; subarticular tubercles of toes less developed than those of fingers.

Coloration. Dark brown above, with obscure transverse bars of a deeper color upon posterior extremities; anterior extremities blotched with darker brown; a white stripe extending from the extremity of the snout, beneath the eye, and tympanum as far as the anterior extremity; a small white spot above the shoulder, which appears to be constant, and in several of the specimens a row of smaller white spots along the sides irregularly disposed. In two of the specimens the back presents a marked tinge of olive; the brown upon the side of the head is somewhat deeper than upon the back, resembling in this respect the Rana sylvatica, Le Conte, of which indeed it may be considered the representative in West Africa. Under parts whitish, more or less mingled with brown; in some specimens the brown very greatly predominates; under surface of thighs more or less spotted with brown.

Dimensions. Length of head 9 lines, greatest breadth 8 lines; length of head, neck and body 1 inch 10 lines to 2 inches 1 line; length of posterior extremities 3 inches 2 lines; of anterior 1 inch 3 lines; length of longest toe 9 lines; of longest finger 5½.

Habitat. W. Africa. Four specimens presented by M. Duchaiilu.

On several new species of Reptiles in the Collection of the Academy of Natural Sciences.

By Edw. Hallowell, M. D.

More detailed descriptions, with drawings of several of the species, will be published in the forthcoming volume of the Transactions of the Philosophical Society.
SCINCIDÆ.

Gen. PLESTIODON.

PLESTIODON SINENSE? Duméril and Bibron.

Char.—Head cuneiform, slightly swollen at the temples; nostrils lateral, opening in a single plate; two supero-nasals, broad and contiguous; an internasal, quadrangular, posterior angle acute, enclosed by the fronto-nasals; (in one specimen the fronto-nasal and internasals are all fused into one plate;) a fronto-hexagonal, broader in front; two fronto-parietals; one inter-parietal; two parietals; no occipital; a freno-nasal; a large and broad frenal; two freno-orbital plates; seven superior labials; nostrils pyriform, broader end above, three or four scales upon its anterior border; third and fourth fingers of equal length; body robust; scales hexagonal, 24 rows; tail long and tapering, robust and cyclo-tetragonal at base; posterior extremities much shorter than anterior; second toe much the longest, with 14 distinct transverse scales; palms of anterior and lobes of posterior extremities tuberculated; six praenàl scales, the two middle ones quite large; pterygoid teeth; tongue slightly notched in front, broad and deeply notched posteriorly, squamiform posteriorly.

Color. Olive above, with four dark colored and more or less interrupted bands upon the back and tail, the black spots forming these bands, which are not very distinct, occupying the posterior half of each scale; in some specimens they are much larger than in others; posterior part of scales upon sides marked with black.

Dimensions. Length of head 10 lines, greatest breadth 64; length of neck, body and vent 3 inch, (Fr.) of tail 4 inches 6 lines. Total length 8 inches 3 lines. Circumference of body 2 inches 2 lines; of tail at base 1 inch 7 lines. Another specimen measured 9 inches in length, and the circumference of the apparently older one was 2 inches 8 lines.

Habitat. Ningpo, China. Five specimens presented by B. H. McCarTEE, M.D. Nothing is known of its habits.

Gen. Remarks. This animal is very probably the Plestiodon sinense of Duméril and Bibron, Tiliqua rubriventeris, Gray, (Hardwicke's Illustrations of Indian Zoology,) the descriptions of the scales corresponding, viz., olive bordered with yellow, but they make no mention of the four dotted lines down the back, which, however, are shown in Gray's figure, and they give one more row of scales, viz. 25. We have one specimen from the same locality with three white lines down the back bordered with black, probably the young of the above, and which is perhaps identical with Plestiodon pulcherum, Duméril and Bibron or Tiliqua trivittata, Gray.

Gen. EUPREPIS.

EUPREPIS SURINAMENSIS, nob.

Char. Nostrils in a single plate, near its posterior border; two supero-nasals contiguous; a large and broad internasal, its lateral and inferior margin in contact with the first frenal; two fronto-nasals not contiguous; a fronto more extended in the longitudinal direction, broader in front; two fronto-parietals; a short inter-parietal; two parietals; no occipital; a small naso-frenal; two frenals and two freno-orbital plates; seven superior labials; four supraciliary plates; a transparent disk to the inferior eyelid; 30 rows of scales, those upon back tricarinate; carinae indistinct; of the praenàl scales the two middle the largest.

Color. Olive above, with brown spots, arranged into two longitudinal rows; a brown band on each side from one and a half to two lines in breadth, commencing behind the eye and passing over the ear, losing itself upon the tail; extremities blotched with brown above; under parts silvery white without spots. Total length 7 inches 3 lines.

Habitat. Surinam. One specimen presented by Dr. Hering.
Etrepis microcephalus, nob.

Syn. Scincus ventralis, Peale and Green.

Char. Nostrils in a single plate near its posterior border; two supero-nasals not contiguous; an internasal broader than long, its lateral inferior margin in contact with the first frenal; two fronto-nasals; a frontal very large, broader anteriorly; a small inter-parietal; two parietals, broad and rather short; six superior labials; head short and rather trapezoid; gape of mouth small; tongue slightly notched in front, papillous; auditory opening somewhat triangular in shape, with three small scales in front; 29 rows of scales, with from 7 to 8 carinae, the middle ones wider apart than the others; tail longer than head, neck and body, cyclo-tetragonal at base, tapering gradually to a point. Total length 4 inches 9 lines.

Habitat. Mexico. One specimen presented by Mr. W. H. Keating.

Etrepis dissimilis, nob.

Char. Nostrils in a single plate, near its posterior border; two supero-nasals, slender, contiguous; an internasal, broader than long; two fronto-nasals; a frontal, much more narrow posteriorly; two fronto parietals, longer and more narrow than the fronto-nasals; a short inter-parietal, broader in front; two parietals; a small naso-frenal; two frenals and two freno-orbitars; seven superior labials; a transparent disk to the inferior eyelid; 33 rows of carinated scales, the seven lateral rows more or less tri-carinate, the intermediate ones strongly bi-carinate; tail long and tapering, cyclo-tetragonal at base.

Color. Light olive above, with three distinct lighter colored vittae, commencing behind the occiput and extending down the back upon the tail; under parts white without spots. Total length 7 inches 11 lines.

Habitat. Bengal. Two specimens presented by Dr. Burrough.

Etrepis longicaudata, nob.

Char. Nostrils in a single plate, near its posterior border; two slender supero-nasals apparently contiguous; a large internasal extending laterally upon the sides of the head, where it joins the supero-nasal and the first frenal plate; two fronto-nasals, more or less quadrangular, passing likewise down upon the sides of the head, where they join the first and second frenal; a frontal much longer than broad, narrow behind; fronto-parietals pentangular; one inter-parietal, more narrow posteriorly, and two parietals, larger than the fronto-parietals; no occipital; a small naso-frenal; two frenals and two freno-orbitars; seven superior labials; a transparent disk to the inferior eyelid; 30 rows of scales; those upon back distinctly tri-carinate, those upon sides also tri-carinate, but the carinae are very indistinct; four inferior rows upon sides, and those upon neck smooth; scales upon tail tri-carinate, smooth laterally and inferiorly; tail very long.

Color. Olive green above, with a tinge of green below, except upon posterior half of tail, which as well as the upper part is brown; a broad black lateral band on each side.

Total length 8 inches 4½ lines.

Habitat. Siam. One specimen in Museum of Academy, presented by Dr. Ruschenberger, U. S. N.

Ophiophthalmidæ.

We have fourteen specimens of Ablepharus Peronii. The predominating color in most of these specimens is bronze, mingled with green, with two lateral rays bordered with black, as described by Duméril and Bibron. In some of the specimens, however, the predominating color is brownish above, with two central rows of black spots. Duméril and Bibron observe that this species has a very wide range, being found, according to them, in New Holland, Otaheite, Java, the Isle of France, Morea and Peru.

The entire number of species of Scincoidians or Lepidosaurian Lizards is 100.
these we have about 40, comprising 132 individuals, with many duplicates of several of the species, twenty-one specimens, for instance, of Gongylus ocellatus. They include the following genera, viz., Scincus, Sphenops, Gongylus, Plesi- todon, Eumecces, Euprepis, Lygosoma, Tropidolopisma, Leioloopisma, Cyclodus, Trachysaurus, Ablepharus, Sepes, Anguis and Acontias.

†Fam. BOID.E.


Char. Head small, triangular, depressed above; eyes of moderate size, lateral, supraciliary plates not projecting; anterior half of head covered with well defined plates, posterior with scales; two internasals; two anterior and two posterior frontals, the former passing down alongside of the head to meet the superior labials; nostrils in a single plate; eleven plates upon the top of the head, viz., two internasals, two anterior and two posterior frontals, a vertical and two occipitals, with several small plates between them; a natal, one anterior orbitar and three posterior orbitars; a row of hexagonal scales larger than the others running along the median line of the back; preanal scute and sub-caudal plates single; ventral scutes quite narrow.

Notophis bicarinatus, nob.

Char. Color uniformly yellow, with a tinge of red upon the abdomen; nine superior labials, the sixth higher than the others; dorsal middle row bi-carinate, the rest uni-carinate; carinae quite distinct; 27 rows of scales; 215 longitudinal rows upon body; 41 upon tail.

Dimensions. Total length 1 foot 8½ inches; of tail 2 inches 4 lines, (prehensile.)

Habitat. Cuba. One specimen presented by Gavin Watson, M. D.


By John Cassin.

Genus MELIGNOTES, nobis.

Bill short, thick and conical. Wings rather long; second, third and fourth quills longest and nearly equal. Tail moderate. Allied to the genus Indicator, Vieillot.

The short billed Indicators form a distinct group, easily recognized by the bill, as above described. Heretofore there have been known Indicator minor, Stephens, (I. minimus, Temm.) and Indicator xanthonotus, Blyth, belonging to this group, but in neither of them is the bill so short and thick as in the two species that we are now about to describe.

1. Melignotes conrostris, nobis.

About the size of I. minor and resembling it, but with the bill thicker; wings shorter; legs and toes longer. Bill short, thick, wide and rather suddenly compressed at the tip; nostrils large; third and fourth quills slightly longest. Legs stout; toes long; tail moderate, rounded.

Dimensions.—Total length (of skin) 5½ inches, wings 3½, tail 2½, bill ¾ inch.

Colors.—Head above dark cinereous, every feather nearly black in the middle; back, rump, upper tail coverts and wing coverts with every feather brownish black in the middle and edged on both sides with golden yellow. Quills brownish black, edged externally with the yellow of the back; narrow on the primaries, wider on the secondaries. Feathers of the throat white at base, dark at their tips. Small space on the abdomen and flanks white, with longitudinal stripes of dark ashy brown. Other under parts and sides of the head and neck clear dark cinereous, under tail coverts slightly edged with white. Under wing coverts ashy. Tail, with the four central feathers brownish black, narrowly edged with
yellow, others yellowish white, tipped with dark brown. Bill and feet bluish black.

_Hab._—Moonda river, Western Africa. Discovered by Mr. P. B. Du Chaillu.

_Obs._—As stated above, this species is about the size of _I. minor_, and somewhat resembles it. In addition to the differences already pointed out, this bird has the bill entirely bluish black, not white at base of the under mandible as in _I. minor_, and as carefully represented in Temm. Pl. Col. 542. The colors are much more clear and different from that species. The bill in the present bird is remarkably short and thick.

This species may be that represented by Le Vaillant, _Ois. d' Afrique_, pl. 242, but is very different from that represented in _Cimelia Physica_, pl. 24, _A_. The latter is _I. sparrmanii_, Stephens, but not the former. It is possible, too, that this may be the bird alluded to by authors on the Ornithology of Western Africa as _I. minor_, but it is distinct from that species of Southern Africa.

2. _Melignothes exilis_, nobis.

The smallest of all known birds of this group. Bill short, thick; wings moderate; second and third quills slightly longest; tail moderate; legs and toes rather strong.

_Dimensions._—Total length (of skin) 4½ inches, wings 2½, tail 1½ inches.

Entire upper plumage with every feather dark in the middle and edged on both sides with greenish yellow, darker on the head. Quills dark brown, edged externally with yellow. Entire under parts greenish cinereous, paler on the abdomen and nearly white on the ventral region. Tail with the four middle feathers brownish black, others yellowish white tipped with dark brown. Bill bluish black; base of under mandible yellowish white; feet bluish black.

_Hab._—River Moonda, Western Africa. Discovered by Mr. P. B. Du Chaillu.

_Obs._—This is the smallest _Indicator_ yet discovered, and is a singular looking little bird. The bill is short and thick, almost resembling that of some species of _Euphonia_. This bird, in general appearance, bears some resemblance to the preceding, but is much smaller and easily distinguished. One specimen only is in the collection.

_Genus_ HET.EROIDES, nobis.

Allied to typical _Indicator_. Bill moderate, curved, slender; rather wide at base, but rather abruptly compressed and tapering to the point; wings rather long; second and third quills longest and nearly equal; tail moderate, containing ten rather wide feathers; tarsi and toes weak, slender; the two anterior rather long. Size of only known species small.

3. _Het.eroodes insignis_, nobis.

Small, about the size of the last preceding and resembling it in color, but with the bill totally different (as above described), and the feet smaller and slender.

_Dimensions._—Total length (of skin) 4½ inches, wing 2½, tail 1½ inches.

_Colors._—Entire upper parts dark olive, tinged with yellow, the latter prevailing on the lower back and rump; quills dark brown, edged externally with greenish yellow; narrow on the primaries, wider on the secondaries, and internally with yellowish white. Under parts ashy olive, darker on the breast, paler and nearly white on the abdomen and under tail coverts. Under wing coverts yellowish white. Tail with the four middle feathers dark olive brown, outer feathers yellowish white, edged with pure yellow. Bill and feet bluish black.

_Hab._—Moonda river, Western Africa. Discovered by Mr. P. B. Du Chaillu.

_Obs._—This is one of the most curious little birds that I have ever seen. It is in all respects, a miniature cuckoo, having evident alliance to _Indicator_ and to _Chrysococcyx_, but especially to the former. The bill is pointed and curved somewhat as in the larger species of _Indicator_, but more slender. The plumage, and especially the tail are of the same colors that prevail in this group. One specimen only is in the present collection.

The smallest of the birds of the genera *Ispidina* and *Corythornis*, and with the bill broader and more flat. Bill long, broad, flat, rather obtuse at the point; wing moderate, third quill slightly longest; tail very short; legs short, weak.

**Dimensions.**—Total length (of skin) 3½ inches, wing 1 8-10ths, tail 9-10ths, bill in front 1, width of bill at nostrils 3-10ths inch.

**Co'vse.**—Male. Front black (without spots), crown and occiput bluish black, with small spots of light blue; back, rump and upper tail coverts light blue, with a purple tinge, a narrow partially concealed collar of rufous on the neck behind; wing coverts black, with small purplish blue spots, quills bluish black, edged with pale rufous on their inner webs. Tail bluish black. A small spot in front of the eye; cheeks, breast and abdomen yellowish rufous, darker on the breast, throat white, under wing coverts rufous. Upper mandible brownish black, point white; under mandible at base yellow, then dark brown towards the point, but at the point white; legs yellow

_Hab._—Moonda river, Western Africa. Discovered by Mr. P. B. Du Chaillu.

This little bird may readily be distinguished from either of the species of minute kingfishers of the genera *Ispidina* and *Corythornis*, previously known by its much broader and flat bill, which is long and quite as flat as in any species of *Todiramphus*. The frontal feathers are clear, lustrous black to the base of the upper mandible, unspotted. It is, moreover, the smallest of all those species.

Of the two genera mentioned, all the known species are now in the collection of this Academy, including *Ispidina nitida*, Kaup., and *Corythornis nais*, Kaup. The present is the only specimen that I have ever seen of this species, and is not readily to be mistaken for any other.

This curious little species is named in honor of my friend John L. Leconte, M. D., one of the most distinguished and accomplished of American Zoologists with whom I have had the great gratification of intimate and uninterrupted friendship for years.

5. **Napothera castanea**, nobis.

About the size of *N. atriceps* of Sumatra, and somewhat resembles it. Bill moderate, straight, rather wide at base, distinctly notched, curved abruptly at tip, wing rather long, fourth quill longest. Tail moderate, ample, somewhat rounded.

**Dimensions.**—Total length (of skin) 6½ inches, wing 3 4-10ths, tail 2½ inches.

**Colors.**—Male. Feathers of the forehead and over the eye black, each having a middle longitudinal line of bright rufous. Feathers of the crown and occiput at base light reddish yellow and tipped with dark rufous. Back, wing coverts and rump bright reddish chestnut, darker on the rump. Loreis, cheeks, sides and flanks light cinnamon. Throat, middle of breast and abdomen white. Under tail coverts yellowish white. Bill brownish black, feet lighter. Greater wing coverts with light rufous circular spots at their tips, edged with black.

_Hab._—Moonda river, Western Africa. Discovered by Mr. P. B. Du Chaillu.

This bird is, for all that I can see, an aberrant *Napothera*, and in its general appearance resembles *N. atriceps*, _coronata_, and other species of Sumatra, Borneo and Java. It appears to be the first species of this genus yet discovered in Western Africa.


General form of and resembling *T. gularis*, Horsfield, (not Swainson,) and *T. caniceps*, both of Java and Borneo, and about the size of the latter, but smaller than the former. Bill slightly curved; fifth quill longest. Tail rather long.

**Dimensions.**—Total length (of skin) about 7 inches, wing 3½, tail 3½ inches.

**Colors.**—Male. Throat white. Tail and its upper coverts rufous, the outer feathers edged narrowly with greenish yellow; tail beneath lighter.

Head above dark brownish ashy, cheeks lighter, each feather with a line of white, a narrow ring of ashy white around the eye. Back, rump and wings yellowish olive green, rather darkest on the wings. Under parts (except throat) greenish yellow, or nearly pure yellow in the middle of the breast and abdomen,
and much shaded with green on the sides. Under coverts of the wings greenish yellow. Bill corneous, the margins white, tarsi light bluish.

Female similar but smaller.

_Hab._—Moonda river, Western Africa. Discovered by Mr. P. B. Du Chaillu.

_Obs._—This species much resembles in form and color _T. gularis_, Horsfield, from Java, but is much smaller and otherwise different. It also resembles _T. caniceps_, Lafres, (which seems to be _Napothera sulphurata_, Müller,) and is about the same size. It is a very remarkable form for Western Africa.

In color this bird appears to be similar to _Dasyophalus syndactyla_, Swainson, (which is described as 9\(\frac{1}{2}\) inches long,) but it has no _syndactyle_ character, and is much smaller. Several specimens are in the collection.

7. _Trichophorus notatus_, nobis.

Bill moderate, nearly straight; wing with the fourth and fifth quills longest. Tail rather long.

_Dimensions._—Total length (of skin) about 7\(\frac{1}{2}\) inches, wing 3\(\frac{1}{2}\), tail 3\(\frac{1}{2}\) inches.

_Colors._—Male. A spot of yellow in front of the eye. Entire upper parts yellowish olive green, darker on the head; wings and tail the same color as the back, with the inner webs of the feathers dark reddish brown. Quills edged on their inner webs with pale yellow, outer feathers of the tail with large spots of pale yellow at their tips. Under parts bright yellow, tinged with green on the sides. Bill corneous, edges of both mandibles white; tarsi light colored. Under wing coverts yellow. Female, similar but rather smaller.

_Hab._—Moonda river, Western Africa. Discovered by Mr. P. B. Du Chaillu.

_Obs._—Owing to evident difficulties in determining the species of birds which have been referred to the genus _Trichophorus_, we have invariably declined presenting any as new in the various African collections that have come into our hands. But the two birds that we now describe are so strongly marked, that we have abandoned our previous custom.

The present bird belongs to the same group as _T. caniceps_, Hartlaub, characterized in some measure by the bill being straighter than usual in this genus. It does not, however, closely resemble that species, nor any other known to us, and is strongly marked by the bright yellow spot in front of the eye, which character distinguishes it at once from _T. eximius_, Hartlaub (Cabanis Journal, 1855. p. 356), and it is much smaller. Four specimens are in the collection.

On motion of Dr. Rand, the Academy proceeded to an election for Librarian to fill the vacancy caused by the resignation of Dr. W. S. Zantzinger.

The Chair appointed Dr. Brinton and Mr. Schafhirt, Tellers. The election having been held, the tellers reported that Dr. J. Aitken Meigs had been unanimously elected.

ELECTION.

Drs. Wm. Mayburry, Thos. George Morton, and George R. Morehouse, of Philadelphia, and Mr. Alfred Monnier, of Camden, were elected Members; and Mr. J. Barnard Davis, of Shelton, England, was elected a Correspondent of the Academy.
September 2d, 1856.

Mr. Lea, Vice President, in the Chair.

Letters were read—

From the Canadian Institute, dated Toronto, C. W., July 25th, 1856, transmitting the Canadian Journal for 1856, and desiring exchange. Referred to the Committee on Proceedings.

From F. V. Hayden, dated Fort Union, July 10th, 1856, acknowledging his election as Correspondent.

From B. F. Shumard, Secretary of the Academy of Science of St. Louis, dated July 30th, 1856, acknowledging the receipt of copies of the Journal and Proceedings of the Academy, and enclosing a resolution of thanks adopted by the Academy at St. Louis.

From the Boston Society of Natural History, dated June 26th, 1856, acknowledging the receipt of the Proceedings of the Academy, (Vol. 8, No. 1, Title and Index,) and the Journal, (N. S. Vol. 3, part 2.)

From the Librarian of the British Museum, acknowledging the receipt of the Proceedings of the Academy, (Vol. 6, Nos. 7, 12, and Vol. 7, No. 1.)

From F. A. Sauvalle, dated Havana, June 2, 1856, transmitting a collection of shells.

From the Royal Society of Sciences of Liege, dated Bonn, April 20th, 1856, transmitting their Memoirs, acknowledged this evening.

From the Natural History Union of Prussian Rhineland and Westphalia, dated March 24th, 1856, transmitting their publications acknowledged this evening.

Dr. Leidy read a paper entitled, "Notice of some Remains of Extinct Vertebrated Animals, by Joseph Leidy, M. D.," which was referred to a committee consisting of Dr. T. B. Wilson, Dr. Le Conte, and Mr. Haldeman.

Mr. Ashmead stated that, he had observed during the past summer an unusual scarcity of marine algae at Beesley's Point, some species usually found in shallow waters having entirely disappeared. Mr. A. attributed this to the intense cold of last winter causing the shallow bays and ponds to be frozen to the bottom. When the ice broke up, the seaweed adhering to it would be carried away. Whole beds of planted oysters were thus lost. The Heterodon Platyrhynus, generally very abundant, was this year almost extinct. Dr. Leidy stated that he had been informed by the fishermen, that immense numbers of crabs were destroyed by the cold, so that this season they were quite scarce. Mr. Haldeman had observed numbers of evergreens killed by the winter's cold.
September 9th.

Dr. Bridges, Vice President, in the Chair.

A paper was presented entitled, "Researches upon the Cyprinoid Fishes inhabiting the fresh waters of the United States of America, west of the Mississippi Valley, from specimens in the museum of the Smithsonian Institution, by Charles Girard, M. D.," which was referred to a Committee consisting of Drs. J. A. Meigs, Rand, and Hallowell.

September 16th.

Mr. Lea, Vice President, in the Chair.

Letters were read—

From the Royal Academy of Sciences of Madrid, dated December 31st, 1854, transmitting their publications acknowledged this evening.

From the Smithsonian Institution, dated Washington, June 18th, 1856, acknowledging the receipt of Vol. 8, No. 2, of the Proceedings of the Academy.

From the American Philosophical Society, dated September 3d, 1856, acknowledging the receipt of the Journal, (N. S. Vol. 3, part 2,) and the Proceedings (Vol. 8, Nos. 1, 2, 3), of the Academy.

Dr. Leidy remarked that, he had observed the eyes of the Katy-did (Platypocephalum concava) which during the day are translucent and greenish, at night assume a deep cherry red color. Upon experimenting with the insect he found that, when the light was excluded, in the course of a few hours the eyes gradually became dark red, and after a restoration of light they again became translucent and greenish. The phenomenon was not positively explained, but it was supposed to belong to the same category of changes, observed in the skin of certain reptiles and cephalopods; i.e. the coloring matter of the eyes probably is composed of chromatophora, or contractile pigment cells, which according to the condition of contraction exhibit a difference in color.

Dr. Leidy also directed the attention of the members to several shells of the oyster and clam (Ostrea virginiana and Venus mercenaria) much perforated, which are common on the ocean shore, where they are noticed by all visitors. Dr. L. had for a long time suspected that the perforations were due to some other molluscan animal or a worm; and he had frequently sought for them. The last summer, in dredging, in company with Mr. Ashmead and Prof. Baird, on an old oyster bed, at Great Egg Harbor, New Jersey, a large number of these perforated shells were obtained, and all of them were observed to be occupied by a sulphur yellow sponge of the genus Cliona. This boring sponge forms an extensive system of galleries between the outer and inner layer of the shells, and protrudes through the perforations of the latter tubular processes, from one to two lines long and one-half to three-fourths of a line wide. The tubes are of two kinds; the most numerous being cylindrical and expanded at the orifice in a corolla form, with their margin thin, translucent, entire, veined with more opaque lines, and with the throat bristling with silicious spicule. The second kind of tubes are comparatively few, about as one is to thirty of the other, and are shorter, wider, not expanded at the orifice, and the throat unobstructed
afterwards appeared a Synopsis of the Ichthyological Fauna of the Pacific slope of North America, chiefly from the collections made by the U. S. Expl. Exped. under the command of Capt. C. Wilkes, with recent additions and comparisons with eastern types. By the same author.*

These two papers, though anticipating some of the following results, were greeted with a hearty welcome, and I can only regret that the second was not concluded up to the time I am writing. I have delayed entering into this subject as long as was consistent with the duties imposed upon me.

In both of them, we find the laudable desire of attempting to bring back into use, the long forgotten genera of Rafinesque, which fell into disuse because of their own imperfection; and if they have not passed into the common nomenclature of the day, it was owing to their defect, more than to the partiality of naturalists. For we may well imagine how any one would feel when rebuilding another's work, as little known to the author as to the commentators themselves.

And yet, for my part, I have always looked upon the restoration of Rafinesque's genera and species as highly desirable, so soon as they had once been proposed and introduced into science as names. But in order to do justice to the scheme, it was necessary to the undertaking that one should go to the very ground trodden over by Rafinesque himself, his book in hand, during all the seasons of the year, ay, even for years in succession, to enable us to discriminate between that which Rafinesque really observed, and that which is imaginary.

That the Ichthyologia Ohioensis has been, and still is a stumbling block, is fully evinced by the fact that Dr. J. P. Kirtland, the Ohio ichthyologist, of untiring and energetic zeal and perseverance, was baffled in many of his attempts to determine Rafinesque's genera and species.

These genera and species, thus restored by Prof. Agassiz, may therefore not be received by all ichthyologists as the final settlement of that much controverted question. Be it as it may, that is; whether the identification be right or wrong, since we must have these names, I sincerely hope they will now be adopted, once for all, as proposed.

Since circumstances have compelled me to write this memoir before the completion of Agassiz's synopsis, I have restored the balance of Rafinesque's genera in the family of Cyprinoides; such are Plagyrus and Semotilus. Once upon that field of inquiries I reverted to Heckel's genera Argyreus and Leucosomus, and shewed their claim for admission upon the same general principles and canons of scientific nomenclature.

On a former occasion the genus Leucosomus was altogether misunderstood by me, and from an advice of mine it thus entered into the "History of the Fishes of Massachusetts, by Dr. D. H. Storer." Prof. Agassiz was led into the same error.† Heckel by inadvertence applies the name of Cyprinus chryssoleucus, Mitch., to Leuciscus pulchellus, Storer, as shown by the figures given of its teeth and the wording of its generic diagnosis. Leucosomus, therefore, is identical with Cheilonemus, and accordingly is the name to be adopted. Cheilonemus was proposed for Leuciscus pulchellus, and allied species, when it was supposed that Leuciscus chryssoleucus would constitute the type of the genus Leucosomus. But it is now well ascertained that Leuciscus chryssoleucus of Mitchell belongs to Rafinesque's genus Luxilus; and Luxilus has the priority over Leucosomus. Leuciscus gracilis of Richardson, referred by Heckel to Leucosomus, is of a different generic type.

As to the genus Argyreus, Heckel includes in it two species generally distinct. Cyprinus atronanus, Mitch., and Cypr. rubripinnis, Mus. Par. MS. But Cyprinus rubripinnis is identical with Leuciscus cornutus, and since Leuciscus cornutus is to enter the genus Plagyrus of Rafinesque, Cyprinus atronanus remains as the type of the genus Argyreus, which again is identical with Rhinichthys. It must be recollected, however, that the teeth figured by Heckel under the name of Argyreus rubripinnis, are those of Plagyrus cornutus.

†Amer. Jour. of Sc., 2d. ser. xix. 1855, p. 225.
All the species referred to in this memoir I have seen and examined; there is not a solitary fact here recorded that was not the result of personal researches. On several occasions I have referred to species from the Atlantic States of the Union, and even from the northern lakes, but it will be obvious to every one that it was only on such occasions as could not well be omitted without sacrifice to the completeness of the subject.

I have aimed at conciseness, as far as consistent with the nature of the task. It was deemed unnecessary to recall, ever and anon, the history of any particular genus, unless it happened to be intricate, for, whoever is interested in the subject, is sufficiently familiar with it. It would be different were I to write a popular work on our fishes.

In the diagnosis of the genera I have often repeated characters shared by many of them; these repetitions I am convinced are needful to their proper understanding. It may not appear so to a few ichthyologists; but I write for naturalists, for the reader who seeks after general information. Besides, the method I follow is the natural, the true method, that which has superseded the artificial method of the last century. In describing the teeth, I have adopted Heckel's phraseology, since it appears to me to answer to the present wants of Ichthyology.

The coloration, as a general rule, is described from specimens preserved in alcohol, in which the brilliancy of the hues is seldom preserved, and occasionally quite altered.

In the course of these investigations I have carefully compared the fishes of our hemisphere to those occurring in the waters of the eastern hemisphere; and when genera and species, either of fishes or reptiles, have, at any time, been described as new, it was the result of such comparative study, shunning display of loose erudition and false criticism, which too often leads into error the true observer.

I have thus added many new genera and species to the known lists. This cannot be surprising; a country so vast as North America, irrigated by so many branching streams and large bodies of waters in the shape of lakes and numerous ponds, a country comparatively little explored, was to yield many species unknown to our predecessors in the field. A superficial knowledge of the history of ichthyology in North America, would at once explain how it is that a "Synopsis of the Fishes of North America," published in 1846, should not have proved a full and complete record of all existing fishes of the country; a synopsis which, moreover, only professes to give such species as were known at that time. If we are so fortunate as to be able to add to the known catalogue of genera and species, let us not lose sight of both the time and the circumstances under which we have accomplished it. Recriminations, in that respect, are not likely to advance much our knowledge on the subject, and furthermore, it places a co-temporary exactly in the same situation towards the next coming generations as the former generations hold towards him.

Most of the new genera which I propose have been designated by words taken from the North American Indians, as being more euphonious than any one I might have framed from the Greek. The classic literature has already furnished so many names that there are but few instances in which a name might yet be coined and express what it is intended to represent. I offer this remark as a mere statement; not as an apology.

**CYPRINI.**

But two genera of this group or tribe, whichever called, are included in this memoir. And curions to say one is provided with a buccal barbel, and the other not. The presence or absence of barbels, therefore, does not seem of primary import here. The teeth are of the molar kind (Dentes molares), of the grinding type (D. masticatorii), without grooves or ridges, and are disposed upon two permanent—and a third, deciduous—rows: 3—2 | 5—5 | 2 | 3. The ventrals are inserted in advance of the anterior margin of the dorsal.
We had a fine opportunity of studying the genus

**Mylocheilus**, Agass.

thanks to the numerous specimens collected by Lt. Trowbridge. The characters of this genus are as follows: Head elongated and sub-conical, rounded upon the snout, which overlaps the lower jaw. The mouth is sub-terminal, horizontal, of medium size and provided upon its angle with a maxillary barbel. The eye is well developed. The isthmus rather narrow. The body is elongated, lanceolated, compressed, sub-fusiform in profile. Pectoral fins slenderer than the ventrals; the latter being inserted in advance of the anterior margin of the dorsal. Caudal fin furcated. Scales of medium size; lateral line following the middle of the flanks. The pharyngeal bones are stoutish, expanded upon their convexity, with the inferior limbs very short. The teeth are inserted upon a very much inclined plan, raised from the surface of the bone itself, from below upwards. They are disposed upon two permanent rows of five and two, and a third deciduous row of three in the thickness of the gum: 3 | 2 | 5—5 | 2 | 3. They are of the molar kind of the grinding type, but without grooves and ridges.


Our specimens are from Fort Steilacoom, Puget Sound, W. T., and were collected by Dr. Geo. Suckley, U. S. A., under Gov. I. I. Stevens.

2. **Mylocheilus fraterculus**,—is closely allied to the preceding by the shape of its pharyngeal bones, differing from it by a more slender body, much smaller head and smaller eye. The color is too far gone to have anything said about it.

From Monterey, Cal., where specimens were collected by Lt. W. P. Trowbridge, U. S. A.

3. **Mylocheilus caurinus**.—*Cyprinus* (Leuciscus) caurinus, Rich. Faun. Bor. Amer. iii. 1836, 304. Has much of the general aspect of the two preceding species, more, perhaps, of *M. fraterculus* than *M. lateralis*. The most prominent difference resides in the pharyngeal bones being less expanded upon the superior limb, which is much more developed also. The inferior limb is also more slender. The head is more elongated, more conical than in *M. lateralis*, and larger than in *M. fraterculus*. The mouth is larger than in either of the two species just referred to.

From Astoria, O. T.; numerous specimens collected by Lt. W. P. Trowbridge, U. S. A.

The genus we next introduce, and which has received the appellation of

**Mylopharodon**, Ayres,

is most closely related to *Mylocheilus*. The species which it includes are remarkable for their elongated body, their sub-conical and tapering head, their deeply cleft mouth, and, like the species of *Mylocheilus*, they have the ventrals inserted in advance of the anterior margin of the dorsal, the caudal furcated, and a narrow isthmus. But *Mylopharodon* has no barbels upon either maxillaries or the angle of the mouth. The pharyngeal bones are likewise stoutish, but the inferior limb is more elongated than in *Mylocheilus*, though a little smaller than the upper limb. We observe the same system of dentition: an external deciduous row of two or three, and two permanent rows of two and four or five: 2 | 2 | 5—5 | 2 | 2, or 3 | 2 | 4—4 | 2 | 3. But the crown is much more compressed than in *Mylocheilus*.


From San Joaquin River, Cal.—Dr. Heermann.


San Francisco, Cal.—Dr. Newberry.
CATOSTOMI.

What distinguishes the Catostomi as a peculiar group, consists, in the first place, in the structure and position of the mouth; it is surrounded with large and fleshy lips, situated under the protruding snout, and has no barbels. The pharyngeal bones are sickle-shaped, varying in the curvature of the dental portion and also in the inferior branch. The teeth are numerous, disposed upon one single series; the inferior ones being longest, the others diminishing in size upwards. To use the expression of Heckel, the teeth are pectiniform (Dentes pectiniformes), that is, arranged like a comb. The anterior margin of the dorsal is situated in advance of the insertion of the ventrals.

Modifications of these characters, associated with others, will furnish the means of distinguishing the genera.

The want of more materials upon which the genera Carpiodes, Ictiobus, Bubalichthys and Cycleptus are founded, has prevented us entering into the discussion of their generic value. The two following species being the only ones at our command, we introduce them without preamble.

Carpiodes damalis.—I have before me a specimen of this species measuring seven inches and three-quarters in total length. The greatest depth of the body is contained about three times and a half in that length, whilst the head constitutes the fifth part of it. The dorsal is much longer than high anteriorly; its anterior margin is nearer the end of the snout than the insertion of the caudal fin, which is posteriorly concave. The origin of the ventrals is situated opposite the fifth developed ray of the dorsal, the seventh in the series. The pectorals are small. The branchiostegals are three on either side.

D 27; A 10; C 4, 1, 8, 8, 1, 3; V 10; P 16.

The anterior two rays, in both the dorsal and anal fins, are rudimentary, as also the anterior one in the ventrals.

The eye is sub-circular; its diameter being contained four times and a half in the length of the side of the head. The snout is sub-conical. A line drawn perpendicularly to the angle of the mouth would pass in advance of the pupil. The sub-opercle is largely developed, and contrasts greatly with its reduced size in C. (I.) tumidus.

The scales are very large; thirteen lateral rows may be counted from the anterior margin of the dorsal to the insertion of the ventrals. They are a little higher than long. The lateral line undergoes a slight fall upon the thorax, then runs straightway to the base of the caudal along the eighth row of scales under the anterior margin of the dorsal.

This species was collected by Dr. Geo. Suckley, U. S. A., in Milk river, an affluent of the Upper Missouri, along the R. R. route explored by Gov. I. I. Stevens.

We have before us half a dozen small specimens from three to three inches and a half in total length, which are closely allied to the preceding species. They were collected in the Arkansas river, near Fort Smith, by Dr. Geo. G. Shumard. A further identification could not be attempted.

Ictiobus tumidus.—Carpiodes tumidus, B. & G. Proc. Acad. Nat. Sc., Philada., viii. 1854, 28.—Should all the sub-divisions of the genus Carpiodes be admitted, then this species, from the Rio Grande del Norte (Rio Bravo), belongs to that of Ictiobus.*

The genus

Moxostoma, Rafin.

may be circumscribed by characters more natural than the preceding ones. And the most striking of these, it must be conceded, is the absence of that lateral

* There can be no question about the etymology of this name, from ἱχθύος and βύτος, which would spell ichthyobus, but Rafinesque chose to write Ictiobus, which is quite as tasteful, if not more so. The "Nomenclator Zoologiæ" must have satisfied every one, that confusion alone would be the result of re-spelling something like thousands of names.
line possessed by almost all fishes. The body is elongated and compressed; the head small; the mouth small also, opening obliquely forwards and downwards. The lips being small and transversally ridged; the inferior one being slightly bilobed. The anterior margin of the dorsal is situated in advance of the insertion of the ventrals. The dorsal fin itself is either higher than long, or else its length is equal to its height, varying somewhat according to the sexes, as well as the anal, which is, however, always deeper than long. The shaft of the pharyngeal bones constitutes a very open curve, the convex margin of which is regular and entire. The teeth themselves are very much compressed, strongly curved inwardly, and much larger inferiorly than superiorly.

To this genus we add four new and very distinct species, inhabiting the South Western waters.

1. Moxostoma claviformis.—This species has been known to us for several years. Its general outline has a club-shaped appearance, a trait though more or less general, is especially characteristic here. The largest specimens which we have examined are four inches in total length, and in all probability not very young. The greatest depth, taken across the pectoral region, is contained four times and a half in the total length, in which the head enters five times. The eye is circular and moderate in development, contained a little over four times in the length of the side of the head. The upper margin of the dorsal fin is sub-convex; its anterior margin is nearer the tip of the snout than the insertion of the caudal fin. The caudal is concave posteriorly; the anal narrow and deep; the ventrals are inserted opposite the fifth ray (or third developed one) of the dorsal, and their tips do not extend as far back as the tips of the posterior rays of the dorsal fin when bent along the dorsal line.

D 13; A 10; C 4, 1, 8, 1, 3; V 9; P 15.

The scales are sub-elliptical in general shape, presenting no grooves upon their lateral sections, but few upon the anterior section, and numerous posteriorly upon that section of the scale that is exposed.

The specimens were collected by H. B. Möllhansen, in Coal creek, a tributary of the South Fork of the Canadian river; along the R. R. route explored by Lt. A. W. Whipple, U. S. A.

2. Moxostoma kennerli.—In its general physiognomy this species resembles M. oblunatum more than any other of its genus. The greatest depth, taken immediately in advance of the dorsal fin, does not enter quite four times and a half in the total length. The head forms a little less than the fifth of that same length. The anterior margin of the dorsal is much nearer the tip of the snout than the insertion of the caudal; the upper margin of that fin is sub-convex and as long as high, whilst in M. claviformis the height is much greater than the length. The caudal is deeply concave posteriorly; the anal is deep and narrow, its extremity extending, as usual in the genus, to the base of the caudal. The ventrals have pretty much the same position as in the preceding species.

D 14; A 10; C 4, 1, 8, 1, 3; V 10; P 13.

The anterior two rays, in both the dorsal and anal fins, are mere rudiments; also the anterior one in the ventral fins. The scales are not quite so long as in the preceding species. The lower lip is rather broad and very little emarginated, whilst in M. claviformis it is very thin and quite sub-divided.

This species was caught in Dry creek, near Victoria, Texas, by Dr. C. B. Kennerly, under Major W. H. Emory, U. S. Commissioner of the U. S. and Mexican Boundary line.

3. Moxostoma victorii.—Form elongated, fusiform, reminding us, by its general appearance, of certain species of Mullet (Mugil). The greatest depth is nearly equal to the length of the head, which constitutes the fifth of the entire length, the lobes of the caudal fin excepted. The dorsal fin is higher than long,
and its anterior margin is situated nearer the tip of the snout than the insertion of the caudal fin. The latter is forked.

D 14; A 10; C 6, 1, 8, 8, 1, 5; V 9; P 17.

The sub-opercle is well developed; the eye is sub-circular, its diameter being contained four times and a half in the length of the side of the head. The snout is rather pointed, sub-conical, and the mouth, which is small, placed entirely in advance of the orbit. Twelve longitudinal rows of scales may be counted upon the greatest depth. The scales upon the dorsal and lateral regions are provided with a black dot or spot upon the anterior part of the exposed portion of the scale. Greatest length of specimens observed, six inches and a half.

This species was collected with the preceding, under the same circumstances and in the same locality.

4. Moxostoma campbelli.—Sub-fusiform and elongated like the preceding species, which it resembles in its general outline, and in the proportions of the head and depth of the body towards the total length. The snout is likewise pointed and sub-conical, but the eye is much larger and the sub-opercle very exquisitely developed. The position and shape of the fins do not differ materially from the preceding species, with the exception of the caudal, which is concave posteriorly instead of being forked.

D 15; A 10; C 5, 1, 8, 8, 1, 5; V 9; P 15.

The scales are smaller than in M. kennerlii; thirteen rows instead of twelve are to be observed upon the region of greatest depth.

Specimens were collected in Live Oak creek, Texas, by Dr. C. B. Kennerly, under Major Emory, and in Devil’s river, by John H. Clark, under Col. Graham. The species, therefore, belongs to the basin of the Rio Grande del Norte (Rio Bravo).

As regards the generic features of Ptychostomus, Agass.

it fell within our observation that the height of the dorsal may be either equal to its length or a little higher than long, and that the wing-like expansions of the pharyngeals is anything but characteristic of this genus. The transverse folds or ridges upon the lips are shared by Moxostoma, though in a lesser degree. The inferior lip is but slightly lobed. The mouth, however, is much more protrac-tile and directed more downwards. The head is short and stout; the scales large and of the same size anteriorly and posteriorly. Finally, the conspicuous lateral line will at once distinguish it from Moxostoma.


From the Rio Salado, Texas.—John H. Clark.

2. Ptychostomus albidus.—The general physiognomy of this species reminds of us P. congensis, although the body is more slender and the head more elongated. The mouth is a great deal larger, as are also the scales. Greyish white above; greyish silver beneath.


3. Ptychostomus haydeni.—The head is contained five times and a half in the total length. The body is sub-fusiform, very regular in its outline. The eye is sub-circular and moderate in its development; its diameter being contained five times in the length of the side of the head. The opercle is largely developed, whilst the sub-opercle is small, a character which is more or less general. The anterior margin of the dorsal fin is much nearer the tip of the snout than the base of the caudal. The height of that fin is a little more than its length; its upper margin is sub-concave. The caudal is forked. The origin of the
ventrals is situated in advance of the middle of the dorsal. The tips of the pectorals reach a vertical line drawn from the origin of the dorsal.

D 15; A 10; C 4, 1, 8, 8, 1, 3; V 10; P 17.

Thirteen rows of scales may be counted between the origin of the ventrals and the anterior margin of the dorsal; the lateral line running through the median row. There are two rudimentary rays at the anterior margin of both the dorsal and the anal, and one at the exterior margin of the ventrals; these are all summed up in the formula.

Specimens of this species were collected in the Yellow Stone valley, by Dr. F. V. Hayden, and in the Missouri river at Fort Pierre, by Dr. John Evans.

Now then, if the principles upon which the above generic divisions are based, be sound, the species which still remain in the genus *Catostomus* must be further revised and arranged in smaller and more restricted groups.

We propose to arrange under the head of

**MINOMUS**, such species as are characterised by an elongated and fusiform body; a head longer than deep; a dorsal fin either higher than long, or with both dimensions equal. The lips being tuberculated, moderately bilobed. The pharyngeals not expanded laterally, but considerably bent inwardly. The teeth compressed, decidedly bicuspid, but the inner projection more developed than the outer. The scales being nearly of the same size, but slightly smaller anteriorly than posteriorly.

   Inhabits the Rio San Pedro, tributary of the Rio Gila.

   From the Rio Mimbres, Lake Guzman, Mexico.

   From the Rio Santa Cruz.
   And then giving the name of

**ACOMUS**

to those species in which the head is very elongated, the dorsal fin higher than long, and the scales much smaller upon the anterior region of the body than upon the posterior. The lips being papillated and very deeply cleft. The pharyngeals are gently arched and not expanded; the teeth compressed and bicuspid, the inner projection conspicuous; the outer one, obsolete, though existing.

   Inhabits British North America.

   Lake Superior.

   Rio San Pedro, tributary of Rio Gila.

4. **CATOSTOMUS (ACOMUS) GUZMANIESENIS.** — has the general physiognomy of *A. latipinnis*, owing to the great development of its fins. Is, however, very readily dis-
tinguished from the latter by the presence of much larger scales, and especially upon the dorsal region, where they are very small in *A. latipinnis*.

D 13; A 7; C 4, 1, 8, 8, 1, 4; V 9; P 17.

The anterior two rays, in both the dorsal and anal, are rudimentary; so also the exterior one in the ventrals.

The head forms the fifth of its total length; the shape is subquadranular, subpyramidal. The eyes are small and circular. The lips are well developed and covered with large papillae, but the posterior one is less indented than in *A. latipinnis*.

The upper regions are purplish black, with an orange lateral band from head to tail. The inferior regions are yellowish white.

Specimens of this species were collected by Dr. C. B. Kennerly, under Major Emory, in Janos River, which empties its water in Guzman Lake, State of Chihuahua.

5. *Catostomus (Acomus) generosus*.—It is a rather short and contracted species, particularly when compared to *A. griseus*. The head constitutes about the fifth of the total length. The eye is moderate in size and circular. The anterior margin of the dorsal fin is equi-distant between the tip of the snout and the insertion of the caudal fin. The scales are larger than in *A. griseus*. The dorsal region, as well as the flanks, are olivaceous brown, spotted with black. Inferiorly unicolor.

Specimens were collected in Cottonwood Creek, an affluent of the great Salt Lake of Utah, and brought home by Lieut. E. G. Beckwith, U. S. A.

6. *Catostomus (Acomus) griseus*.—The body is slender, gracefully fusiform in its outline, the head forming the fifth of the entire length. The anterior margin of the dorsal is equidistant between the tip of the snout and the insertion of the caudal fin. The ventrals are inserted opposite the posterior third of the dorsal. The tail is slender.

D 13; A 10; C 6, 1, 8, 8, 1, 5; V 10; P 16.

Collected in the Sweet Water fork of Platte River, by J. S. Bowman, Esq.

Scales exhibiting radiating furrows all around. Upper regions greyish; inferior regions whitish or yellowish.

7. *Catostomus (Acomus) lactarius*—is closely allied to the preceding species, from which it differs by a stouter head and larger eyes, and larger scales on the body. The structure of the scales themselves is very different, since the radiating furrows exist upon the anterior and posterior sections only, instead of being distributed all over the scale. The upper margin of the dorsal is concave, whilst it is nearly straight in *A. griseus*.

D 13; A 10; C 4, 1, 8, 8, 1, 5; V 11; P 17.

Greyish brown above, greyish white beneath.

Specimens of this species were collected in Milk River, affluent of the upper Missouri, by Dr. George Suckley, under Gov. I. I. Stevens.

The genus *Catostomus*, Lesu.

would then be restricted to such species in which the head is moderately elongated, the dorsal fin generally longer than high, and the size of the scales less disproportionate anteriorly and posteriorly than in *Acomus*. The lips are papillated and deeply cleft. The pharyngeals provided with a little expansion inferiorly. The teeth are compressed, with the inner projection of the crown alone developed.

The type of this group is *Catostomus hudsonius*. *C. communis* would be a second species. And the following:

By a singular coincidence, this species received the same specific name from two authors at a few weeks interval.
San Francisco, Cal.—Dr. Newberry.

Klamath Lake, O. T.—Dr. Newberry.

5. Catostomus Macrocheilus.—This species is very different from both of the preceding ones by a larger and more elongated head, a larger mouth, and hence much larger lips, covered with large papillae. The scales which cover the body are larger than in C. occidentalis, and smaller than in C. labiatus. The head constitutes the fifth of the total length; the horizontal diameter of the eye is contained nearly six times in the length of the side of the head. The head itself is subquadrangularly pyramidal, truncated anteriorly with the upper edge of the snout projecting. The anterior margin of the dorsal is a little nearer the end of the snout than the insertion of the caudal fin. Its upper margin is concave. The anal is well developed, for its tip extends beyond the base of the caudal. The ventrals are inserted opposite the middle of the dorsal. The pectorals are large and long.

D 17; A 9; C 5, 1, 8, 8, 1, 6; V 10; P 18.

Bluish black above; yellowish golden on the sides and whitish beneath.

Collected at Astoria, O. T., by Lieut. W. P. Trowbridge, U. S. A.

6. Catostomus Sucklii.—The head, as usual, forms the fifth of the entire length. It is subquadrangular, the upper surface rather sloping towards the blunt snout. The eye is small and subelliptical; its horizontal diameter being contained somewhat over five times in the length of the side of the head. The anterior margin of the dorsal fin is equidistant between the tip of the snout and the insertion of the caudal. Its height is equal to its length, and its upper margin is slightly concave. The posterior margin of the caudal is deeply emarginated, crescentic. The insertion of the ventrals is a little in advance of the middle of the dorsal fin.

D 14; A 10; C 5, 1, 8, 8, 1, 4; V 10; P 18.

The scales are large and but a little smaller anteriorly than posteriorly; they are subelliptical in shape, longer than deep, with their anterior and posterior margins irregular.

Specimens of this species were collected by Dr. Geo. Suckley, under Governor I. I. Stevens, in Milk River, an affluent of the upper Missouri.

7. Catostomus Bernardini.—A specimen of seven inches and a half, slender and graceful. The head forms a little less than the fifth of the total length. The eye is small and subcircular; its horizontal diameter entering a little over four times in the length of the side of the head. The upper margin of the dorsal is subconvex, the tips of the posterior rays reaching a vertical line which would intersect the anus. The caudal is subcrescentic posteriorly. The ventrals and pectorals are well developed.

D 15; A 10; C 5, 1, 8, 8, 1, 5; V 10; P 16.

Uniform purplish black above, yellowish white beneath.

Specimens of this species were collected by Dr. C. B. Kennerly, under Major W. H. Emory, at San Bernardino, in the upper waters of the Rio Huagui, west of the Sierra Madre, Mexico.

CHONDROSTOMI.

This group must include a much greater number of genera and species than was formerly anticipated. But, as a group, it must be based upon characters very different from those derived from the structure of the mouth. Indeed, those cartilaginous maxillary sheathes so prominent in Chondrostoma, Chondrocylius, Chondrohynechus and Lavinia, gradually become less and less conspicuous, until we find but a thin pellicle, such as occurs in other groups of the same family. The characters of Chondrostomi, as derived chiefly from the American representatives, consist in the absence of barbels; in the position of the mouth, which is
generally overhung by the upper jaw, and sometimes both jaws are equal. The pharyngeal teeth are of the grinding type and cultriform kind (Dentes cultriformes), disposed upon a single series, with one exception only, and that occurs occasionally in *Campostoma*. I say occasionally, because in the majority of cases there is also but one single row in the latter. *Ecoglossum* is removed from this group, of which it has none of the characters, except the absence of barbels.

We introduce the tribe by the genus

*Campostoma*, Agass.,

which may be characterised as follows: Head subconical; body subfusciform; both compressed. Snout obtuse and protractile; mouth inferior, though its cleft is horizontal; lips very conspicuously developed; no barbels or cirri. Eyes of moderate development. Isthmus very wide. Origin of ventrals situated in advance of the anterior margin of the dorsal. Caudal furcated. Scales longer than high. Pharyngeal bones strongly curved, with a small dilatation upon their convexity. Teeth of the cultriform kind, of the grinding type, occasionally slightly hooked. They are disposed upon a double row of four and one, in the following manner: 4–4, or 1 | 4–4 | 1.


2. *Campostoma ornatum*—is larger, more elongated and more fusiform than *C. anomalum*. The head enters four times and a half in the total length. The diameter of the eye enters nearly six times in the length of the side of the head. The scales are much smaller than in *C. anomalum*.

D 8+2; A 8+2; C 7, 1, 9, 8, 1, 6; V 8; P 16.

The upper regions are purplish black; the inferior regions golden brown and yellow, with black spots distributed over the flanks. A black patch at the base of all the fins, otherwise the latter are orange or yellowish brown.

From Chihuahua River and a tributary only a few miles long. Collected by John Potts, Esq.

3. *Campostoma formosulum*.—This species resembles more *C. anomalum* than *C. ornatum*; the most conspicuous difference between it and the former consist in the presence of larger scales. The ground color is alike, but in *C. formosulum* black irregular spots are distributed all over the upper region of the body.


4. *Campostoma nasutum*.—It is a shorter and more compact species, with the peduncle of the tail rather tapering. Its most prominent character consists in its thick and protruding snout, which overlaps the lower jaw more than in the species already referred to. The ground color is greyish above, and whitish or yellowish beneath; upper region of body and flanks occasionally marmorated. A black patch at the base of the caudal and dorsal fins.

Specimens were collected by Lieut. D. N. Couch, U. S. A., at Cadereita, and near Monterey, New Leon, in April, 1853.

From the foregoing species of moderate size, we pass to a genus composed of quite small fishes, differing from the former by the position of the ventral fins, which are inserted either immediately under the anterior margin of the dorsal fin or posteriorly to it, never in advance, as in *Campostoma*. To designate these we have selected the name of

**DIONDA.**

They are very intimately related to the Ilyborhynchii, and differing from them by a smaller and more pointed head, a smaller mouth, though constructed upon the same plan as in *Ilyborhynchus*, that is, the lower jaw being thin, flat and rounded upon its periphery. The body is more slender and elongated, the snout
more protruding. The scales are either large, or else of moderate size, and the lateral line follows more or less the middle of the flanks. The dorsal fin is higher than long, and shorter than in Hyborynchus, and the anterior ray is more closely united to the next. The insertion of the ventrals is always situated posteriorly to the anterior margin of the dorsal, or under it, never in advance of it. The caudal is furcated. The pharyngeal bones are stouter than in Hyborynchus, the lower branch or limb has the same length as the upper; both are more curved, thus rendering the convexity of that bone more conspicuous; it is expanded as usual. The teeth are similar to those of Hyborynchus, being, however, not quite so compressed and not hooked. Four are observed upon one single row: 4—4.

This genus is closely allied to Campostoma, and since our Diondae are, generally speaking, small fishes, we should not be surprised at hearing that some of the species of Campostoma, while yet immature could not always be easily distinguished from them, for the mouth is, properly speaking, not smaller than in Campostoma.

The following species have fallen under our observations.

1. Dionda episcopa.—Slender and graceful, fusiform in profile and compressed, with the back slightly arched. The head is large, forming about the fifth of the length. The eye is large and subcircular, its diameter being contained three times and a half in the length of the side of the head. The fins are of but moderate development; the insertion of the ventrals is situated a little posterior to the anterior margin of the dorsal. The rays read as follows:

  D 8+2; A 8+2; C 8, 1, 3, 8, 1, 7; V 8; P 14.

The scales are large, the lateral line following the middle of the flanks.

The dorsal region is blackish brown; a black vitta is observed along the flanks, just above the lateral line, extending from a black spot, upon the base of the caudal, to the extremity of the snout. The inferior region is yellowish white spread over with minute black dots.

Collected in the head waters of the Río Pecos, and brought home by Capt. John Pope, U. S. A. Specimens of the same species were caught by John H. Clark, under Col. J. D. Graham, U. S. A., in Camanche Spring, a presumed tributary of the Río Grande del Norte (Río Bravo), or more probably without outlet.

2. Dionda serena.—Could easily be mistaken for D. episcopa. Its form is slender and elongated, the dorsal outline being nearly straight; the head enters five times and a half in the total length. The eye is large and circular, its diameter entering only three times in the length of the side of the head. The insertion of the ventrals takes place immediately opposite the anterior margin of the dorsal fin. The pectorals are long and slender, more so even than in D. episcopa.

The dorsal region is light brown, the flanks and abdomen being silvery, with the scales of the lateral line dotted with black, imitating spots. A black spot upon the base of the caudal fin.

From the Río Sabinal, Texas; collected by Dr. C. B. Kennerly, under W. H. Emory, Commissioner U. S. and Mex. Boundary.

3. Dionda texensis,—is a very characteristic species. The body is rather deep upon its middle, and the lateral line somewhat depressed. The head is quite small and subconical, entering five times and a half in the total length. The eye is large and circular. The insertion of the ventral fin is placed a little posteriorly to the anterior margin of the dorsal. The dorsal region is greyish brown; the abdominal region greyish white; a diffused greyish black band may be observed along the middle of the flanks, embracing the lateral line beneath, and a black spot upon the base of the caudal. The ventrals and pectorals are yellow.

Numerous specimens were collected in the Río Nueces, Texas, by John H. Clark, under Col. J. D. Graham, U. S. A.
4. Dionda Pafalis.—The head in this species is rather small, but rounded off upon the snout; it forms a little less than the fifth of the entire length. The body is thickish anteriorly, subcylindriclal, tapering posteriorly. The dorsal and anal are proportionally well developed. The caudal is forked; the ventrals are inserted under the anterior margin of the dorsal. The scales are large. The coloration has been altered to a uniform black subsequently upon its immersion in alcohol with sundry other specimens.

Collected in Delaware Creek, a tributary of the Rio Pecos, and brought home by Capt. John Pope, U. S. A.

5. Dionda argentosa,—has a small head and obtuse snout, a rather slender and compressed body. The head constitutes 2–11ths of the total length. The insertion of the ventrals is situated opposite the anterior margin of the dorsal. The scales being quite large, the lateral line is slightly deflected upon the thorax. Color of the dorsal region reddish brown; sides and abdomen as if painted over with silver or quicksilver. Fins olivaceous.

Collected in San Felipe Creek and Devil’s River, two tributaries of the Rio Grande del Norte (Rio Bravo), by John H. Clark, under Col. J. D. Graham, U. S. A.

6. Dionda chrysitis.—Very slender and compressed; head very small and obtuse, contained six times in the total length. Eyes large and circular. Origin of ventrals opposite the anterior margin of dorsal. Upper surface of head tuberculous. Scales large. Dorsal region reddish brown; sides and abdomen as if painted with gold. A black spot upon the base of the caudal fin. Fins themselves yellowish or olivaceous.

Specimens were collected by John H. Clark, under Col. J. D. Graham, U. S. A., in Live Oak Creek, presumably tributary of Rio Pecos, or else losing itself into the ground.

7. Dionda melanos.—A rather short and deep body characterizes this species. The head is proportionally well developed, forming a little less than the fifth of the total length. The snout is conical and not abruptly truncated. The insertion of the ventrals is situated a little posteriorly to the anterior margin of the dorsal. Scales large. The dorsal region is blackish; the sides and abdomen are dotted with black upon a bluish lead ground, giving the whole fish a dark appearance. A black spot upon the base of the caudal fin.

From Buena Vista, Coahuila;—collected by Lieut. D. N. Couch, U. S. A.

8. Dionda couchi.—Though closely allied to the preceding, it may readily be distinguished from it by a more elongated body and more elongated head. The snout is rounded. The eye is circular and of medium size. The ventrals are inserted posterior to the anterior margin of the dorsal. The scales are quite large. Upper regions greyish black; sides and abdomen yellowish or whitish, either unicolor or maculated. A black spot upon the base of the caudal fin.


9. Dionda plumbea.—Besides several other peculiarities of structure, this species may be distinguished from all its congeners by the size of its scales, which are the smallest in the genus.

Greyish above, whitish or yellowish white beneath. Black spot at base of caudal.

Collected in the head waters of the Canadian River (Llano Estacado), by H. B. Möllhausen, under Lieut. A. W. Whipple, U. S. A.

10. Dionda spadicea.—This has the general aspect of D. plumbea, in being slender and elongated in body and head. The latter, however, is more conical and the eye smaller, the scales being but a very little larger. Colors brownish red above, whitish beneath. No spot at the base of the caudal.

From Fort Smith, Ark.;—collected by H. B. Möllhausen, under Lieut. A. W. Whipple, U. S. A.
The ten species that precede as well as the four following ones, are amongst those whose history has most perplexed us. At last we were glad to recognize the genus

_Hyborhynchus_, Agass.

established upon a species of the Ohio and its tributaries, and believed to be _Minnitus notatus_ of Rafinesque. We have examined carefully the latter species, and after a series of comparative studies we were enabled to add the following few species to the genus which we thus characterize: Head rather short, upper surface depressed; snout abruptly truncated and rounded. The mouth is of medium size, subterminal, its cleft being horizontal, the lower jaw flattened and thin, rounded upon its periphery and slightly overlapped by the snout. There are no barbels at the angles of the mouth, which do not reach a vertical line drawn in advance of the orbit. The eyes are large; the isthmus is of moderate width. Anterior ray of dorsal fin shorter than the second. The insertion of the ventrals is situated opposite the anterior margin of the dorsal or in advance of it. The caudal is furcated. The scales are large, higher than long; the lateral line follows the middle of the flanks. The pharyngeal bones are slender, and more so upon the inferior limb, which is longer than the upper and curved backwards and sideways, whilst the upper limb is gently curved inwards. The convexity of the same bone is expanded. The teeth are of the cultriform kind of the grinding type, very much compressed, slightly hooked, and consequently provided with quite a narrow grinding surface. Their disposition is upon a single row of four: 4—4.

1. _Hyborhynchus perspicuus._—The head is contained five times and a quarter in the total length, instead of constituting the sixth part of it, as in _H. notatus_. The mouth and eye, both, are a good deal larger than in the latter. The insertion of the ventrals is situated immediately under the anterior margin of the dorsal. The caudal fin is more deeply furcated than in _H. notatus_.

D 9+2; A 7+2; C 10, 1, 9, 8, 1, 8; V 9; P 14.

There is a very minute rudimentary ray at the anterior margin of both the dorsal and anal, followed by a second, about half the height of the fin.

Upper region and flanks reddish; abdomen sulphur yellow; lateral line dotted with greyish purple, more distinct towards the base of the caudal upon which a dark spot exists. Fins yellowish, also with a black spot upon the anterior margin of the dorsal below the middle height. Superior portion of the dorsal. greyish, as also the external margin of the caudal.

From Arkansas River, near Fort Smith;—collected by Dr. Geo. G. Shumardn

2. _Hyborhynchus tenellus._—It is more slender and more compressed than even _H. perspicuus_. The head is very much depressed, subpyramidal were the snout not rounded, hence appearing quite small; it is contained five times and a half in the total length. The insertion of the ventrals is a little in advance of the anterior margin of the dorsal fin. The eye and mouth are proportionally large, and especially the scales, which are the largest among the hitherto known species of the genus. Color uniform reddish above and on the sides; yellowish beneath. A black spot upon the base of caudal fin. Otherwise the fins are unicolor.


3 _Hyborhynchus funcicus._—As regards the general aspect, this species is intermediate between _H. perspicuus_ and _H. tenellus_. It is distinguished from both of these by more developed opercular apparatus and much smaller scales. The color is uniform pale red; the fins are unicolor, yellowish.

Specimens were collected in Antelope Creek, a tributary of the Canadian River, by Dr. C. B. Kennerly, and from Llano estacado, by H. B. Möllhausen, both under Lt. A. W. Whipple, U. S. A.

4. _Hyborhynchus confertus._—This species has a short and contracted appear
ance, covered with scales a little larger than in *H. puniceus* but smaller than in the other species of the same genus. The opercular apparatus is likewise well developed. Color light red above, yellowish beneath; a black spot upon the anterior margin of the dorsal.

From Hurrah creek, a tributary of the Rio Pecos;—collected by H. B. Möllhausen, under Lt. Whipple.

A very remarkable genus, inhabiting our western waters, is that of

**Pimephales, Rafin.**

Its body is subfusiform when seen in profile, compressed, however, as usually. The head is large, short, and very blunt upon the snout. The mouth being small, slightly arched, and terminal; both jaws even. The eye is of moderate development. The isthmus is proportionally wide. The dorsal fin is a little higher than long, provided anteriorly with a rather thick and undivided, short and hard ray. The origin of the ventrals takes place either immediately opposite the anterior margin of the dorsal, or else a little posterior to it. The scales are rather large and the lateral line, after a slight deflection along the thorax, follows the middle of the flanks to the base of the caudal fin. The pharyngeal bones are of moderate stoutness, gently arched, the upper and lower limb nearly equal though the upper is more curved; the convex portion is regularly dilated or expanded. The teeth are of the cultriform kind of the grinding type, very slightly hooked, compressed, with a narrow grinding surface, disposed upon one single row of four: 4—4.

1. **Pimephales maculosus.**—It is a stouter fish than *P. promelas*, both in body and head. The latter is almost round. The anterior margin of the dorsal is equidistant between the extremity of the snout and the last scales upon the caudal fin. The origin of the ventrals is situated a little posterior to the anterior margin of the dorsal. The scales are larger also than in *P. promelas*. Upon a yellowish brown ground there are large and irregular black blotches covering more than half the entire surface of the body. The fins are yellow upon their bases and tips, and black upon their middle. The external margin of the ventrals and pectorals is pure white.

Caught in the sluice of the Arkansas near Fort Makee, and brought home by Lt. E. G. Beckwith, U. S. A.

2. **Pimephales fasciatus.**—This species has the general aspect of *P. maculosus*, differing, however, from it by the position of the ventrals, which are inserted under the anterior margin of the dorsal fin. The scales are smaller also. The color is alternately brown and black in transverse fascies. Dorsal fin provided with two black spots, one anteriorly, the other posteriorly. The other fins being unicolor, with the exception of the pectorals, which are greyish upon their external margin.

From the Yellowstone river;—collected by Dr. F. V. Hayden.

Two immature specimens of this, or a similar species, were collected in Milk river, Upper Missouri, by Dr. Geo. Suckley.

We separate from both *Pimephales* and *Hyboryknechus*, under the name of

**Algoma,**

some small fishes, partaking in a measure of the characters of the genera just mentioned. The teeth are of the cultriform kind, of the grinding type, disposed upon a single row of four: 4—4. The grinding surface is nearly linear, in which respect the teeth resemble more those of *Pimephales* than of *Hyboryknechus*. The pharyngeal bones do not differ materially in all these genera. The head is small and subtruncated, mouth small, with the lower jaw the shortest, and overlapped by the upper, a feature also noticed in *Hyboryknechus*. The isthmus of a moderate size; the eye well developed. The insertion of the ventrals takes places posterior to the anterior margin of the dorsal. The latter is higher than long.
without a short and thick ray anteriorly. The anal is shaped like the dorsal. The caudal is furcated. The scales are very large; the lateral line, submedian, is slightly deflected upon the abdomen.

The large scales will serve to distinguish, upon a first glimpse, this genus from both *Hyborhynchus* and *Pimephales*.

1. **Algoma amara.**—Ten rows of scales upon the line of greatest depth, five above the lateral line and four beneath it. The upper surface of the head and nape is flattened as in *Hydrgyra* and *Pundulus*. Dorsal region pale red; sides silvery; abdomen whitish.


2. **Algoma fluviatilis.**—This species has the general aspect of a young *Campostoma* and might easily be taken as such. Its mouth and eye are smaller than in the preceding species. The upper lobe of the caudal is longer than the lower lobe. There are also ten longitudinal rows of scales upon the line of greatest depth. The upper surface of the head exhibits numerous small spines as fishes sometimes have during the breeding season. Color reddish brown above; yellowish brown beneath.

Collected near Monterey, New Leon, by Lt. D. N. Couch, U. S. A.

And still more curious and remarkable, is the genus

**Cochlognathus**, B. & G.

which, under the external aspect of *Pimephales* presents that unique peculiarity in the cyprinid family, of having spoon-shaped bony expansions of the jaws. There is one on each side on the upper as well as on the lower jaw exactly as in the genus *Tetraodon*; their edge being sharp and cutting. The dorsal fin has the structure of that of *Pimephales*; the insertion of the ventrals is situated under the anterior margin of the dorsal, the caudal being furcated. The scales are large, and the lateral line follows the middle of the flanks. The isthmus is rather wide. The pharyngeals have the same shape and form as in *Pimephales*: the teeth, however, are more slender and concave upon the grinding surface, giving them the appearance of being bent backwards. They are of the same type, a little more conspicuously hooked, and disposed upon a single row of four: 4—4.


From Brownsville Texas;—collected by Capt. Van Vliet, U. S. A.

Now, then, the genus

**Hybognathus**, Agass.

General form elongated, rather slender and compressed. The head is subconical, the snout overlapping the lower jaw, which is thin and flat, provided upon its symphysis with a small tubercle. The mouth being small, subterminal, and directed horizontally forwards; there are no barbels upon its angles, which do not reach the anterior rim of the orbit. The eyes are well developed. There is a narrow isthmus. Anterior ray of dorsal longest. Insertion of ventrals situated posterior to the anterior margin of the dorsal. Caudal furcated. The scales are large, higher than long, and the lateral line following the middle of the flanks. Pharyngeal bones very much bent, with a dilatation upon the convexity, whilst the upper branch is bent inwards, so as to simulate a curve concave from above. The teeth are of the cultriform kind, of the grinding type, very compressed and slightly hooked, and provided with a very narrow grinding surface; they are disposed upon a single row of four: 4—4.

Amongst the species of this genus which we have before us, none answers specifically to the description of *H. nuchalis*. We find every where the symphysis of
the lower jaw rounded instead of angular, and, generally speaking, the eye rather large.

1. *Hybognathus argraitis.*—This species seems to come nearest to *H. nuchalis,* Agassiz, than any of the following ones. The eye, however, is quite large, subcircular in shape, its diameter entering a little short of four times in the length of the side of the head. The snout is rather pointed, and the mouth larger than in the species enumerated further below. The largest specimens observed are four inches and a half in total length. The dark stripe along the dorsal line does not appear conspicuously here, but may be observed, as on all the others, more or less distinctly.

We have examined specimens collected in Milk River by Dr. Geo. Suckley, under Gov. I. I. Stevens, and in the Arkansas River near Fort Smith, by Dr. Geo. G. Shumard.

2. *Hybognathus evansi.*—May easily be distinguished from the preceding by a much stouter head, more protruding snout, small mouth, smaller eye. The opercle is as long as deep, subquadangular, slightly margined behind, as in the rest of the species.

Collected at Fort Pierre, Nebraska, by Dr. John Evans.

3. *Hybognathus plagiatus.*—The general aspect is shorter than in any of the preceding species. The snout is thickish, but less so than in *H. evansi*; the mouth smaller also. The eye is circular, its diameter being contained over four times in the length of the side of the head. The scales are also larger than in *H. evansi.* Greyish brown above, greyish silver along the middle of the flanks, and metallic white or yellow beneath.

Collected in the sluices of the Arkansas near Fort Makee; brought home by Lieut. E. G. Beckwith, U. S. A.

The fish described by Dr. Ayres, under the name of *Gila microlepidota,* presents such peculiarly shaped pharyngeal bones, that wedid not hesitate erecting it into a distinct genus under the name of

ORTHODON,

in allusion to the erect form of its teeth. But to proceed more systematically: the head is subconical, attenuated towards the snout. The mouth is below the medium size, terminal, oblique, both jaws even; no barbels of any sort. A knob or tubercle upon the symphysis of the lower jaw, as in *Hybognathus.* Eye of medium size. Isthmus small. Body subsufiform, having the aspect of the Gile, but the ventrals are inserted under the anterior margin of the dorsal fin. The caudal is furcated. The scales are small; the lateral line submedial, being somewhat depressed along the middle of the abdomen. The pharyngeal bones are thin, vertically elevated, or rather broad in the vertical direction, bent as usual and widening towards the upper and inner limb, so as to be broadest there. The lower branch is much narrower. The teeth are of the cultriform kind of the grinding type, compressed, lanceolated, erect, very slightly bent inwards. They are disposed upon a single row of five, thus: 5—5, the upper ones being quite raised above the edge of the bone.


San Francisco, Cal.—Dr. Newberry.

The genus we next come to, and for which we have chosen the name of

ALGANSEA,

has features and characters altogether different from any known genus. The head is subconical, more or less pointed, though rounded upon its periphery. The mouth being of medium size, slightly oblique upwards, its angles never extending beyond the anterior rim of the orbit, and destitute of barbels; the jaws themselves terminate evenly. The eye is of moderate development.
There is a narrow isthmus between the gill openings. The body short and stoutish, quite compressed, covered with scales of medium or of large size, the lateral line being submedial, slightly deflexed upon the middle of the abdomen. The fins are rather moderate in development; the origin of the ventrals is situated opposite to the anterior margin of the dorsal, the posterior margin of the latter never reaching the anterior margin of the anal. The caudal fin is emarginated posteriorly. The pharyngeal bones are moderately strong; the upper and lower branches of nearly equal strength, though the lower is a little longer than the upper. The convexity is strongly marked and dilated. The teeth are of the cultriform kind of the grinding type, disposed upon a single row of four or five, as follows: 4—4 or 5—5. The uppermost stand boldly out above the surface of the bone.

1. Algansea tincella.—Leuciscus tincella, Val. in Cuv. & Val. Hist. Nat. des Poiss. xvii. 1854, 329.—The scales in this species are next in size to those of A. obesa. There are about twelve rows beneath and fourteen above the lateral line. I say about, because the specimens are somewhat mutilated, as most market specimens are. The insertion of the ventrals are situated a little posteriorly to the anterior margin of the dorsal. The eye is smaller than in any of the preceding species of this genus. Reddish brown above, silvery on the sides, and white beneath.

Purchased in the city of Mexico by Major Wm. Rich.

2. Algansea bicolor.—Of all the species hitherto known of this genus, the one here referred to has the largest scales, five rows of which may be counted from the origin of the ventrals to the lateral line, and nine from the lateral line to the anterior margin of the dorsal, in all fifteen rows. The ventrals are inserted a little in advance of the anterior margin of the dorsal. The body is thickest anteriorly, and tapers backwards; the nape is slightly swollen. The head enters about four times and a half in the total length. The back and sides are of a metallic bluish black, intermingled on the lower half of the flank with a golden hue. The inferior surface is white, contrasting with the color of the back.

Caught in Klamath Lake, O. T., by Dr. John S. Newberry, under Lieut. R. S. Williamson.

3. Algansea obesa.—A very corpulent species covered with scales of moderate development, and so far, the smallest in the genus. The depth is contained about three times in the length, caudal fin excluded. There are eight longitudinal rows of scales between the origin of the ventrals and the lateral line, and fourteen rows above it to the anterior margin of the dorsal, in all twenty-three rows. Dorsal region bluish grey; sides greyish; belly yellowish.

Specimens of this species were collected in the waters of Humboldt River by the late J. Soule Bowman and Lieut. E. G. Beckwith.

4. Algansea formosa.—A very graceful and well proportioned fish as regards body and head. The latter is rather slender and conical, constituting the fourth of the total length, in which the greatest depth enters nearly five times. The origin of the ventrals is situated under the anterior margin of the dorsal, as in A. obesa. The scales are next in size to those of A. bicolor. Seven rows are found between the origin of the ventrals and the lateral line, and ten above it, making eighteen rows in all. Metallic greenish brown above and on the sides, minutely dotted with black; beneath yellowish or whitish.

This species was collected in Merced and Mohave rivers, by Dr. A. L. Heermann, under Lieut. R. S. Williamson, and is very closely allied to Lavinia gibbosa, Ayres, but since I have no specimens of the latter, and that those before me measure but five inches and a half, I feel reluctant to attempt an identification.

Of all the genera recently established by Prof. Agassiz, there is none that has given me so much difficulty to understand, as his genus Acrocheilus.
The lengthy description appended to it, reminded me very forcibly of those "specific descriptions referring chiefly to individual peculiarities of specimens, a kind of portrait of peculiar individuals without much likeness." After a careful study of whatever specific there was in the description of *Acrocheilus alutaceus*, I came to the conclusion that *Acrocheilus* was identical with

**LAVINIA,**

published for the first time in 1854, nearly one year before *Acrocheilus* was proposed. Circumstances of that kind are always to be regretted on either side. The characters of the genus are as follows: The body is very much compressed, deep, subfusciform in outline, covered with well developed scales; the lateral line forming an open curve, convex downwards, nearer the abdominal outline than the back. The fins are well developed; the insertion of the ventrals are situated either in advance of the anterior margin of the dorsal, or immediately under it. The posterior margin of the dorsal approximates more or less the anterior margin of the anal. The caudal is deeply furcated, rounded upon its insertion, and provided with numerous well-marked rudimentary rays above and below. The head is rather small. The cleft of the mouth is situated altogether anteriorly to the orbit; it is of medium size, the upper jaw overlapping the lower one, which is either rounded or truncated upon its symphysis. There are no buccal barbels. The eye is of moderate size; a narrow isthmus separates the gill openings. The pharyngeal bones are strongly curved, the upper branch directed inwards and downwards, the inferior one slightly arched backwards, with the convexity dilated. The teeth, being of the cultriform kind of the grinding type, and disposed upon one single series of five, thus: 5—5, with a sharp terminal point.


   From Sacramento River, Cal.; collected by Dr. A. L. Heermann.

2. **LAVINIA ALUTACEA**.—*Acrocheilus alutaceus*, AGASS. & Pick. Amer. Journ. of
   Sc. 2d ser. xix. 1855, 99.

   From Willamette Falls and Wallawalla river, collected by Dr. Charles Pickering,
   under Capt. C. Wilkes, U. S. N.

3. **LAVINIA HABENGUS**.—This species is intermediate between *L. exilicauda* and *L. alutacea*. The most characteristic feature consists in the relative position of the dorsal and anal fins, which are wider apart. Their size is nearly the same, and if any difference should be observable, the anal would be found a little larger than the dorsal. The specimens before us are in a mutilated condition, inasmuch as the scales are all fallen. The dorsal region seems to have been of a much deeper hue than the lower half of the sides, which are whitish, as well as the belly, contrasting with the rather dark hue of the dorsal region.

   Caught at Monterey, Cal., by A. S. Taylor, Esq.

IV.

This fourth group is less uniform, if the teeth are taken into account. The latter belong to the hooked types, with or without grinding surface (*Dentes uncinato-submolares* and *unicinato-subconici*), of the raptatorial (*Dentes raptatorii*) and prehensile (*D. prehensiles*); kinds chiefly; in most cases disposed upon a double series. But all its representatives are provided with buccal or maxillary barbels. In the species from the Pacific range a thin cartilaginous pellicle is observed upon the jaws: illustrating what we had already remarked, that the cartilaginous lips are not sufficient to characterise the group of Chondrostomi. Of course, it is in the latter where that character assumes its greatest development.

*Amer. Journ. of Sc. 2d, ser. xix. 1855, 220*
We begin the group with the genus

Argyreus, Heck.

which is the exact synonym of Agassiz’s Rhinichthys. And we are not a little surprised at seeing the learned Professor bring forward his generical appellation,* introduced into the nomenclature in 1850, in preference to that of Heckel instituted in 1840, especially when elsewhere he appears so eager at restoring all such names as have the priority of publication, and which is nothing but just.

The natural characters of the genus Argyreus, are: “A snout more or less protruding beyond the lower jaw, thus giving the mouth an inferior position.” In that respect it resembles Campostoma and similar Chondrostm. “The mouth itself is rather small, surrounded with quite narrow and smooth lips,” covered with a deciduous cartilaginous pellicle in the western species, “and provided upon its angle with a small barbel, sometimes very conspicuous.” The gill openings are separated beneath by a very wide isthmus. The insertion of the ventrals is situated in advance of the anterior margin of the dorsal fin, which is higher than long. The caudal is furcated. The scales are small. The pharyngeal bones are quite narrow, and stouter above than below. The teeth are of the hooked type without grinding surface, strongly hooked and disposed thus: 1 | 4-4 | 2, that is, upon two rows, four in the outer row, and one or two in the inner row.

The following species have already been mentioned:


2. Argyreus nasutus, Grd.—See Storer, Hist. of Fish. of Mass. in the Mem. of the Amer. Acad. v. 1855.

3. Argyreus marmoratus.—Rhinichthys mormoratus, Agass. Lake Sup. 1850, 384, Pl. ii. figs. 1 and 2.

From Sault St. Mary.—L. Agassiz.


From Tennessee River.


From Iowa.

To which we add, as new:

6. Argyreus dulcis.—It has the snout more prominent than A. atronatus, and less so than A. nasutus. The head is well developed, constituting the fourth of the length, the caudal fin excluded. The eye is quite small and subcircular, its horizontal diameter entering six times in the length of the side of the head, a little over twice in advance of its anterior rim. The mouth is larger than in most of its congers, and the barbel much more conspicuous. The dorsal fin, as usual, is higher than long, but its upper margin is slightly convex. Its anterior margin is nearer the extremity of the snout than to the insertion of the caudal fin. The latter constitutes a little less than the fifth of the entire length. The anal is a little shorter than the dorsal, but not as deep as the latter is high.

The dorsal region is greyish yellow; the sides yellowish, with an indistinct silvery band; beneath yellowish white. The dorsal region, including the upper part of the flanks, is spread over with black specks, sometimes observed beneath the silvery band also.

Specimens, the largest of which measuring about three inches and a half, were collected by the late J. S. Bowman, in the Sweet Water, a tributary stream.

* Amer. Journ. of Sc. 2d. ser. xvii. 1854, 357.
of Nebraska, or Platte River. Smaller specimens of the same species were obtained in Cottonwood Creek, Utah, by Lieut. E. G. Beckwith, U. S. A.

7. *Argyreus nubilus.*—This is a very characteristic species. The head is very small, and the body, fusiform in shape and compressed, is thick and swollen upon its middle. The tail again is rather slender. The snout is subconical, but not more protruding than in the preceding species; the mouth is a great deal smaller than in the latter, with its barbels less conspicuous. The head constitutes about the fifth of the entire length. The eye is moderately developed and subcircular in shape; its horizontal diameter is contained about five times in the length of the side of the head. The dorsal, caudal and anal fins are of but moderate development, the pectorals and ventrals rather small.

D 8+2; A 7+2; C 5, 1, 9, 8, 1, 6; V 8; P 12.

The number of rays in the fins does not materially differ from that of the preceding species; in both, the anterior two rays of the dorsal and anal fins are mere rudiments.

The color above is blackish brown, with a purplish hue along the middle of the flanks; the inferior regions are of a soiled white or yellowish brown. The upper surface of the head and upper half of the sides, including the eye, is deep black; inferiorly it is whitish or yellowish white.

Specimens, four inches in total length, were collected at Fort Steilacoom, Puget Sound, W. T., by Dr. Geo. Suckley, U. S. A., under Gov. I. I. Stevens.

8. *Argyreus osculus.*—Has more the fascies of *A. atronanus* than of any other of its congeners, both by the outline of its body and head, and the shape and position of the mouth. The head is comparatively small, forming the fifth of the length, with the exception of the lobes of the caudal. The eye is rather large and subcircular, its diameter entering about four times in the length of the side of the head. The dorsal and anal fins are well developed, the former being convex superiorly, and the latter subconvex exteriorly. The posterior margin of the caudal is crescentic. The posterior extremity of the ventrals extend as far as the vent, which is not the case in the two species described above.

D 8+2; A 7+2; C 5, 1, 9, 8, 1, 6; V 8; P 14.

The anterior two rays of both the dorsal and anal fins are mere rudiments, as already stated.

The color is reddish brown above; olivaceous on the sides, with numerous dark blotches and dots. Beneath uniform yellowish white or silvery white.

Many specimens, the largest of which measuring less than three inches, were collected by John H. Clark, under Col. J. D. Graham, U. S. A., in the Babocomori, a tributary stream of the Rio San Pedro, itself flowing into the Rio Gila.

9. *Argyreus notabilis.*—This species resembles *A. osculus* in many respects, but will always be easily distinguished from it by a more truncated snout, and consequently by a mouth not so deeply cleft. The dorsal fin is situated more anteriorly also. The scales are smaller. The ground color is yellowish or brownish above, golden or orange beneath, covered all over, the abdominal region excepted, with small black spots.


The hydrographic basin of the Rio Gila harbors a generic type which, at first sight, one would refer to *Argyreus*; but on a closer inspection, its generic traits will appear quite conspicuous. The name of

**AGOSIA**

is proposed for it; the diagnosis is as follows: Snout rounded, slightly protruding beyond the lower jaw, though the mouth opens horizontally. The mouth is of medium size, surrounded with narrow and smooth lips, and provided upon its angle with a very small barbel. The isthmus is of moderate width. The insertion of ventrals is situated opposite the anterior margin of dorsal fin, which is higher than long. The caudal is bifurcated. The scales are minute;
The pharyngeal bones are expanded upon their curvature. The teeth are of the prehensile kind of the hooked type, provided with a grinding surface; strongly hooked, and disposed thus: 4—4, that is, upon one single row of four.

Now, comparing the above with the characters assigned to *Argyreus*, we find that the most prominent difference resides in the pharyngeal teeth. The isthmus is narrower, and the insertion of the ventrals placed further back.

1. *Agosia chrysogaster*—is about three inches and a half in total length, the head forming a little more than the fifth of it. The posterior extremity of the maxillary extends to the vertical line of the anterior rim of the orbit. The eye is large and circular, its diameter being contained about four times in the length of the side of the head. The anterior margin of the dorsal is a little nearer the end of the snout than the insertion of the caudal. The following is the formula of the fins:

D 19; A 7; C 4, 1, 9, 8, 5; V 9; P 16.

A minute rudiment at the anterior margin of both the dorsal and the anal fins are not included in the above numbers.

The region above the middle of the flanks is reddish brown, spotted or dotted with black, especially upon the head; a black vitta separates this region from that beneath, which is unicolor of a golden hue.

The species was collected in the Rio Santa Crux, Sonora, by John H. Clark, under Col. J. D. Graham.

2. *Agosia metallica*—The specimens of this species are a little shorter than those of the preceding one. It is very characteristic, and easily distinguished from its congener. The head is shorter and the snout more abruptly rounded. The eye is smaller also. The body is more gracefully subfusiform and compressed. The dorsal is higher and narrower, rounded superiorly. The posterior margin of the caudal is crescentic, less furcated than in *A. chrysogaster*.

The formula of the fin's rays present also some difference:

D 9; A 8; C 4, 1, 9, 8, 1, 5; V 8; P 15.

The same is true with regard to the rudiment at the anterior margin of the dorsal and anal, and which must be sought for under the skin.

Upper regions greyish brown dotted with black; inferiorly silvery and unicolor; a black vitta on the sides separating the two hues.


The genus which we have formerly characterized under the name of *Pogonichthys*, although enlarged by the accession of a new species, stand within the same limits as were originally assigned to it. The body is fusiform and elongated, compressed, covered with large and uniform scales, and provided with a conspicuous lateral line deflexed upon the middle of the abdomen. The dorsal fin is higher than long; the ventrals are inserted in advance of the anterior margin of the dorsal. The caudal is bifurcated. The head is of moderate size or else small, either rounded or flattened upon its upper surface. The snout being more or less protruding beyond the lower jaw, the mouth assumes a somewhat inferior position, although opening horizontally forwards. The mouth itself is of medium size, provided upon its angle with a barbel inserted upon the anterior edge of the posterior extremity of the maxillary. The eye is of moderate development. The isthmus is quite narrow. The pharyngeal bones are proportionally stout, the inferior limb being, however, slender, slightly arched and expanded upon its symphysis. About the height of the third tooth the convexity suddenly expands, tapering off towards the extremity of the upper branch, which is slightly bent inwardly downwards. The teeth are well developed, very much compressed upwards and hooked. They are of the prehensile kind, of the hooked type, with a grinding surface, somewhat inclined backwards, and disposed upon a double row of two and four: 2 | 4—4 | 2.
This genus is intimately related to *Leucosomus*, differing from it chiefly, by the structure of its teeth, which are provided with a grinding surface in *Pogonichthys*, whilst there is a sharp edge in *Leucosomus*.

   Besides the specimens collected by Dr. Heermann in the San Joaquin River, Cal., we have received others from Petaluma, Sonoma County, Cal., collected by E. Samuels.

   From Fort Miller, San Joaquin Valley, Cal.; collected by Dr. Heermann.

   Collected at Presidio, near San Francisco, Cal., by Lieut. W. P. Trowbridge, U. S. A.

4. **Pogonichthys communis**.—This species is the most characteristic of the genus, by its small and flattened head and the large scales which cover the body. The mouth is larger in proportion than in any of its congener; in large specimens the snout overlaps entirely the lower jaw, in which respect it resembles *Gila elegans* most remarkably. The barbel upon the angle of the mouth is very conspicuous. The fins are all well developed; the external rays of the pectorals extend beyond the usual termination of these fins in other species. The dorsal region is reddish grey or greyish red, according to circumstances; the rest of the body whitish yellow or yellowish golden, the fins being unicolor.
   We have examined numerous specimens of this species. They were collected at Fort Pierre, Nebr., by Dr. John Evans; at Fort Union, by E. J. Denig; above Fort Union and in Milk River, by Dr. Geo. Suckley, under Gov. I. I. Stevens; in the Yellowstone River, by Dr. F. V. Hayden, and in the Sweet Water, a tributary of Platte or Nebraska River, by the late J. Soulé Bowman.

The genus of genuine Gudgeons,

**Gobio**, Cuv.

is a type that may easily be characterized. Head subconical, with the snout rather thick and obtuse, overlapping the lower jaw, thus giving the mouth a somewhat inferior position. The latter, however, is directed forwards; it is large, and provided with a well developed barbel upon the posterior extremity of the maxillary. The eye is of moderate development. The isthmus is large. The body is elongated, subcylindrical. The dorsal and anal, both, are rather narrow fins. The insertion of the ventrals takes place under the anterior margin of the dorsal or a little behind it. The caudal is bifurcated. The scales are large and the lateral line nearly median. The pharyngeals are gracefully curved, the upper and lower branches tapering, the convexity very slightly expanded. The teeth are slender, subcylindrical upon their base, compressed above, of the raptorial kind of the hooked type, without grinding surface, and disposed upon a double series of one, two or three, and three, four or five, as follows: 3 | 5—5 | 2, or 2 | 4—4 | 1, &c. &c.

This genus may be distinguished from *Leucosomus* by its protruding snout, much more developed maxillary barbel, and narrow dorsal and anal fins, and finally its pharyngeal teeth more strongly hooked.

1. **Gobio gelidus**.—Body and head very slender and elongated; head forming about the fifth of the total length. The snout is quite prominently developed. The eye is rather small compared to *G. fluviatilis*, resembling more, in that respect, *G. cataractae*, from which, however, this species can readily be distinguished by the position of its ventral fins, which are inserted under the anterior margin of the dorsal, whilst they are placed in advance of it in *G. cataractae*. 

**Note:** The text above appears to be a continuation of an earlier discussion on fish species, particularly focusing on the characteristics and distribution of various species within the *Pogonichthys* genus. The text is rich with scientific detail, referencing specific specimens and locations, and delving into the anatomical features of these fish species. It highlights the distinctive traits of each species, such as the shape of the mouth, the coloration of the body, and the structure of the fins. The text also mentions the collection of these specimens by various individuals and the geographical locations where they were found. The final note at the end introduces a new species, *Gobio gelidus*, with a brief description of its physical attributes and distinguishing features, contrasting it with other species like *G. fluviatilis* and *G. cataractae*.
Color yellowish brown, lighter beneath than above, with a silvery streak along the middle of the flank.

Specimens of this species were collected in Milk River, an affluent of the upper Missouri, by Dr. Geo. Suckley, under Gov. I. I. Stevens.

2. GoBIO ESTIVALIS.—This is quite a characteristic species, differing from all its congeners by a rather compressed body, elevated and arched upon its middle, and tapering rapidly along the peduncle of the tail. The snout is much shorter and less obtuse than in G. gelida; the eye is larger also, and the position of the ventrals a little more forwards. The scales are larger, too. In coloration we see no marked difference between this species and G. gelidus.

Caught in the Rio San Juan, near Cadereita, New Leon, by Lieut. D. N. Couch, U. S. A.

3. GoBIO VERNALIS.—The body is fusiform, thickest anteriorly, tapering posteriorly. The head is short, the snout blunt and rounded. The eye is large, its diameter being contained three times and a half in the length of the side of the head. The caudal fin is long and deeply furcated; it constitutes nearly the fourth of the entire length, whilst the head cutters in the latter nearly five times and a half. The color is uniform yellowish brown, with a silvery streak along the middle of the flanks. The opercular apparatus and cheek are highly silvery.

From Arkansas River, near Fort Smith; collected by Dr. Geo. G. Shumard.

Under the head of Luxilus will be found the reasons for transferring the name of Leucosomus, Heck.

to Leuciscus pulchellus, instead of Cyprinus chrysoleucus. We shall now characterize this genus, as it is, henceforth, to stand in the ichthyic system. The body is elongated, subfusiform, compressed. The head is stout, conical, either abruptly truncated or tapering off. In either case, the mouth is large, subterminal, and the upper jaw slightly protruding beyond the lower. A small barbel upon the maxillary, near the angle of the mouth. Eyes of medium size. Insertion of ventrals a little in advance of the anterior margin of the dorsal, or immediately under it. Caudal bifurcated. Scales large, a little longer than high; lateral line following the middle of the flanks. Pharyngeal bones stoutish, sickle-shaped; the inferior branch rather slender, the convexity having a slight expansion tapering off towards the tip of the upper branch. The teeth are subconical, compressed and strongly hooked, of the raptorial kind, of the hooked type, without grinding surface. They are disposed upon a double row of four and two in the following manner: 2 | 4—4 | 2; sometimes 2 | 5—4 | 3, and even 1 | 4—4 | 2.

The genus Cheilonemus, Bd., is strictly synonymous with Leucosomus; the latter differs from Semotilus by the presence of maxillary barbels.


Inhabits the fresh waters of New England.

2. Leucosomus plumbeus.—GoBIO plumbeus, AGASS., Lake Sup. 1850, 366.—If at all different from the preceding, this will be a second species of the genus.

Lake Huron and Lake Superior.

3. Leucosomus dissimilis.—This species will be easily recognized by the small size of the scales of the back compared to those of the flanks. In that respect it approximates species of the genus Semotilus. Its head is subconical, contained a little less than four times in the total length. The eye is large, its diameter being contained four times in the length of the side of the head. The color is
uniform greyish brown above, silvery along the middle of the flank and yellowish beneath.

Specimens of this species were collected by Dr. Geo. Suckley, under Gov. I. I. Stevens, in Milk and Little Muddy rivers, tributaries of the upper Missouri.

4. *Leucosomus pallidus.*—This species has the same general physiognomy as *L. dissimilis.* The scales of the back are likewise a great deal smaller than on the flanks, but in *totalum* they are larger than in the preceding species. The origin of the ventrals is situated in advance of the anterior margin of the dorsal, a feature that will enable us at once to discriminate between this species and *L. dissimilis.* The dorsal region is greyish brown, the ventral region yellowish white. A black spot at the base of the caudal, as well as upon the anterior margin of the dorsal.

Specimens were collected in Antelope Creek, Arkansas, by Dr. C. B. Kennerly, under Lieut. A. W. Whipple, U. S. A.

5. *Leucosomus incrassatus.*—Remarkable for its stout and short body and well developed head, which constitutes a little more than the fourth of the total length. The scales are proportionally smaller than in *L. pallidus.* Dark greyish above, light greyish beneath, with a yellowish hue all over the head and body. A black spot upon the anterior margin of the dorsal; none upon the caudal.

Collected twenty miles west of Choctaw Agency, by H. B. Möllhausen, under Lieut. A. W. Whipple, U. S. A.

The following genus, for which the name of

**Nocomis**

is thought well appropriated, has a short, stoutish and compressed body, covered with large scales. The ventrals are inserted opposite the anterior margin of the dorsal, mayhap a little anterior to it. The caudal is furcated. The head is large, rounded upon the snout, which is declivous. The mouth is large and terminal, the lower jaw being slightly overlapped by the upper. A barbel upon the posterior extremity of the maxillary. Eyes small. Isthmus rather wide. The pharyngeals are stoutish, somewhat expanded upon their convexity; expansion tapering off towards the tip of the upper limb, which is gently curved inwards. The inferior limb is scarcely longer than the upper, looks more slender, is flattened upon its extremity, which is turned outwards, causing a convexity inwardly. The teeth are of the voratorial kind of the hooked type, without grinding surface. They are subcylindrical, acerated and hooked, disposed upon a double series of one and four, in the following manner: 1 | 4—4 | 1.

This genus is allied to *Semotilus* by its pharyngeal teeth, differing chiefly by its mouth, which is not so deeply cleft, and by its maxillary barbels, which are absent in *Semotilus.*

**Nocomis nebrascensis.**—It is a fish about four inches in total length, of a uniform reddish brown hue above, and golden yellow beneath; a blackish streak along the middle of the flanks terminating into a black spot upon the base of the caudal fin. The lateral line is nearly medial, being but slightly depressed along the thoracic region.

Collected in the Sweet Water, a tributary of Platte or Nebraska River, by the late J. Soule Bowman.

V.

The genera brought together in this paragraph are numerous, and quite as varied in their dentition as in the former group. They differ from the latter by the absence of barbels. As in the preceding, the teeth are of the hooked types, with or without grinding surface (*Dentes uncinato-submolares* et *uncinato-subconici*), mostly of the raptorial kind. In the majority of cases, the teeth are disposed upon a double series also.

This and the former group ought to be subdivided in a natural method, which is not our object now. Moreover, a thorough grouping of the American Cypri-
noids cannot yet be attempted with any sort of satisfaction, as long so the eastern representatives are not all revised.

The most curious genus, it must be conceded, is that of

**Exoglossum**, Rafin.

The body is elongated, subcylindrical, slightly compressed. The head is sub-conical, flattened upon the occiput, and terminated by a blunt snout. The mouth is subterminal, opening downwards and forwards, the lower jaw being shorter than the upper and not surrounded by the lips around its symphysis, the lips being largely developed at the angle of the mouth and along the upper jaw also. The eye is of moderate size. The isthmus is wide. The origin of the ventrals is situated opposite the anterior margin of the dorsal. The caudal is bifurcated. The scales are of medium size, nearly quadrilateral. The pharyngeal bones are exiguous, very slender upon their inferior branch, hardly dilated above. The teeth are of the raptatorial kind of the hooked type, without grinding surface, instead of which a sharp, but not crenated, edge. They are disposed upon a double row of one and four, thus: 1 | 4—4 | 1.


Prof. Haldeman was the first who thought of restoring the name of *maxillíngua* to this species.

2. **Exoglossum miráble**.—A very characteristic species, very slender and fusiform, and distinguished from the preceding by a smaller head, smaller mouth, the position a little more backwards of the ventrals, and larger scales. The color is reddish brown above, light reddish beneath, with a silvery band along the middle of the flanks from head to tail. A black spot upon the insertion of the caudal fin.

Caught in the Arkansas River, near Fort Smith, by Dr. Geo. G. Shumard.

Along with young specimens of *Gila grahami*, caught in the San Pedro, were numerous little fishes from two and a half inches to three inches long, which, upon a superficial examination, might not have been distinguished from their associates just mentioned, for the fact of the absence of scales could not have given them an aspect very different from the young Gile, since the latter have very minute scales in their immature state. A careful comparison between the two sets of specimens very soon revealed generic characters so peculiar, that we had to institute, under the name of

**MEDA,**

a genus widely different from all other American cyprinoids, by the presence, upon the anterior margin of the dorsal, of a stout undivided (though articulated) ray, resembling in its general appearance that which is observed in *Barbus*, *Luciobarbus*, *Scaphidion* and *Siptomus*, differing, however, from all of these in the structure of its posterior edge, which is grooved instead of being serrated. The absence of buccal barbels in *MEDA*, is another feature to warrant its claims as a genus, which differs from *Cyprinus*, *Carassius*, *Carpio*, &c., by characters equally obvious, as will be seen by the following diagnosis:

Body elongated, slender, compressed, fusiform in its profile, and perfectly naked. The lateral line may be traced along the middle of the flanks, slightly deflected upon the abdomen. The head is elongated, subconical, rounded upon the snout without being truncated. The mouth is proportionally large, subterminal, its cleft slightly oblique upwards, the lower jaw fitting into the upper. No barbels. The eye large and circular. The isthmus narrow. Dorsal fin higher than long, provided anteriorly with a stout, articulated but simple and osseous ray grooved posteriorly and nearly as high as the second ray, which is
slightly higher, and the highest of all. The ventrals are inserted in advance of the anterior margin of the dorsal, and adherent to the ventral line for more than the half of their total length. The caudal is deeply furcated. The pharyngeal bones are slender, especially upon their inferior limbs, which are longer than the upper ones. The latter are flattened or expanded, and curved inwardly downwards. The teeth are very slender, subconical, compressed at their base, of the prehensile kind of the hooked type, without grinding surface. They are disposed upon a double series of one and four: 1 | 4—4 | 1. Thus, equally distinct from both Phoxinus and Phoxinellus, to which this genus bears an external resemblance.

Thus far we are acquainted with but one species.

Meda fulgida.—The head constitutes a little more than the fifth of the total length. The angle of the mouth is even with a vertical line drawn in advance of the orbit. The dorsal region is reddish yellow; the middle of the flanks as if painted with silver; underneath pale yellow.

From Rio San Pedro, tributary of the Gila; collected by John H. Clark, under Col. Graham, U. S. A.

We now bring here together, under the name of

Cliola,

some species of small cyprinoids, having the external aspect of Dionda, but differing from the latter by the pharyngeal teeth, which are curved, and without grinding surface. The snout is rounded, the mouth small and terminal, with both jaws equal. There is a rather wide isthmus. The eyes are well developed, also. The dorsal fin is about as long as high, or longer than high. The caudal fin is bifurcated; the insertion of the ventrals, opposite the anterior margin of the dorsal. The scales being large, and the lateral line following the middle of the flanks. The pharyngeal bones are of moderate strength; the inferior branch is rather slender, and nearly straight when viewed in front; from the insertion of the teeth, they gradually expand to the entire convexity which is gentle and gradual. The teeth themselves are of the raptorial kind, of the hooked type, without grinding surface, compressed, curved, and disposed upon one single row of four: 4—4.


From Otter Creek, a tributary to the northern fork of Red River, Ark.

2. Cliola velox.—A very slender and elegant species, differing from C. vigilax, by a more conical head, much larger eyes, and larger scales. A black spot may be observed upon the anterior margin of the dorsal fin. The ground color is olivaceous, with the middle of the flanks silvery; a black vitta follows the course of the lateral line. A black spot exists also upon the base of the caudal fin.

Specimens were collected by Dr. C. B. Kennerly, under Major W. H. Emory, in the San Pedro creek, a tributary of the Rio San Antonio, Texas.

3. Cliola vivax.—This species might easily be mistaken for C. velox, were it not for the shortness of its head and its small eye. Besides, the body is not so much elongated, and is covered with scales a great deal smaller. The color is uniform light yellowish or saffron, with a black spot upon the base of the caudal fin, and another upon the anterior margin of the dorsal; the middle of the flanks exhibits traces of a greyish or blackish vitta.

Caught in Leon River, a tributary to the Rio San Antonio, Texas, by Dr. C. B. Kennerly, under Lt. A. W. Whipple, U. S. A.
Amongst the few genera which seem to be common to both hemispheres, there is the genus

**Alburnus**, Rond.

which we find distributed over a large portion of our continent. But, in order to include the American species in that genus, the diagnosis is to be slightly modified, so as to read: Raptoatorial teeth disposed upon a double row of two and four or five, thus: 2 | 5—5 | 2 or 2 | 4—4 | 2. In all the species which I have examined, the teeth are disposed according to the second formula.

The teeth themselves are slender and compressed, more or less hooked. The pharyngeal bones are slender, expanded upon their convexity, the upper limb bent inwards and downwards, and the inferior limb rather exiguus and shorter than the upper. Should the American species, now referred to this genus, prove generically distinct upon a more minute comparison, which we cannot now establish, the name of Alburnellus might unite them under a new generic appellation.

1. **Alburnus dilectus**—is about three inches and a half in total length; the head forming a little less than the sixth part of it. The greatest depth is nearly equal to the length of the head. The diameter of the circular eye is contained a little more than three times in the length of the side of the head, and less than once in advance of its anterior rim. There are ten longitudinal rows of scales between the insertion of the ventrals and the base of the dorsal. The lateral line is upon the fourth row from the ventrals upwards. The color is uniform yellowish red with a lateral silvery streak.

Collected in the Arkansas river near Fort Smith, by Dr. Geo. G. Shumard.

2. **Alburnus umbratilis**—is a shorter and deeper species, and which might easily be taken for a *Luxilus*, so striking is its general resemblance with small specimens of the latter genus. The greatest length is about three inches; the greatest depth being equal to the length of the head, and contained five times in the total length. The lateral line, though running along the fourth row of scales from the insertion of the ventrals, is more deflected upon the abdomen than in *A. dilectus*; the longitudinal rows of scales being fourteen in number. The ground color is silvery grey above; the back, sides and fins as if shaded; the belly reddish.

Specimens were collected, by H. Mollhausen, in Sugar Loaf Creek, a tributary to Poteau river, flowing into the Arkansas near Fort Smith.

3. **Alburnus amabilis**—This is a very slender and graceful species, about two inches and a half in total length. The head constitutes the fifth of the length, and the greatest depth, the sixth. There are nine longitudinal rows of scales upon the flanks, between the insertion of the ventral fins and the dorsal line. The lateral line, as usual, is found along the fourth row from the ventrals upwards. The color is dark reddish brown, silvery upon the flanks. A black patch upon the base of the tail.

Specimens were collected in the Rio Leona, an affluent of the Rio Nueces, by John H. Clark, under Col. J. D. Graham, U. S. A.

4. **Alburnus megalops**—Resembles *A. amabilis* in general traits, being slender and graceful, but easily distinguished from it by a shorter and more rounded snout and a larger eye. The coloration is the same with the exception of the black caudal patch, which does not exist here. The average size of the specimens before us is about two inches.

Caught in San Felipe Creek, Texas, by John H. Clark, under Col. Graham.

5. **Alburnus socius**—Resembles *A. megalops* by its snout and eye. The total length is two inches and a half, the head forming the fifth part of it. The greatest depth is a little less than the length of the head. The dorsal region is olivaceous, the flanks silvery, and the belly yellowish. Opercular apparatus golden.

Specimens of this species were collected in Live Oak Creek, Texas, by John H. Clark, under Col. J. D. Graham, U. S. A.
There are yet other species which bear a striking external resemblance to *Alburnus*, or better *Alburnellus*, but differing by an ensemble of characters, which have led us to establish, under the name of

**ALBURNOPS,**

a genus to include them. They may be distinguished by their smaller mouth and by a thickening of the snout, which slightly overlaps the lower jaw, contrary to what is the case in *Alburnus* and *Alburnellus*. In that respect, *Alburnops* will remind us some species of *Ilyborhynchus*. The eye is large; a very narrow isthmus separates the gill apertures beneath. The insertion of the ventrals takes place under the anterior margin of the dorsal fin, which resembles that of *Alburnus* and *Alburnellus*.

In both of the latter genera, the ventrals are situated in advance of the dorsal. The caudal is bifurcated. On the other hand, the anal has a narrower base than in *Alburnus* and *Alburnellus*; the lateral line is nearly medial, instead of being deflexed upon the abdomen. The scales are large and deciduous. The pharyngeal bones resemble, by their configuration, those of *Alburnellus*. The teeth themselves, are of the prehensile kind of the hooked type, with a narrow and sometimes contorted grinding surface. They are disposed upon a double row of two and four: 2 | 4-4 | 2, or 1 | 4-4 | 2.

Thus we see that a marked difference between *Alburnops* and *Alburnus* s. *Alburnellus*, consists in the presence of a grinding surface in the former, and which is absent in the latter.

1. **ALBURNOPS BLENNIUS.**—This species has the snout most prominently rounded. The posterior extremity of the maxillary extends to a vertical line drawn across the anterior rim of the orbit. The eye is smaller than in the two following species. The greatest length being about three inches and a half, the head forming the fifth part of it; the depth is less than the length of the head. There are ten longitudinal rows of scales upon the greatest depth, six above the lateral line and three below it. The color is reddish brown; the middle of the flanks, silvery; the fins unicolor.

Specimens collected in the Arkansas river, near Fort Smith, by Dr. Geo. G. Shumard.

2. **ALBURNOPS SHUMARDI.**—The snout is more conical than in the preceding species, the mouth larger and more deeply cleft. The head constitutes, likewise, the fifth of the total length, which measures three inches and a half. There are but nine rows of scales, five above and three below the lateral line. Color reddish brown; flanks silvery.

Collected by Dr. Geo. C. Shumard, in the Arkansas river, near Fort Smith.

3. **ALBURNOPS ILECEBROSUS.**—Perhaps the most graceful of the three species so far known of this genus. The number of rows of scales is ten, as in *A. blennius*. The snout less prominent than in *A. shumardi*, and more so than in *A. blennius*. The eyes are the largest in the genus. The head is contained five times and a half in the total length, which averages about three inches. Color reddish brown; flanks silvery.

Caught in the Arkansas river, near Fort Smith, by Dr. Geo. G. Shumard.

Under the name of

**CODOMA,**

we arrange small cyprinoids, characterized by a short head and rounded snout, terminated by a small mouth, the cleft of which does not reach a vertical line drawn in front of the orbit; there being no barbels at its angle, and both jaws even. The isthmus is of moderate width. The body is more or less elongated, compressed. The insertion of the ventrals is situated in advance of the anterior margin of the dorsal. The caudal is bifurcated, and like the rest of the fins, rather
small. The scales are of medium size, higher than long, and the lateral line is but slightly deflexed upon the thoracic region. The pharyngeals are moderately expanded upon their convexity. The teeth are of the raptorial kind, of the hooked type, compressed, without grinding surface, instead of which, a sharp, but not serrated ridge. They are arranged upon one single row of four, thus: 4—4.

The general physiognomy of the genus reminds us of that of Pimephales and Cochlognathus, with which genera it has no intimate affinities, when the pharyngeal dentition is taken into consideration. Indeed, its affinities with Cyprinella and Moniana are of a more close character, for the teeth are constructed according to the same general pattern; from Cyprinella, however, it differs by the presence of one single row of teeth, and from Moniana by the absence of serratures upon the cutting edge of the teeth, and finally from both Cyprinella and Moniana by smaller scales, the course of the lateral line, and the short and rounded head.

1. **Codoma ornata.**—This species has the aspect of Pimephales promelas to a much higher degree than the following. The head forms the fifth of the total length, whilst the greatest depth enters in the latter but three times and a half. The eye is circular and well developed; its diameter entering a little over three times in the length of the side of the head. The anterior margin of the dorsal is a little nearer the extremity of the snout that to the insertion of the caudal fin.

D 8+1; A 7+1; C 6, 1, 9, 8, 1, 6; V 7; P 12.

The coloration is rich and profuse, the upper regions are purplish black, with transverse bands of the same hue along the flanks to the base of the caudal fin; the space not occupied by these, on the back as well as on the abdomen, is of a golden red. The fins are purplish black, edged or tipped with golden yellow or pure white.

Inhabits Chihuahua river and its tributaries; collected by John Potts, Esq.

2. **Codoma vittata.**—Has a more elongated body and subfusciform outline than the preceding species. The head forms a little less than the fifth of the entire length, whilst the depth enters in it about four times and a half. The eye is much smaller than in C. ornata; the fins and scales are smaller, also.

D 8+1; A 7+2; C 7, 1, 9, 8, 1, 6; V 7; P 14.

The upper regions are purplish brown; a silvery band along the middle of the flank; inferiorly yellowish orange. Fins unicolor; the superior ones greyish, the inferior yellowish.

Collected in the valley of Mexico, by John Potts, Esq.

Since Rafinesque's genera are to be restored, his genus *Plargyrus,*

is to take the precedence over the genus Hypsolepis of more modern coinage. The name of Plargyrus was provided for in the Ichthyologia obiensis, to replace that of Rutillus in the eventuality that Cyprinus rutillus of Europe, which was the type of the genus Rutillus, should prove generically distinct from Rutillus plargyrus and similar American species, and which is the case.

The genus Plargyrus includes the prettiest species of American Cyprinoids. Their comparatively small size, compressed and graceful body, subfusciform in its profile, added to brilliant and vivid colors, have brought these fishes to the notice of the multitude. They are commonly known as "Red Dace," "Silver-side Fall-fish," "White and Yellow-winged Shiner," "Shiner," &c.

Its generic traits may be thus expressed: Head large and subconical; mouth terminal, more or less oblique upwards. Jaws equals. No cirri or barbels. Eyes large. Isthmus quite narrow. Tail tapering. Caudal fin bifurcated or forked. The insertion of the ventrals is situated opposite the anterior margin.
of dorsal fin, or a little behind it. Dorsal and anal fins without strong and undivided ray anteriorly. Scales very large, imbricated, much higher than long. Lateral line forming a downward curve beneath the middle of the flanks. Pharyngeal bones rather slender with an angular expansion at the upper portion of the descending branch, the expansion itself tapering away towards the upper and inner extremity. The teeth are compressed, of the prehensile kind, of the hooked type, very slightly hooked, provided with a grinding surface; being disposed upon a double row as follow: 2 | 4—4 | 2.

The teeth of this genus are figured by Heckel, under the name of Argyreus rubripinnis, the second species of his genus Argyreus, and which is nothing else but Plargyrus cornutus in a breeding dress.

The species are:

1. Plargyrus cornutus.—Cyprinus cornutus, Mitch.—See Storer’s Fishes of Mass. in Mem. Amer. Acad. v. New Ser. 1855, 118, where this species is figured and described.


Alabama.

4. Plargyrus frontalis.—Leuciscus frontalis, Agass., Lake Sup. 1850, 363. Pl. iii. fig. 4.
Lake Superior.

5. Plargyrus gracilis.—Leuciscus gracilis, Agass., Lake Sup. 1850, 370.
Lake Huron.

6. Plargyrus Bowman.—We inscribe this species to the memory of one, who, under difficulties of various sorts, during a travel across the continent, thought it not of little importance to collect and preserve specimens of natural history, which he forwarded to the Smithsonian Institution. The species is gracefully sub fusiform in its profile, the depth in advance of the dorsal being equal to the fifth of the entire length, in which the head itself enters about four times and a half. The eye is very large; its diameter being contained a little less than four times in the length of the side of the head. Dorsal region reddish brown; sides silvery, abdomen yellowish. A black streak along the flanks and above the lateral line.

A specimen, four inches in total length was caught in the Sweet water, a tributary of Platte or Nebraska river, by the late J. Soule Bowman.

Had the name of Hypsolepis not been made synonymous of Plargyrus, we might have applied it with perfect propriety to the group which we now call Cyprinella,

since the fishes therein included, possess that curious character of scales higher than long. They replace in the South-west, the Plagryi of more norther climes. Though generally smaller than the species of Plargyrus, some do resemble the latter in a very striking manner, whilst others are much shorter and deeper in proportion. The chief differences between the present genus and Plargyrus, is to be found in the pharyngeal teeth and the position of the ventrals.

To Montana it bears more striking resemblances and real affinities. The position of the ventral fins is the same, the pharyngeal bones are alike also, the teeth are of the same general pattern, but disposed upon a double series in Cyprinella, and upon one only in Montana. Besides, in Cyprinella, the snout generally protrudes beyond the lower jaw, though the mouth is slightly oblique and subterminal. But let us formulate the generic characters of the genus we are now treating of: Body very compressed, either elongated and sub fusiform, or else with the dorsal and abdominal outlines rather arched, but which may, after all,
simply indicate the female sex at the breeding season. The head is of moderate size, subconical, the snout generally protruding beyond the lower jaw. The mouth is small, slightly oblique and subterminal. No barbels of any sort. Eyes moderate. Isthmus narrow. Tail tapering, caudal fin bifurcated. Insertion of ventrals opposite or slightly in advance of the anterior margin of dorsal fin. Scales of moderate development, imbricated, much higher than long. Lateral line forming a downwards curve beneath the middle of the flanks. Pharyngeal bones like those of Pharyngus. The teeth are slender and compressed, of the raptorial kind of the hooked type, slightly hooked, without grinding surface, instead of which, a sharp ridge inconspicuously crenated, and disposed upon a double row of four and one, in the following manner, 1 | 4—4 | 1.

We know already several species of this genus, besides one formerly described and with which we commence the list.

1. **Cyprinella bubalina.**—Louiseus bubalinus, B. & G., in Marcy's Expl. of Red Riv. of La. 1853, 249. Zool. Pl. xiv. figs. 5—8.—It is one of those species, the dorsal outline of which is very much arched. From Otter Creek, a tributary to the northern fork of Red River, Ark.

2. **Cyprinella umbrosa.**—Also a deep bodied species, much larger than the preceding, indeed the largest of the species hitherto known of its genus. The ventral outline as much arched as that of the back. The greatest depth, taken at the anterior margin of the dorsal, is equal to the third of the length, the caudal fin excluded. The entire length measures about three inches and a quarter, the caudal fin being a little less than the greatest depth. The nape is a little depressed; the head constitutes the fourth of the length, caudal fin excluded. The eye is circular, its diameter entering a little over three times in the length of side of the head. The anterior margin of the dorsal is nearer the tip of the snout than the insertion of the caudal. The insertion of the ventrals is a little in advance the anterior margin of the dorsal.

\[ D 8 + 2; A 9 + 2; C 3, 1, 9, 8, 1, 4; V 8; P 14. \]

Greyish red above; greyish white beneath. Fins unicolor.

Specimens were caught by H. B. Möllhausen, under Lt. Whipple, in Coal creek, a tributary to the southern fork of the Canadian river, Ark., and also twenty miles west of the Choctaw Agency.

3. **Cyprinella gunnisoni.**—The body is short but not so deep as in the preceding species. The head is smaller than in *C. umbrosa*, but the eye preserves the same proportions. A characteristic feature may be found in the scales which show a greater portion of their surface, though equally as high. Color reddish brown, dark above and light beneath.

Collected in Cottonwood creek, a tributary of the Great Salt Lake of Utah, and brought home by Lt. E. G. Beckwith, U. S. A.

4. **Cyprinella beckwithi.**—A species allied to the preceding by its external form and general appearance, but readily distinguished from it by a larger head, and larger scales also. The latter one likewise larger than in *C. umbrosa*. Color greyish brown above, orange red beneath; fins unicolor.

From the sluices of the Arkansas river near Fort Makee; brought home by Lt. E. G. Beckwith, U. S. A.

5. **Cyprinella scavis.**—This species establishes the transition between the deep and slender species. The head forms about the fifth, and the depth the fourth of the total length. Yellowish red above, and yellowish white beneath with a silvery hue.

Collected near San Antonio, Texas, by Dr. C. B. Kennerly, under Lt. A. W. Whipple, U. S. A.

6. **Cyprinella lepida.**—Elongated and fusiform; the greatest depth taken upon the anterior third of the body, being contained four times and a half in the total length; the head forming a little less than the fourth of the same length. The
head, therefore, is well developed; the eye is circular, its diameter being contained four times in the length of the side of the head. The scales are larger than in any of its hitherto known congeneres. Light reddish above, pale sulphur yellow beneath.

Caught in the Rio Frio, a tributary to the Rio Nueces, Texas, by Dr. C. B. Kennerly, under Lt. A. W. Whipple, U. S. A.

8. *Cyprinella notata*.—Also an elongated and fusiform species, but easily distinguished from *C. lepida*, by a shorter head, less furcated caudal, and, especially, by smaller scales; the latter differing also in their general outline and radiating furrows. Reddish above; yellowish beneath, with a jet black patch upon the base of the caudal fin.

Caught in the Rio Seco, a tributary to the Rio Nueces, Texas, by Dr. C. B. Kennerly, under Lt. A. W. Whipple, U. S. A.

8. *Cyprinella whipplii*.—Gracefully elongated and subfusiform. Dorsal region slightly arched upon the insertion of the fin. Greatest depth forming a little more than the fifth of the total length, whilst the head, which is subconical, constitutes a little less than the fifth of the same dimension. The eye is quite large, larger than in any other species of the same genus, since its diameter enters but a little over three times in the length of the side of head. Another very characteristic feature is to be found in a very high dorsal fin, rounded upon its upper margin. The origin of the ventral fins is situated opposite the anterior margin of the dorsal. The scales are of moderate development, and the lateral line is but slightly flexed downwards. Reddish brown above; golden yellow beneath; a black patch upon the posterior margin of the dorsal.

Caught in the Sugar Loaf creek, a tributary of Poteau river, itself emptying its waters into the Arkansas river, near Fort Smith, Ark., by H. B. Möllhausen, under Lt. A. W. Whipple, U. S. A.

9. *Cyprinella macrostoma*.—This species is very characteristic. The body is deep upon its middle, tapering posteriorly. The head is subconical, with a prominent snout and a very large mouth. The eye is well developed. The ventrals are inserted a little in advance of the anterior margin of the dorsal fin. Red; silvery upon the opercular apparatus and middle of the sides.

Specimens were collected in Devil's River, Texas, by John H. Clark, under Col. J. D. Graham, and at China, New Leon, by Lt. D. N. Couch, U. S. A.

10. *Cyprinella venusta*.—Gracefully compressed and fusiform in profile. The snout protruding and subconical. The species is related to *C. macrostoma*, from which it chiefly differs by the relative size of its mouth and shape of the body. The ventrals are likewise inserted a little in advance of the anterior margin of the dorsal. Greyish red above, pale beneath; sides silvery. A black patch upon the base of the caudal fin.

Numerous specimens were collected in the Rio Sabinal, Texas, by Dr. C. B. Kennerly, under Major W. H. Emory.

11. *Cyprinella texana*.—Body very slender and fusiform; head small and subconical; mouth small; eye large. Ventrals inserted under the anterior margin of the dorsal. Color reddish brown, sides silvery; lateral line accompanied by black dots terminating into a black spot upon the base of the caudal.

From Rio Salado, Texas, and Turkey creek, Texas, collected by John H. Clark, under Col. J. D. Graham.

12. *Cyprinella luxiloides*.—At first, this species would remind us of certain species of *Luxilus* in its general appearance. The body being deep, gradually tapering away forwards and backwards. The head is well developed, and the mouth also. Ventrals inserted slightly in advance of the dorsal. Reddish brown above; silvery beneath.

From San Pedro creek, Texas, collected by Dr. C. B. Kennerly, under Major W. H. Emory.
13. Cyprinella lucubris.—Elongated, fusiform; head large and mouth accordingly, though the latter is smaller than in C. macrostoma. The ventrals are inserted under the anterior margin of the dorsal. Dark brown above, silvery upon the sides and under the belly.

The locality where these species was collected is not precisely known. It was brought home by Lt. E. G. Bockwith.

14. Cyprinella ludibunda.—All the specimens of this species which we have examined are immature, and yet there is no doubt in our mind as to its specific difference from all the species hereto alluded to. The head is small and conical, with the snout round and truncated. The mouth being small. The ventrals inserted in advance of the anterior margin of the dorsal. Color reddish brown; middle of sides silvery; lateral line marked with black dots.

Associated with the preceding, and collected under the same circumstances.

We next introduce a genus composed of small species, all being provided with scales similar in general outline, to those of both Plagyrus and Cyprinella: we call it

MONIANA.

Its species truly replace the Plagyrus in a more southern latitude under a diminutive aspect. As regards structure, they differ widely from Plagyrus, as will appear by the following diagnosis: Body compressed, subfusciform. Head rather small, subconical or rounded. Snout occasionally protruding slightly. Mouth suboblique, terminal; both jaws generally equal. No barbels. Isthmus narrow. Eyes moderate. Caudal fin bifurcated. These characters, so far, are found in Plagyrus. But now for the differences. The insertion of the ventrals is situated in advance of the anterior margin of the dorsal, which is higher than long. The pharyngeal teeth are compressed, of the raptorial kind, of the hooked type, without grinding surface, instead of which, a sharp ridge is observed, very minutely crenated. They are disposed upon a single row of four, thus: 4—4.

Besides a species previously described, there are several new ones to be placed on record.


From Otter creek, tributary of the northern fork of Red River, Ark. It was also caught in Gypsum creek, a tributary of the false Washita River, by H. B. Möllhausen, under Lt. A. W. Whipple, U. S. A.

2. Moniana lecnina.—The largest of the hitherto known species of the genus. The entire length measures three inches and a quarter, the head forming the fourth of it, the caudal fin excluded. The body is very deep upon its middle, where the greatest depth is a little less than the fourth of the entire length. The mouth is proportionally small. The eye being circular, its diameter entering four times in the length of the side of the head. The rays are:

\[ D 9 + 2; \ A 10 + 2; \ C 5, 1, 9, 8, 1, 7; \ V 9; \ P 16. \]

Greyish brown above; white or dull yellowish beneath.

Specimens were collected in Leon River, a tributary to the Rio San Antonio, Texas, by Dr. C. B. Kennerly, under Lt. A. W. Whipple, U. S. A.

3. Moniana deliciosa.—This is one of the most slender of all the species hitherto known of the genus. Its length is a little over two inches and a half, the head forming the fifth part of it. The latter is proportionally small, subconical anteriorly. The eye is quite large and circular, its diameter entering about three times in the length of the side of the head. There are ten longitudinal rows of scales upon the greatest depth of the body; the scales them-
selves are large. The color is reddish brown above, silvery along the middle of the flanks and yellowish beneath.

Specimens of this species were collected in Leon River, a tributary of the Rio San Antonio, by Dr. C. B. Kennerly; under Lieut. A. W. Whipple, U. S. A.

4. **Moniana proserrina**—is remarkable for its slender body, subconical head, and very small mouth. The eye is of moderate development. The total length is two inches and a quarter, the head constituting the fifth part of it. Eleven rows of scales may be counted upon the line of greatest depth of the body. Greyish brown above; metallic greyish white upon the sides and beneath.

From Devil's River, Texas; collected by John H. Clark, under Col. J. D. Graham, U. S. A.

5. **Moniana aurata**—A most handsome species, with a rather deep body gradually tapering posteriorly, and a rounded and subtruncated head bearing minute spines upon its upper surface. The eye is proportionally small, and the mouth of medium size. Chesnut brown above; a diffused blackish streak along the middle of the flanks; golden beneath.

From Piedra Painte, New Mexico; collected by John H. Clark, under Col. J. D. Graham.

6. **Moniana complanata**—The most compressed of all the species so far known. The profile is regular; the peduncle of the tail rather slender. The total length is two inches and a half, the head entering in it five times and a half. The mouth and eye are of but moderate size. Scales large and very deciduous. Pale red above, silvery upon the sides and yellowish beneath.

Collected at Brownsville, Texas, by Capt. Van Vliet, U. S. A.

7. **Moniana lepturis**—The body is subelliptical in profile, the tail slender. The head well developed, being contained four times and a half in the total length, which measures about two inches. The greatest depth is equal to the length of the head. The fins are quite conspicuously developed; the scales large, as usual in the genus, being also deciduous. Reddish brown above, yellowish white beneath; sides silvery.

Specimens collected by H. B. Möllhausen, under Lieut. W. A. Whipple, in Hurah Creek, a tributary of the Rio Pecos, of the Rio Grande del Norte (Rio Bravo).

8. **Moniana pulchella**—Allied to *M. lutrensis*, but differing from it by a shorter snout and a more compact tail. The eye is large also. A distinctive feature between the two species is to be found in the squamation, since the scales are more deeply imbricated in *M. lutrensis* than in *M. pulchella*. The color is reddish brown; silvery upon the sides.

Caught by H. B. Möllhausen, under Lieut. A. W. Whipple, U. S. A., in the Sugar Loaf Creek, emptying its waters into the Poteau River, itself a tributary of the Arkansas, near Fort Smith.

9. **Moniana frigida**—This species is a little more than three inches in total length, and stands next to the largest of the hitherto known species. The head forms about the fifth of the length. The body is rather deep and very much compressed; the caudal fin deeply forked. The eye is circular, and its diameter contained four times in the length of side of the head.

The rays of the fins are,
\[ D 8+2; A 8+2; C 6, 1, 3, 8, 1, 6; V 8; P 13. \]

The color is of a reddish brown above, silvery white beneath. The middle of the flanks exhibits an indistinct or rather diffused silvery band, sometimes blackish.

Specimens of this species were collected by John H. Clark, under Col. J. D. Graham, U. S. A., in the Rio Salado, Rio Sabinal and Rio Medina, all three tributaries to the Rio San Antonio, and in the Rio Nueces also. It was likewise caught in the Rio Frio, a tributary of the Nueces by Dr. C. B. Kennerly, under Lieut. A. W. Whipple, U. S. A.
10. **Moniana couchi.**—resembles *M. gracilis* most; is, however, distinguished from it by a less fusiform body and a much shorter head. This feature may be traced upon series of specimens of both species with an unerring constancy. The eye is smaller also, and so is the mouth as might be deduced from the characters just alluded to.

From the vicinity of China, New Leon, Mexico; collected by Lieut. Couch, U. S. A.

11. **Moniana rutilis.**—has the general physiognomy of *M. gracilis*, from which it differs by a more advanced position of the dorsal fin and larger scales. Dorsal region greyish; sides and abdomen golden.

From Cadereita, New Leon, Mex.; collected by Lieut. D. N. Couch, U. S. A.

12. **Moniana nitida.**—This species differs from *M. couchi* by a more elongated and fusiform body, more elongated head and much larger eye. From *M. rutilis* it differs by the same characters of the body, but the head differs by the flattening of its upper surface. There are eleven longitudinal rows of scales upon the line of greatest depth of the body, five above and five below the lateral line. The latter, therefore, is nearly medial, forming but a slight curve upon the middle of the abdomen. Color pale red, sides of head and middle of the flanks silvery.

Collected at Cadereita, New Leon, by Lieut. D. N. Couch, U. S. A.

13. **Moniana formosa.**—The prettiest species of the genus; the body is ellipsoid in profile and the tail very much tapering. The region above the lateral line is blackish brown in the adult, and reddish brown in the young, occasionally also dotted with black; the inferior regions are reddish yellow anteriorly and yellowish red posteriorly.

Numerous specimens of this species were collected in the Rio Mimbres, Mex.

14. **Moniana gracilis.**—A very graceful and slender species, resembling most *M. lutrensis*, from which it however differs by a much smaller head and a more arched back; the body itself is more compact. Ash grey above, yellowish white beneath; flanks silvery.

Specimens were collected near Monterey, New Leon, by Lieut. Couch, U. S. A.

15. **Moniana gibbosa.**—May readily be distinguished from all its congeners by a short and arched body, resembling a cyprinodon as much as any fish we might compare it to. Pale reddish above, whitish beneath; sides silvery.

Specimens collected at Brownsville, Texas, by Capt. Van Vliet, U. S. A.

16. **Moniana tristis.**—A slender and graceful species, subfusiform in profile, though the back is rather arched. The peduncle of the tail is long and of nearly uniform depth. The head constitutes about the fifth of the length. Eleven rows of scales, five above, five below the lateral line. Reddish brown.

Brought home by Lieut. E. G. Beckwith, U. S. A.

The "Fauna Boreali Americana" records under the name of *Cyprinus (Abraminis) ballatus*, a species of this family, which bears a strong external resemblance to the large species of *Luxilus*, and so much so, that, on a superficial examination, no one would hesitate to refer it to the latter genus. The structure of the pharyngeal teeth affords the most striking generic differences, as will be seen further on. In selecting for it the name of

**Richardsonius,**

we have borne in mind the eminent labors of the author of the work just referred to. We will characterize the genus by saying, that the body is very compressed, subelliptical or fusiform in its outline and deep upon its middle. The head is proportionally small; the mouth terminal, slightly oblique, constructed as in *Luxilus*, but somewhat larger, yet unprovided with cirrihi or barbels. The eye is large. Isthmus very narrow. Caudal fin forked; insertion of ventrals situated in advance of the anterior margin of the dorsal. Anal fin longer than the
dorsal, and its anterior margin situated anteriorly to the posterior margin of the base of the dorsal, in which respects it differs from *Luxilus*. The pharyngeal bones are narrow, with a slight expansion upon their convexity; the teeth being of the raptorial kind of the hooked type, strongly hooked, without grinding surface, instead of which a sharp but not crenated ridge. They are disposed upon a double row of four or five and two, as follows: 2 | 4—4 | 3, or 2 | 5—5 | 2.

The present genus bears some resemblance to *Squalius*, from which it may be distinguished by the smooth edge of the dental ridge and the long anal, with its peculiar position in reference to the dorsal. The scales are also smaller and much deeper than long, which is not the case in *Squalius*.


The specimens before us were collected at Fort Vancouver and Fort Dalles, Columbia River, by Geo. Suckley, under Gov. I. I. Stevens.

2. Richardsoniulus lateralis,—is more of an elongated and fusiform aspect than *R. balteatus*. The head is contained four times and a half in the total length. The pharyngeal teeth are five upon the outer row, instead of four. Dorsal region blackish brown; lower part of sides and abdomen silvery; upper part of sides provided with a black band extending from head to tail.


We adopt the genus

**Luxilus**, Rafn.

To include such species as are congenerical with *Leuciscus chrysoleucus* of Mitchill, and *Luxilus chryscephalus* of Rafinesque. It is one of the most characteristic genus of North American cyprinoid, and altogether misunderstood by Heckel; for, *Cyprinus chrysoleucus*, Mirr., which he places in his genus *Leucosoma*, is generally distinct from *Leuciscus pulchellus* of Storer, as I have had the opportunity to ascertain. The diagnosis given to *Leucosoma* by its author, and the figures representing the pharyngeal dentition, leave no room for doubt. *Leucosoma*, therefore, is not synonymous with *Luxilus*, but was really established upon a species most intimately related to the one yet unpublished, and which is the type of the genus *Cheilonemus*. The latter, therefore, must give way to *Leucosoma*, a circumstance unavoidable and very much to be regretted, for it complicates the synonymy of both *Luxilus* and *Leucosoma*.

We characterize as follows the genus *Luxilus*: "Body very much compressed, flattened laterally, and deepest upon the middle of its length. Head proportionally small and compressed like the body. Mouth small, terminal, unprovided with cirrhi or barbels. Eyes quite large. Isthmus small. Caudal fins forked; insertion of ventrals situated in advance of the anterior margin of the dorsal. Scales large; lateral line forming a very open curve, convex downwards." Pharyngeal bones much stouter superiorly than inferiorly; a slight expansion may be observed upon the convexity of these bones, extending upwards. The teeth are of the bruisling kind of the hooked type with a slight hook and a well developed grinding surface, both edges of which being strongly crenated. They are disposed upon a single row of five, thus: 5—5. The three uppermost (sometimes the upper two only), stand out in bold relief from the line of the bone.

We meant to have observed, in speaking of the head, that the lower jaw fits into the upper one when the mouth is shut without protrusion of the snout, and that when the mouth is partly open, the lower jaw appears longer than the upper.

1. Luxilus americanus.—*Cyprinus americanus*, Lacep.—*Cyprinus chrysoleucus*, Mitch.—*Leuciscus chrysoleucus*, Storer.—*Leucosoma americanus*, Grd.—For a de-
scription and a figure of this species, we refer to Storer's "History of the Fishes of Massachusetts," in the fifth volume of the memoirs of the American Academy.


5. Lucilius leptosomus.—Outline regularly subfusiform; the depth forming a little more than the fifth of the entire length. The head enters five times and a half in the same dimension. The anal fin is a great deal larger than the dorsal. The scales are larger than in any other species of the same genus.

D 9; A 13+2; C 5, 1, 9, 8, 1, 5; V 2; P 15.

Color greyish brown above; light reddish beneath; sides silvery. Forked margin of caudal, blackish grey.

From Dry Creek, near Victoria, Texas; collected by Dr. C. B. Kennerly, under Major W. H. Emory, U. S. A., Commissioner U. S. and Mex. Boundary.

6. Lucilius seco.—Body deeper than in L. leptosomus; depth equal to the fourth of total length. Head contained five times and a half in the same dimension. Eye very large; its diameter entering three times only in the length of the side of the head. Mouth small. Scales of moderate development. Light brown above, yellowish white beneath; sides silvery.

Specimens of this species were collected in the Rio Seco, a tributary of the Rio Nueces, Texas, by Dr. C. B. Kennerly, under Lieut. A. W. Whipple, U. S. A.

7. Lucilius lucidus.—General form resembling that of L. seco. The head, however, is contained but four times in the length of the side of the head. The mouth is a good deal larger, whilst the eye is smaller. The scales, likewise, attain to a greater development. The color is the same as in the preceding species, with the exception that the tint of the back has a greyish hue and extends more to the sides.

Collected by H. B. Möhlhausen, under Lieut. A. W. Whipple, U. S. A., in Coos Creek, a tributary of the South Fork of the Canadian River, and also twenty miles west of Choctaw Agency.

In the Ichthyologia ohiensiz we find the genus Semotilus, Rafin.

which, though imperfectly characterised, leaves not doubt as to the species the author intended to include in it. Semotilus dorsalis and Semotilus cephalus, are both well known species. S. diploem, on the other hand, does not come under this head. The genus Semotilus we therefore restore with the following characters: Head subconical, both jaws equal or else even anteriorly; cleft of mouth slightly oblique upwards. The mouth itself being large, surmounted with soft lips and without barbels. The isthmus is rather narrow. The insertion of the ventral fins is situated in advance of the anterior margin of the dorsal fin which is higher than long. The caudal is bifurcated. The scales, of moderate size. The pharyngeal bones are narrow, very slightly expanded upon the upper half of their curve. The teeth are of the voratorial kind, of the hooked type without grinding surface, stoutish, moderately hookd and disposed upon a double row in the following manner: 2 | 5—5 | 2; sometimes 2 | 4—5 | 2. Generally speaking, a black or brown spot may be observed at the base of the anterior margin of the dorsal fin.
Besides the two species just referred to, the present genus will include:


4. Semotilus macrocephalus.—Easily distinguished by its very large head which forms more than the fourth of the entire length. Its body is very much compressed and tapering posteriorly. The scales are more uniformly imbricated than in *S. atromaculatus*, in which there is a noted difference it that respect between the anterior and posterior portions of the body. The species of this genus are generally very uniform; the number of the rays of the fins hardly undergoes any variation. In the present species they stand as follows:

D 9+3; A 9+3; C 6, 1, 9, 8, 1, 5; V 8; P 15.

Two rudimentary rays in front of both the dorsal and anal, one of which very exiguous. Brownish grey above; silvery white beneath. A black spot at the base of caudal also.

Specimens were collected at Fort Pierre, Nebr., by Dr. John Evans, U. S. Geologist.

5. Semotilus speciosus.—A graceful and slender fish, subfusiform in its outline, the head, which is conical and pointed forwards, constituting exactly the fourth of the entire length. The ventrals are situated a little further than in *S. atromaculatus*. The scales of the dorsal region in advance of the dorsal fin are quite small; and those on the thoracic region smaller than posteriorly along the sides of the tail.

There are thirteen rays in the pectorals; the number of rays in the other fins does not differ from the preceding species.

The dorsal region is reddish brown; the abdomen is yellowish or whitish. A black vitta extends from the nose across the face and eye to the base of the caudal, where exists also a circular black spot, similar to the one upon the base of the anterior margin of the dorsal.

Collected in the Sweet Water, a tributary of Platte or Nebraska River, by the late J. Soulé Bowman.

We come next to a small fish, constituting a new genus, not without analogy with the Gudgeons, differing from the true Gudgeons, by the absence of barbels either maxillary or buccal and a less prominent snout. We propose to call it

Tiaroga,

and characterise it as follows: Head small, subconical, depressed. Mouth obliquely terminal, of moderate size and without barbels of any kind. Upper jaw slightly longer than the lower. Eye of medium size. Isthmus very wide. Body slender, subfusiform, compressed. Fins are well developed; dorsal and anal narrow and high; caudal bifurcated. The insertion of the ventrals takes place in advance the anterior margin of the dorsal. The scales are small; the lateral line, medial. The pharyngeals are similar to those in *Gobio*. The teeth are likewise of the same character: slender, subcylindrical upon their base compressed above, of the raptorial kind of the hooked type, without grinding surface and disposed upon a double row of one and three, thus: 1 | 3—3 | 1.

So far but one single species is known.

Tiaroga coriitis.—About two inches and a half in total length, the head forming about the fifth of it. The eyes approximate the upper surface of the head which is rounded. The upper regions are brownish, with small blackish spots; the inferior regions are unicolor of a yellowish tint. A black spot upon the base of the caudal fin.

About three years since, the genus

**Gila, B. & G.**

was proposed, to include species whose body was sub fusiform, compressed, with the back more or less arched, especially in large and old specimens, and sometimes tapering very much posteriorly, with the peduncle of the tail very slender. The head being depressed and proportionally small, with its upper outline often concave; the snout is elongated; the eyes are of moderate size; the isthmus small. The mouth is of medium size, the upper jaw overlapping the lower, so as to conceal its cleft from above. No barbels, or rudiments of barbels. The pharyngeal bones are well developed, the inferior limb, elongated, the upper one forming an open curve; the convexity being somewhat expanded, the expansion tapering along the upper and inward limb. The teeth are well developed, of the raptorial kind of the hooked type, without grinding surface, subcylindrical slightly compressed and disposed upon a double row of one or two and four or five as follows: 1 | 4—5 | 2, or even, 2 | 4—5 | 2. The ventral fins are inserted in advance of the anterior margin of the dorsal. The caudal is bifurcated. The scales are small on the dorsal region and of medium size on the sides, and longer than high. The lateral line forms an open curve along the middle of the abdomen.

The species which we now include in this genus, are the following:

   From Zuni River.—Dr. Woodhouse.

   Specimens from Zuni River, collected by Dr. Woodhouse; from the Colorado, collected by A. Schott, under Major Emory, and from the Gila, collected by Dr. Heermann, under Lieut. J. G. Parke, U. S. A.

   From Zuni River.—Dr. Woodhouse.

   From Rio San Pedro, a tributary of the Rio Gila.—John H. Clark.

   From Gila River, collected by Dr. John L. Lecoute.

We separate from the genus *Gila*, under the name of

**Tigoma,**

some species formerly excluded by us in other genera, to which we add a few others not hitherto described. They all bear a general resemblance to *Gila*, from which they differ by a much smaller mouth, and larger scales, and those of the dorsal region, though smaller than on the sides, are not so disproportionate. The ventrals are inserted in advance of the anterior margin of the dorsal, and the caudal is bifurcated. It is not deemed superfluous to state that there are no barbels at the angle of the mouth, and a characteristic of this genus as distinct from *Gila*, consists in its terminal mouth and even jaws. The pharyngeal bones resemble very much those of *Gila*, but the inferior limb is not quite so long, the convexity not quite so expanded, and the upper limb more curved inwards. As to the teeth, it requires a minute observation to detect a difference; they are more compressed and more strongly hooked, otherwise of the raptorial kind, of the hooked type either without a grinding surface, or else a grinding surface more or less developed. They are disposed in the following wise: 2 | 5—5 | 2, 2 | 4—5 | 2, or 1 | 4—5 | 2, and some intermediate formulae.

A. Teeth without grinding surface.
   From Rio Mimbres, a tributary of Guzman Lake, Mex.—John H. Clark.

   From Posa Creek, San Joaquin Valley, Cal.—Dr. A. L. Heermann.

3. **Tigoma bicolor**.—A large species, the largest of the genus hitherto known to us. It is twelve inches in total length, the head forming the fourth of it. The greatest depth is nearly equal to the length of the head. The eye is subcircular, and its diameter contained about six times in the length of the side of the head. The origin of the ventrals is situated but slightly in advance of the dorsal. The latter is higher than long throughout the genus. The scales are quite large. The dorsal region is bluish grey; the sides and belly are silvery white, sometimes golden, but always in contrast with the tint of the back.
   Specimens of this species were collected in Tlamath Lake, O. T., by Dr. John S. Newberry, under Lt. Williamson, U. S. A.

4. **Tigoma purpurea**.—This is a much stouter fish than *T. pulchella*, which it resembles in other respects; but its head is larger and its body shorter. The anterior margin of the dorsal is nearer the extremity of the caudal than the tip of the snout, whilst in *T. pulchella* it is nearer to the snout than the extremity of the caudal. The scales are also larger than in *T. pulchella*. The color is of purplish black above and on the sides; beneath yellowish.
   Collected at San Bernardino, in the upper waters of Rio Huagui, west of the Sierre Madre, by Dr. C. B. Kenmerly, under Major W. H. Emory.

5. **Tigoma intermedia**.—Intermediate between *T. pulchella* and *T. purpurea*, more closely related however to the former than to the latter. The fins are much less developed, the inferior fins especially are quite small.

6. **Tigoma obsesa**.—A very characteristic species by its short and deep body, its short and conical head, and its small fins. It bears a general resemblance to *T. purpurea*, but its head is much smaller. Color of dorsal region bluish grey; upper half of sides dotted, lower half unicolor and yellowish white like the belly.
   Specimens of this species were collected in Salt Lake Valley by J. Soulé Bowman.

7. **Tigoma humboldti**.—Resembles *T. obsesa* by a deep and rather short body, but the latter is covered with much larger scales. The head and eyes are also much larger. The dorsal region above the lateral line is bluish or greyish black and so the upper surface of the head. The rest is red and golden, except a narrow blackish streak below the lateral line, extending from the thoracic belt to near the anal fin.
   Collected in Humboldt river by J. Soulé Bowman, and Lt. E. G. Beckwith, U. S. A.

8. **Tigoma lineata**.—The general aspect is elongated, the body being subfusiform, and the head small and conical, constituting a little less than the fourth of the total length. The ground color is yellowish; the centre of the scales of the upper regions being black, the back and upper half of the flanks appear as if marked with alternate lines of black and yellow.
   Specimens of this species were likewise collected by Lt. E. G. Beckwith.

9. **Tigoma gracilis**.—The body is elongated and compressed, subfusciform, resembling *T. lineata*, but the head is more elongated. The ventrals are inserted but a little in advance of the anterior margin of the dorsal, whilst they are more so in *T. lineata*. In the latter the pectorals are short and broad; in the present species they are narrow and elongated. The scales are smaller than in *T. lineata*. Bluish grey above and on the sides; yellowish beneath.
Collected by Lt. E. G. Beckwith, U. S. A.

B. Teeth provided with a grinding surface more or less conspicuous.


11. TIGOMA NIGRESCENS.—This is quite an elegant species, being elongated and slender like T. pulchella and T. gracilis. It differs from T. gibbosa by a more conical head and snout. The ground color is yellowish, the body of the scales being covered with crowded black dots, the back and sides appear almost black, the belly is unicolor. In the young, the upper regions are lighter than in the adult. Specimens were collected in the Boca grande and Janos river, by Dr. C. B. Kennerly under Major W. H. Emory, U. S. A.

12. TIGOMA PULCHRA.—The body is gracefully elongated, in which respect it resembles T. nigrescens, from which it may be distinguished by its smaller head and larger scales. The color, moreover, is of a far more brilliant type: the dorsal region is reddish or blackish brown, the sides and belly of a uniform golden yellow; a diffused black streak may occasionally be seen along the upper portion of the flanks, very likely more predominant in the male than in the female. Collected in Chihuahua River and tributaries, by John Potts, Esq., of Chihuahua, Mex.

13. TIGOMA CRASSA.—This species has a short and deep body; the greatest depth being more than the fourth of the entire length. The head is small and conical, constituting nearly the fifth of the entire length of the fish. The scales are very large, higher than long and the lateral line deflected upon the abdomen as usually in this genus. The color of the back is bluish or purplish black, greyish black on the sides where the yellowish ground color appears; beneath unicolor. Caught in the Sacramento River near Fort Reading, Cal., by Dr. John S. Newberry, under Lt. R. S. Williamson, U. S. A.

Next to these numerous species in which the system of dentition seems to be in an unstable condition, we place the new genus

CHEONDA,

which has the general aspect of both Gila and Tigoma, by the position of the ventrals in advance of the anterior margin of the dorsal, by the absence of barbels at the angle of the mouth, which is of moderate size.

The body is elongated, fusiform in profile, and very much compressed. The caudal fin is bifurcated. The head is rather small and subconical, and the snout, though rounded, is yet elongated. The eye is large and the isthmus small or narrow. The scales being of medium size and the lateral line greatly deflected upon the abdomen. The teeth are of the prehensile kind, of the hooked type, with a grinding surface; they are compressed and disposed upon a double row of two and four and five, thus: 2 | 4-5 | 2.

1. CHEONDA COOPERI.—The fins are well developed and the anal is larger than the dorsal. Their formula is as follows:

| D 10-12; | A 11-2; | C 7, 1, 9, 8, 1, 6; | V 9-1; | P 10 |

The dorsal region is reddish grey; the sides and belly silvery white, with a golden reflect.

Collected at Fort Vancouver, Columbia River, by Dr. John G. Cooper.

2. CHEONDA CERULEA.—May readily be distinguished from its congener by
the presence of much smaller fin; the anal is a good deal smaller than the dorsal, and the ventrals a little less anterior, with reference to the dorsal.

D 10+2; A 8+4; 6, 1, 3, 8, 1, 5; V 10+1; P 16.

Upper regions of a greyish azur; inferior regions dull silvery white; black dots scattered all over the back, sides and belly.

Caught in Lost River, O. T., by Dr. John S. Newberry, under Lt. R. S. Williamson, U. S. A.

There is another generic type, for which we have provided the name of

**Siboma**,

composed so far of but two species, one of which originally referred to the genus *Lavinia*. It is to be recognized by a stout and somewhat compressed body, covered with large scales. The caudal is crescent-shaped posteriorly; the origin of the ventrals is situated a little posteriorly to the anterior margin of the dorsal, or immediately under it. The head is rather small, sloping towards a wedge-shaped snout, rounded superiorly. The mouth is of small size, horizontal, terminal, with jaws even. No barbels. Eye below the medium size. Isthmus rather narrow. Pharyngeal bones stout, expanded upon their convexity, with the inferior branch short and bent inwardly so that its extremity is directed outwardly, whilst the upper branch is slightly bent inwards. The teeth are large and very compressed, and terminated by a slender hook. They are of the raptorial kind, of the hooked type without grinding surface properly so called, but instead of a sharp edge along the inner margin of the teeth, a blunt and narrow ridge may be observed. They are disposed upon a double row of one and two and four and five, as follows: 1 | 4—5 | 2.


Specimens of this species were procured by Dr. A. L. Heermann, under Lt. R. Williamson, in the San Joaquin, Merced and Mohave Rivers, Cal.

2. **Siboma atraria**.—The largest specimen of this species which we have examined is about seven inches in length, and although small, compared to the specimens of *S. crassicauda*, to which we had to compare it, yet the distinctive features between the two species appear very striking. And first of all, the imbrication of the scales in *S. atraria*, is such as to expose more of their surface than in *S. crassicauda*, and moreover the lateral line in *S. atraria* runs along the seventh row of scales from the insertion of the ventrals upwards, leaving eleven rows above it, to the base of the dorsal fin, whilst in *S. crassicauda*, there are as many rows of scales below as above the lateral line. The absolute number of longitudinal rows of scales is the same in both species. The head is proportionally larger than in *S. crassicauda*, but the fins are much less developed. The ground color is olivaceous, the sides and back being nearly black or brownish black, from the number of confluent maculae and dots. The fins itself are blackish upon an olivaceous ground. The sides and upper part of the head, are likewise brownish black.

Found in a spring, in Utah District, near the Desert, by Lt. E. G. Beckwith.

The species which are arranged under the genus

**Psychochelius**, Agass.

remind us by their general appearance of both *Mylocheilus* and *Mylopharodon*. They have an elongated, subcylindrical and compressed body; an elongated head, a mouth deeply cleft, but no barbels upon its angle. The upper jaw overlaps the lower, though the mouth remains horizontal and subterminal. The eye is of moderate size; and so with the isthmus. The ventral fins are inserted a little in advance of the anterior margin of the dorsal. The caudal is furcated. The scales, of medium size; the lateral line nearly medial. The
pharyngeal bones are long and slender, slightly expanded upon their convexity, with the inferior limb much more slender than the upper. The teeth are of the raptorial kind, of the hooked type without grinding surface, subconical, slightly hooked, and disposed upon a double series of two and four or five, thus: 2 | 4—4 | 2, or 2 | 5—5 | 2.


San Francisco, Cal.—Dr. Newberry.


Specimens of this species were collected at Fort Vancouver and Fort Steilacoom, by Dr. Geo. Suckley, at Astoria, O. T. by Lt. Trowbridge, and in Villa-
mette River, by Dr. Newberry, under Lt. Williamson, U. S. A.

3. Ptychocheilus rapax.—This is a large species too, differing from *P. grandis* by a proportionally shorter head, a more advanced position of the ventral fins and by much smaller scales on the dorsal region in advance of the dorsal. The inferior limb of the pharyngeal bones is not so long and slender, and there are but four teeth upon the main row, instead of five. The teeth and bones are stouter. Colors, blackish brown above; whitish beneath.

From Monterey, Cal.; collected by Lt. W. P. Trowbridge, U. S. A.

4. Ptychocheilus lucius.—A very characteristic species. The body is compressed, but the head is flattened or depressed and very much developed, constituting nearly the fourth of the entire length. The dorsal and ventrals are situated quite posteriorly. The scales are below the medium size, and the lateral line is bent downwards upon the abdomen. The pharyngeal bones are very slender; the inferior limb is almost exiguous and proportionally as long as in *P. grandis*. There are, however, but four teeth upon the main row, instead of five, as in the case of *P. grandis*. Color bluish grey above; silvery golden beneath.


5. Ptychocheilus vorax.—The head is also depressed in this species, but it is much smaller since it constitutes the two-ninths of the entire length. The body is much deeper than in *P. lucius*, and the ventrals are situated more in advance of the dorsal. The dorsal itself is not situated so far back. The scales are very small upon the dorsal region between the dorsal fin and the operculum. Bluish above; silvery beneath.

Specimens were brought home by Lt. E. G. Beckwith, U. S. A. The precise locality, not known.

**APPENDIX.**

The following species are here recorded as complementary to the preceding ones.

1. Hybognathus regius.—A large and beautiful species, the largest that has, so far, come to our knowledge, some of the specimens measuring seven inches in length. The body is gracefully elongated, compressed, fusiform in its outline. The greatest depth, taken immediately in advance of the dorsal fin, is contained about five times in the length, or five, and a third of a time. The head is of moderate development, subconical, subtruncated, contained six times in the total length. The mouth is quite small. The isthmus, very narrow. The origin of the ventrals recedes a little from the anterior margin of the dorsal,
which anterior margin of the dorsal, is nearer to the tip of the snout than the base of the central rays of the caudal.

D 2+9; A 2+9; C 5, 1, 9, 8, 1, 7; V 8; P 15.

There are thirty-eight scales in the lateral line; six longitudinal rows above it, and four beneath, upon the line of greatest depth. Color brownish red above, pale reddish beneath; flanks shining of silver and gold.

Inhabits the Potomac River, and probably all the fresh waters of Maryland. It is commonly called Smelt, at Washington and vicinities, and Gudgeon at Baltimore and surrounding counties.

2. Hybognathus nitidus.—Leuciscus nitidus, DeKay, N. Y. Fauna. iii. 1842, 209. Pl. xxxiii. fig. 105.—Storer, Synops. 1846, 162.

Collected at Westport, Lake Champlain.—S. F. Baird.

HUDSONIUS.

Body elongated, compressed, fusiform in profile, and covered with quite large scales. The lateral line being nearly medial. The head is of but moderate size; the snout being subconical and rounded anteriorly. The mouth is subterminal, somewhat protractile, in which situation it is directed obliquely forwards and downwards; when shut, the lower jaw fits within the upper, the snout being slightly protruding. There are no barbels about the mouth. The eyes are large; the isthmus is small. The dorsal is higher than long; its anterior margin is even with the insertion of the ventrals. The anal has a proportionally longer base than the dorsal. The caudal is deeply furcated. The pharyngeal bones are well developed; the inferior limb is rather short, its extremity being flattened and slightly turned outwardly. From the middle of the convexity a sudden expansion occurs, tapering into the upper limb, slightly curved downwards. The teeth are of the bruising kind, of the hooked type, provided with a grinding surface. But there occurs many irregularities, being more or less hooked and the grinding surface more or less developed. It is not uncommon to observe all these variations upon the pharyngeal of a single specimen. The teeth are disposed upon a double row with the following variations: 2 | 4—4 | 2, 2 | 4—4 | 1, 0 | 4—4 | 2, or 0 | 4—4 | 1.


Specimens collected in Chicago Harbor, Lake Michigan, and in the Root River, at Racine, Wis.—S. F. Baird.

2. Hudsonius amarus.—This species is closely allied to the preceding, from which it differs by a smaller head and smaller eye. Its opercle is also broader compared to its height or depth. The head constitutes the sixth of the total length. The greatest depth taken immediately in advance of the dorsal, enters a little over five times in the total length.

The coloration is nearly the same as in H. fluviatilis, with the exception that the black spot at the base of the tail disappears at a much earlier period. The species grows to a much larger size also; we have seen specimens seven inches long, in which the satin band along the sides and the black spot of the tail had given way to a uniform golden hue extending to nearly the entire body.

Caught in Chesapeake Bay, and as far up the Potomac River as Washington, where it is caught along side with Hybognathus regius, and similarly called Smelt.

Hybopsis, Agass.

This genus was left rather vaguely defined by its author, for there are many genera in which "the mouth is protractile downwards, after the fashion of Catostomus" with the lips neither swollen nor thickened. And many other genera
too, in which there is "only four or five compressed and hooked teeth in each main row, and one or two in a second row." What is really of generic value is left for us to conjecture, since we are not in possession of its typical species.

The generic characters which we now offer are based upon *Leuciscus storriarianus* and a new species from Alabama, and should they prove generally distinct from *H. gracilis*, a new name will have to be coined for our species.

Body elongated, compressed, sub fusiform in profile, covered with rather large scales. The lateral line being straight, along the middle of the flanks. The head is of moderate size, subconical and rounded upon the snout which protrudes beyond the lower jaw. A barbel, inserted upon the anterior margin of the posterior extremity of the maxillary, may be seen at the angle of the mouth. The eyes are large, the isthmus narrow. The dorsal is a little higher, and the anal deeper, than long. The insertion of the ventrals takes place opposite the second ray of the dorsal, hence very nearly under its anterior margin. The tail is deeply furcated. The pharyngeal bones have the same form and appearance as in *Hudsonius*; the teeth are likewise of the same kind (brusing) and type (hooked with a grinding surface), but more irregular yet. Sometimes not hooked, the grinding surface contorted and nearly absent, or even resembling a truncated cone. They are disposed upon a double row of four and one: 1 | 4—4 | 1, or 0 | 4—4 | 1.

This genus, it will appear, is intimately related to *Hudsonius*, from which it chiefly differs by the presence of barbels at the angle of the mouth, and by its straight lateral line also.


From Marietta, Ohio.—Prof. E. B. Andrews; Russellville, Ky.—Dr. Shumard.

2. *Hybopsis winchelli.*—It is a shorter and more contracted species than the preceding. The head forming but the fifth of the total length, whilst it constitutes the sixth in *H. storriarianus*. The eye and mouth are also larger; the same is the case with the scales. The color is pale red with a silvery streak along the middle of the flanks.

From Black Warrior River, Ala.—Prof. A. Winchell.

**CLINOSTOMUS.**

A genus instituted to include several new species, together with one previously described as a *Leuciscus*. Its characters are as follows: Body elongated, compressed, sub fusiform in profile. The head is compressed like the body; the frontal surface being very declivous and sloping towards a pointed rostrum, so that in profile the head is sub triangular, and if broader, would be wedge-shaped when seen from above. The mouth is very large, the lower jaw longer than the upper, beyond which it protrudes, giving to the cleft an oblique direction upwards. The eye is very large; the isthmus, quite narrow. The dorsal is higher than long, and inserted on the space between the ventrals and the anal, a little nearer to the former than the latter in a vertical line. The caudal is deeply furcated. The scales are of but moderate development, varying considerably in size between the different species. The lateral line forms a downward curve upon the abdomen so as to bring its convexity nearer to the ventral than the dorsal outline. The pharyngeal bones are rather slender, the lower limb especially; a slight expansion may be observed upon their convexity; the upper limb being flattened, bent inwardly and either shorter or of equal length with the lower limb. The teeth are of the raptorial kind, of the hooked type without grinding surface, and disposed thus: 2 | 4—4 | 2, or 2 | 5—4 | 2, and sometimes 1 | 4—4 | 2.

This genus is more closely related to *Ptychocheilus* than to any other of the family. The pharyngeal teeth are constructed upon the same pattern; the chief difference being found in the inclined cleft of the mouth, and the protrusion of the lower jaw beyond the upper.

Inhabits most of the tributaries of the Ohio River.

2. Clinostomus funduloides. The body is proportionally much shorter than in C. elongatus, and less tapering posteriorly also. The head constitutes a little more than the fifth of the entire length. The greatest depth is equal to the length of the head. The eye is a little smaller than in any of its hitherto known congeners; its diameter entering three times in the length of the side of the head. The scales are a good deal larger than in C. elongatus. The color is of a pale red, with a silvery hue along the middle of the flanks, and a few scattered black spots.

The specimens before us we caught in the creeks and inlets of the Potomac River, in the neighborhood of Washington, D. C., the largest of which measuring about three inches.

3. Clinostomus affinis. Resembles the preceding one in its general bearing. The body however seems to be more tapering posteriorly, the head larger and the mouth more deeply cleft, since the posterior extremity of the maxillary reaches a vertical line passing through the anterior rim of the pupil, whilst in C. funduloides the extremity of the same bone extends but half way between the anterior rim of the orbit and the pupil. The eye is a little larger also, whilst the scales are smaller.

Inhabits the waters of James River, Va.—Collected by S. F. Baird.

4. Clinostomus carolinus. The head is larger than in C. affinis, and the body more elongated, compared to the depth. The eye is a great deal larger, and the scales smaller. Blackish brown above, with scattered black spots; reddish beneath; flanks golden.

From Salem, N. C.—Collected by J. T. Lineback and School. Specimens sent to the Smithsonian Institution.

Alburnus lepidules. The most slender and elongated of the species hitherto known to us. The total length is about four inches, in which length, the depth enters a little over eight times. The head itself constitutes about the sixth of the length. The posterior extremity of the maxillary scarcely reaches the vertical line drawn in advance of the orbit. The caudal fin is a little longer than the head. The anterior margin of the dorsal fin is nearly equidistant between the tip of the snout and the concavity of the caudal. The pectorals and ventrals are rather small. A broad silvery band may be observed above the lateral line.

Specimens from Black Warrior River, Ala.—Prof. A. Winchell.

Plagyrus argentatus. A specimen of this species is about three inches long, the head forming the fifth of the entire length. A vertical line drawn across the anterior rim of the orbit, intersects the extremity of the maxillary bone. The eye is large; its diameter entering three times in the side of the head. The dorsal scales anterior to the dorsal fin are quite small, contrasting greatly with those of the side which are well developed. The anterior margin of the dorsal is nearer to the insertion of the rays of the caudal fin than the tip of the snout. The dorsal region is pale red, whilst the sides appear as if coated with silver.

Inhabits the waters of James River, Va.—S. F. Baird.

Ceratichthys, Baird.

Body elongated, fusiform or subfusciform, somewhat compressed. Head flattened above, very declivous anteriorly with the snout rounded and overlapping the lower jaw. Mouth moderate in size, subterminal and horizontal.
provided with a barbel upon its angle, and inserted upon the extremity of the maxillary bone. Eye approximating the upper surface of the head, and rather moderate in size. The isthmus is wide. The insertion of the ventrals is even with a vertical line drawn from the anterior margin of the dorsal fin. The latter is higher, and the anal deeper—than long. The scales are large, and the lateral line nearly straight along the middle of the flanks. The pharyngeal bones are pretty stout upon their convexity which is very slightly expanded, whilst the upper and lower branches are nearly equally developed, the latter however, more slender. The teeth are stoutish, compressed, of the prehensile kind of the hooked type, generally without grinding surface. Sometimes, however, a grinding surface may be observed upon some of the teeth which are subject to some variations being compressed or else subconical, generally hooked and occasionally conical. They are disposed upon a single row: 4—4.


From Yellow Creek, a tributary of the Mahoning.—J. P. Kirtland.


Falls of the Ohio.—Rafinesque.

3. Ceratichthys leptocephalus.—A species easily to be distinguished from its congener, by its small head which enters four times and a half in the total length. The body itself is proportionally shorter than in C. amblops especially. Its scales are likewise larger than in the latter species. The color is of a uniform blackish grey above, and greyish white beneath.

Specimens were collected at Salem, N. C., by J. T. Lineback and School, and preserved in the Museum of the Smithsonian Institution.

Nocomis Bellius.—It is a more bulky and deeper fish than its congener from Nebraska. And what is still more characteristic, its head is smaller, hence its mouth smaller also. We could not detect the small teeth constituting the inner row, but supposed they got lost in the preparation of the pharyngeal bones. At any rate, whether lost or entirely absent, we have here a second species of the genus Nocomis. Color reddish above; reddish yellow beneath, with an obsolete black spot upon the base of the caudal.

Caught in the Black Warrior River, Ala.—Prof. A. Winchell.

Description of the Byssus in the genus Unio.

By Isaac Lea.

Professor Kirtland published in the American Journal of Science for July, 1840,* some observations he had made on the anatomical and physiological characters of the Naïades, and was the first a few years before to have noticed that at least some species of Unio, when very young, were anchored to some foreign substances by "a small silky filament" attached to the foot. I had casually observed the fact in a single instance, in Unio complanatus from the Schuykill, but had not the opportunity of again witnessing it. The Professor followed up his discovery at different periods, and found thus attached the young of the following species; viz., zigzag, elegans, dehiscentus, ebenus, crassus, foliatus, pyramidatus, crassidens and gibbosus.

The fact at the time was considered of great interest, and it was very much desired that further observations should have been made. Nothing has, however, to my knowledge, been since published in connexion with the subject neither in this country nor in Europe. M. D'Orbigny discovered in the Rio Parana, South America, a very remarkable fresh water bivalve, which he named

* Page 167 figs. a and b.
Byssanodonta Paranensis. (Voy. dans l'Amerique Merid.) This always remains attached by a byssus, proceeding from the foot. It has anterior and posterior adductor muscles.

In the examination of the soft parts of a very large number of species of this family, from Georgia, which I have been enabled to do through the kindness of Bishop Elliott, I have noticed in the adults of two small species, a perfect byssus attached to the lower portion of the foot, posterior to the base.

In dissecting five specimens of Unio acutissimus, nobis, from Etowah River, Georgia, I found in a full grown specimen, one and a quarter inches wide, a large fine byssus, fully an inch in length, thicker than a horse hair, quite flattened, semitransparent, and without any appearance of fibre, but rather hornlike. At the point of insertion in the foot, the filament is a little enlarged and rounded, and there is also at the same point the rudiment or remains of a second one. The other extreme end of this filament, where it was attached to the foreign substance to which the animal had anchored itself, is evidently perfect, shewing the true length of the byssus. At this end it is divided into four branches, undoubtedly having been attached. Of the five specimens before me, one only has the byssus remaining; but it is evident, from the fact that each of the others has a longitudinal cicatrix at the point of the former attachment, that every one had been furnished with a byssus.

I found also that the same kind of byssus existed in the adult of the closely allied species, Unio Conradius, nobis, which accompanied the above from the same locality. There are three of this species, one of which has a portion of the byssus attached in the same manner, but evidently broken off and not being more than the fourth of an inch long. This filament is much more delicate than that described above, not being thicker than a human hair. It is not flattened, but rounded. Close to its insertion in the foot is a second one, shorter and probably the remains of a separate filament of attachment, the genus Pinna having innumerable fine threads of attachment, the shell itself of one species being sometimes found more than two feet in length.

In all the eight specimens of the two Uniones above mentioned, the impressed cut or cicatrix made by the byssus is very observable, so that there cannot remain a doubt, but that they had all been attached until they had arrived at adolescence.

As part of these were no doubt anchored when taken from the water, and part of them free and locomotive, it appears that it cannot be necessary to their existence that they should retain their normal condition of attachment.

There are other allied species, forming with these a group, of which acutissimus is the type, which I have not had the advantage of examining; but I have no doubt that those will all be found to be also anchored by a byssus, in the same manner.

These facts will I hope draw the attention of the Zoologist more closely to observe the habits of this family.

Dr. LeConte, on behalf of the Committee appointed to revise the list of members and correspondents of the Academy, presented a corrected copy of the list; which report was adopted, and the Committee discharged.

The Corresponding Secretary read his report for September.

ELECTION.

Mr. Wm. G. Binney, of Germantown, Dr. Wm. Smith Forbes, and Mr. Wm. Weightman, of Philadelphia, were elected members of the Academy.
October 7th, 1856.

MR. ORD, President, in the Chair.

Letters were read—
From W. G. Binney, dated Germantown, October 5th, 1856, acknowledging his election to membership.
From H. W. Kennedy, dated Buenos Ayres, August 5th, 1856, transmitting specimens for the museum.

On leave granted, Mr. Lea offered the following resolutions, which were unanimously adopted.

Resolved, That the members of the triennial General Convention of the Protestant Episcopal Church, with their families, be invited to visit the Museum on public days, during their session in this city.

Resolved, That an invitation be transmitted to the members of the United States Agricultural Society to visit the Museum on public days, during their session in this city.

October 14th.

DR. BRIDGES, Vice President, in the Chair.

Letters were read—
From the Library Department of the Royal Bavarian Academy of Sciences, dated November, 1855, transmitting donations.
From the Royal Society of Sciences at Upsal, dated August 7th, 1856, acknowledging the receipt of the Journal (Vol. iii. part 2,) and the Proceedings (vol. vii. Nos. 2-7,) of the Academy.
From the Royal Academy of Sciences of Naples, dated March 10th, 1854, accompanying vol. vi. of the Transactions of the Academy.

Dr. Le Conte presented a paper, for publication in the Journal of the Academy, entitled "Synopsis of the Melolonthidae of the United States, by John L. Le Conte, M. D.;" referred to a Committee consisting of Mr. Schaffert, Mr. Guex, and Dr. Bridges.

A paper was presented for publication in the Proceedings, entitled "Notice upon the species of the genus Salmo of Authors, observed chiefly in California, by Charles Girard, M. D.;" referred to a Committee consisting of Drs. Morris, Hallowell, and Bridges.

Dr. Leidy presented a paper, for publication in the Proceedings, entitled "Notices of extinct Vertebrated animals of New Jersey, collected by Professor Cook, of the State Geological Survey, under the direction of Dr. W. Kitchell, by Joseph Leidy, M. D.;" referred to a Committee consisting of Drs. Le Conte, Hallowell, and T. B. Wilson.

Mr. Lea exhibited two specimens of Uniones, illustrating his paper on the Byssus of the Genus Unio, read September 23d.

On leave granted, Mr. Vaux moved that the Academy authorize the publication of the list of members and correspondents recently reported by the Committee appointed to prepare said list; which was so ordered.
October 21st.

Mr. Ord, President, in the Chair.

Letters were read—

From the Rev. M. A. De Wolf Howe, Secretary of the House of Clerical and Lay Deputies of the General Convention of the Protestant Episcopal Church, dated October 1856, acknowledging the receipt of an invitation to visit the Museum of the Academy.

From George French Angus, Secretary of the Trustees of the Australian Museum, dated Sydney, New South Wales, May 1st, 1856, offering exchanges. Referred to the Curators with power to act.

From the Hon. W. L. Marcy, Secretary of State, dated Washington, October 1st, 1856, transmitting a collection of Books for the Academy, sent to the Department of State by Charles Huffnagle, Esq., Consul-General of the United States at Calcutta.

From Joseph Barnard Davis, dated Shelton, Staffordshire, October 3d, 1856, acknowledging his election as Correspondent.

The following papers were presented:


"Notices of Remains of extinct Vertebrated Animals, discovered by Prof. E. Emmons, by Joseph Leidy, M. D." "Notices of some remains of Fishes, discovered by Dr. Jno. E. Evans, by Joseph Leidy, M. D." Both referred to a Committee consisting of Dr. Bridges, Mr. Lea and Dr. Le Conte.

October 28th.

Dr. Bridges, Vice President, in the Chair.

The Committee on Dr. Le Conte's paper, read 14th inst., reported in favor of publication in the Journal of the Academy.

The Committees on Drs. Girard's and Leidy's papers, read 14th inst.; on Mr. Cassin's, and Drs. Hallowell's and Leidy's papers, read 21st inst., severally reported in favor of publication in the Proceedings of the Academy.
Notice upon the Species of the genus Salmo, of authors, observed chiefly in Oregon and California.

By Charles Girard, M. D.

In the 21st volume of the "Histoire Naturelle des Poisons," published in 1848, Valenciennes subdivides the genus Salmo of Artedi, Linnæus, and others into three genera: the salmons proper (Salmo), the salmon trouts (Fario), and the brook trouts (Salutar), each characterised by the number and arrangement of the vomerine teeth.

This method we have applied to the species of the present synopsis, which is but an abstract of a more elaborate memoir to be published shortly, accompanied with figures of most of the species.

Needless to say that the observations here recorded have all been made upon specimens preserved in the Museum of the Smithsonian Institution.

The sources whence specimens were obtained, are enumerated under each special heading; all being well known to the lovers and cultivators of Natural History.

Genus Salmo, (Artedi), Valenc.

Gen. char. Body fusiform; head large; mouth generally deeply cleft, and armed with conspicuous teeth. Pre-maxillary (intermaxillary) bones short and rather situated upon the sides of the snout than upon its extremity; the maxillaries are attached behind them and composed of a single bone. The lower jaw is strong, and terminates frequently into a small knob or tubercle, which, in some species, acquires a very great development. Strong and conical teeth, disposed upon a single row, are implanted upon the dentary. A few teeth on the front of the vomer; none on the shaft of that same bone; a single row of them is also observed along the palatines, and two rows upon the pterygoids and upon the tongue. There is one anterior dorsal fin, followed posteriorly by a small adipose more or less thick. The caudal is well developed, and either truncated posteriorly or slightly emarginated.


The scales, on all the species, have that common character of being deprived of those radiating grooves or furrows which extends from the organic centre of the scale to its periphery. The concentric, or lines of growth, are the only ones extant, and, in many instances (in Salmo and Fario, especially), they are interrupted or else have become obsolete upon the posterior section of the scales. In many instances, also, they have disappeared from the organic centre itself, which, under the microscope, appears perfectly homogeneous. Generally speaking, their outline is subelliptical, elongated in the direction of the longitudinal or horizontal axis of the body. Differences of minor value may be observed in each species.


The "Ekewan" of the natives of the Columbia river. Is identical with the "Observatory Inlet salmon." A specimen collected by Dr. John S. Newberry, under Lt. W. R. Williamson, in the Des Chûtes river, a tributary of the Columbia, O. T.


Body fusiform in profile, compressed. Head forming about the fifth of the entire length. Maxillary bone curved, extending beyond the orbit. Dorsal region olivaceous, studded with irregular black spots; dorsal and caudal fins
similarly spotted. Region beneath the lateral line, unicolor; silvery along the
middle of the flanks, and yellowish on the belly. Inferior fins unicolor. Head,
above blackish grey, its sides bluish grey.
A specimen from Columbia river, was preserved by Dr. Geo. Suckley, under
Gov. I. I. Stevens.

3. Salmo spectabilis, Grd.—Body subfusiform in profile, very much com-
pressed, the head forming about the fourth of the total length. Maxillary bone
curved, extending to a vertical line passing somewhat posteriorly to the entire
orbit. Anterior margin of dorsal fin, a little nearer the extremity of the snout
than the base of the caudal. Bluish grey above; silvery beneath. Dorsal region
and upper portion of the flanks spread over with light spots.
By its general appearance, this species resembles Salmo hoodii most, but may
readily be distinguished from it by a more elongated and elliptical head, hence
a mouth more deeply cleft, with the maxillary extending further back.
Specimens collected at St. Mary's Mission, Flathead valley, Oregon, by Dr.

Genus Fario, Valenc.

Gen. char.—All the characters of the salmons, differing from the latter by
the presence of only one row of teeth upon the shaft of the vomer.


1. Fario aurora, Grd.—Red Char of Lewis and Clarke.—Body fusiform, com-
pressed; head forming the fourth of the length, the caudal fin excluded. Upper
jaw longest. Maxillary gently undulating; its posterior extremity extending to
a vertical line passing considerably behind the entire orbit. Anterior margin
of dorsal fin equidistant between the tip of the snout and the insertion of the
caudal. Ground color greyish—silvery above; sides and belly yellowish orange
Dorsal fin spotted.
Specimens collected at Astoria, O. T., by Lt. W. P. Trowbridge, U. S. A.

2. Fario tsuppitch, Grd.—Salmo tsuppitch, Rich. Faun. Bor. Amer. iii. 1836,
324.—Storer, Synops. 1846, 197.—Salmon Trout of the settlers.
Body very much elongated, compressed, fusiform in profile; head forming
about the sixth of the total length. Snout rounded, with the jaws subequal.
Maxillary gently curved, dilated posteriorly, and extending to a vertical line
passing slightly behind the orbit. Anterior margin of dorsal fin nearer the ex-
tremity of the snout than the insertion of the caudal fin. Ground color of dorsal
region olivaceous, clouded with bluish brown, and scattered about with round-
ish black spots which extend over the dorsal, the adipose and the caudal
fins. Upper surface of head bluish black. Sides and inferior region of the
body unicolor, yellowish brown; inferior fins unicolor also. Sides of head
yellowish.
A female specimen 26 inches long, caught at Fort Dallas on the Columbia
River, Oregon, was skinned and preserved by Dr. Geo. Suckley, U. S. A., under
Gov. I. I. Stevens.

3. Fario argyreus, Grd.—Body very much compressed, rather deep upon its
middle region and quite tapering posteriorly. Head moderate, constituting the
fifth of the entire length. Jaws equal. Maxillary slightly curved; its free ex-
tremity extending to a vertical line drawn posteriorly to the orbit. Anterior
margin of dorsal fin nearer the extremity of the snout than the insertion of the
caudal fin. Bluish grey above; silvery along the middle of the flanks; yellowish
white beneath.
This species is quite characteristic in its outline, since it is much more taper-
ing towards the tail than in any other of its congeners. In other respects it re-
sembles somewhat Fario aurora, but its elongated and low anal fin will distin-
guish it from the latter at the very first glance.
Specimens were collected at Cape Flattery, W. T., by Lt. W. P. Trowbridge, U. S. A., and at Fort Steilacoom, Puget Sound, W. T., by Dr. Geo. Suckley, U. S. A.

4. Fario gairdneri, Grd.—Salmo gairdnerii, Rich. Faun. Bor. Amer. iii, 1836, 221.—DeKay, New York, Fauna iii, 1843, 243.—Storer, Synops. 1846, 196.—Body fusiform in profile, very compressed; head comprised four times in the length, the caudal fin excluded. Upper jaw longest. Maxillary curved, extending to a vertical line intersecting the posterior rim of the orbit. Anterior margin of dorsal fin equidistant between the extremity of the snout and the base of the caudal. Caudal fin furcated. Back silvery grey; sides silvery, and belly yellowish or whitish. Body absolutely spotted with black; similar, but more distinct, spots on the dorsal and caudal fins.

A purplish red tint is sometimes apparent over the middle of the flanks.

A specimen collected in Klamath River, O. T., by Dr. John S. Newberry, under Lt. W. R. Williamson, Top. Eng.


Body fusiform; head well developed, forming the fifth of the total length. Maxillary slightly bent, extending to a vertical line drawn inwardly to the posterior rim of the orbit. Jaws equal. Anterior margin of dorsal fin a little nearer the extremity of the snout than the insertion of the caudal fin. Back bluish grey; upper surface of head blackish grey; sides silvery grey; fins ash grey; dorsal and caudal spotted. Upper regions of head and body studded with irregular black spots or specks.

Specimens collected at Fort Dallas, Columbia River, by Dr. Geo. Suckley, under Gov. I. I. Stevens.


Body elongated and fusiform; head well developed, contained four times and three-quarters in the total length; jaws equal; maxillary gently curved, reaching a vertical line drawn posteriorly to the orbit. Anterior margin or dorsal fin a little nearer to the snout than the insertion of caudal fin. Back light olive; belly light yellowish white. Head, body and fins profusely spotted with black, giving it a very peculiar aspect, easily recognised amongst all the other species of the same genus.

Specimens were collected at Fort Steilacoom by Dr. Geo. Suckley, U. S. A.; at Schoolwater Bay, W. T. by Dr. J. G. Cooper; at Cape Flattery, W. T., Astoria and Humboldt Bay by Lt. W. P. Trowbridge, and in Des Châtes River, O. T., by Dr. John S. Newberry under Lt. Williamson.

Genus Salar, Valenc.

Gen. Char.—All the characters of the Salmons, but differing from them as well as from the genus Fario in being provided with a double row of teeth upon the shaft of the vomer, and none on the front of that same bone.


1. Salar lewisi, Grd.—Body rather thickish upon its middle region; head moderate, constituting a little less than the fifth of the total length. Lower jaw longest. Maxillary gently curved, its posterior extremity reaching a vertical line drawn immediately behind the orbit. Anterior margin of dorsal fin a little nearer the extremity of the snout than the base of the caudal fin. Ground color of the upper region bluish grey, of the inferior region yellow or orange. The back, peduncle of tail, dorsal, adipose, and caudal fins, spotted with black. The belly and lower fins are unicolor, a deep orange hue existing along the rays and also in the shape of a dot upon the abdominal scales, and which disappears by long standing in alcohol.

This is the trout alluded to in Lewis and Clarke's "Travels." They "caught (at the Falls of the Missouri) half a dozen trout from sixteen to twenty-three
inches long, precisely resembling in form and the position of the fins, the mountain or speckled trout of the United States, except that the specks of the former are of a deep black, while those of the latter are of a red or gold color: they have long sharp teeth on the palate and tongue, and generally a small speck of red on each side behind the front ventral fins; the flesh is of a pale yellowish red, or when in good order, of a rose colored red."—London edition of 1814, p. 192, 4to. And further on, page 487, we read: "The mountain or speckled trout are found in the waters of the Columbia within the mountains; they are the same with those found in the upper part of the Missouri, but are not so abundant in the Columbia as in that river. We never saw this fish below the mountains, but from the transparency and coldness of the Kooskoskee, we should not doubt of its existence in that stream as low as its junction with the south east branch of the Columbia."

It would be an interesting point to compare, side by side, specimens caught in the Columbia, with those of the Missouri river. We should not be surprised if the result of such a composition should refer the specimens from the basin of the Columbia to *Fario gairdneri*.

Specimens of this species were collected at the Falls of the Missouri River, Rocky Mountains, by Dr. Geo. Suckley, U. S. A., under Gov. I. L. Stevens.

2. *Salmo virginalis*, Grd.—Body subfusiform in profile, otherwise compressed; head comprised about four times in the length, the caudal fin excluded. Jaws subequal; posterior extremity of maxillary extending to a vertical line intersecting the posterior rim of the orbit. Anterior margin of dorsal nearer the extremity of the snout than the insertion of the caudal fin. Greyish brown above with a purplish reflection and subcircular black spots; beneath, olivaceous, unicolor.


Specimens were collected in the head waters of San Matteo Creek, Cal., by R. D. Cutts; at Petaluma, Cal. by E. Samuels, near Humboldt Bay, by Lt. W. P. Trowbridge, and finally specimens obtained by Dr. Ayres, of San Francisco, under the name of *Salmo rivularis*, proved identical with *Salmo iridea*, of Dr. Gibbons. Dr. Gibbons' description was drawn from a very immature specimen, but has the priority over Dr. Ayres' appellation. The aspect of the male is quite different from that of the female, so that their identification requires a very close study of their intrinsic characters.

**Notices of remains of extinct vertebrated animals of New Jersey, collected by Prof. Cook of the State Geological Survey under the direction of Dr. W. Kitchell.**

**Macrophoca**, Leidy.


Based upon three specimens of molar teeth, obtained by E. Davis, Esq., from the miocene marl of Cumberland County. Genus belonging to the Zeuglodont family.

Crowns of the molar teeth broader than the length, laterally compressed conical; anterior and posterior borders acute, the former with a series of two and the latter with four conical tubercles having denticulated borders; inner and outer
surfaces exceedingly roughened, especially towards the base, by longitudinally acute and broken ridges. Root composed of an antero-posterior pair of fangs confluent half their length. Length of largest tooth 2 inches; length of crown 10 lines, breadth 12\(\frac{1}{2}\) lines.

POLYGONODON, Leidy.

2. POLYGONODON VETUS, Leidy.
   Based on a specimen of the crown of a tooth found in the marl (cretaceous) of Burlington Co., by L. T. Germain, Esq.
   Length three times the breadth; transverse section elliptical; with trenchant borders; with six planes on one side and seven on the other. Length 1\(\frac{1}{2}\) inches, breadth 1\(\frac{1}{2}\) an inch. May it be an incisor of MOSAURUS?

ISCHYRHIZA, Leidy.

3. ISCHYRHIZA MIRA, Leidy.
   Based upon an imperfect specimen of a remarkable tooth apparently of a fish, obtained by L. T. Germain, Esq., from the cretaceous green sand of Burlington County.
   Crown of the tooth when perfect, apparently, laterally compressed conical, invested with smooth shining enamel. Fang more robust than the crown, curved pyramidal, quadrate in section, with the base rugged and divided antero-posteriorly. Pulp cavity expanded within the fang, closed below, and narrowing towards the crown. Probable length of tooth when entire about 2 inches; length of fang 10\(\frac{1}{2}\) lines, breadth of its base 8 lines.

4. SPHYRENA SPECIOSA, Leidy.
   Founded on a specimen of the crown of an anterior tooth obtained by E. Davis, Esq., from the miocene marl of Cumberland County. Posterior border of the crown nearly straight or slightly sigmoid, trenchant border minutely denticulated, sides towards the base striated, apex semi-barbed. Length 4 lines, breadth 2 lines.

EDAPHODON.

5. EDAPHODON MIRIFICUS, Leidy.
   Based on eight specimens of upper and lower maxillary bones, found in the Green Sand of New Jersey.
   The superior maxillaries are 3\(\frac{1}{2}\) inches long in the median line and 2 inches wide posteriorly; and they present the matrices of three teeth. The inferior maxillaries are 5\(\frac{1}{2}\) inches long and 2\(\frac{1}{2}\) inches deep; and besides the matrices of the three large teeth, they present two or three apparent small ones near the apices of the bones, and another small one to the inner side of the largest tooth.

Notes on the Reptiles in the collection of the Academy of Natural Sciences of Philad’a.

By Edw. Hallowell, M.D.

Fam. GECKOTID.E.

Gen. HEMIDACTYLUS, Cuvier, Wagler, Gray, Wiegmann.

Section DACTYLOPERES ou a pouce comme tronqués (Peropus Wiegmann.)

A. H. DACTYLOPERES à lames sous-digitales entieres. D. & B.

Duméril and Bibron mention but one species belonging to this division, viz., HEMIDACTYLUS ouallensis, inhabiting Oualan, Tahiti, Vanicoro and Tongatabou. It differs very materially from the one about to be described. I do not find any species of HEMIDACTYLUS inhabiting Jamaica in the Catalogue of Reptiles in the British Museum, by Mr. Gray.
**Hemidactylus præsignis, no.**

*Char.* Mental plate large and triangular; immediately behind it a transverse row of four plates, the two exterior large, the two middle quite small; seven to eight plates margin the upper jaw on each side, and as many the lower; scales upon the abdomen much larger than those upon throat and neck; in the latter regions granular; color brownish above, lighter brown or greyish beneath.

*Description.* The head is long and rather narrow, depressed in front, covered above with granulations larger upon the front; rostral plate large, somewhat quadrangular in shape; the nostril, which is more or less circular, situated at its upper and external angle; of the seven plates which margin the upper jaw the first appears to be the highest; these plates are all very distinct, and more or less quadrangular; the mental plate is large and triangular, broader than long; there are four plates immediately behind it, the two intermediate very small, the two lateral, which are in contact with the first inferior labial, quite large; the eyes are large, the pupil circular; auricular openings moderate; body moderately stout, covered above with granulations of nearly equal size; tail longer than head, neck and body, rather stout at base, covered above and upon the sides with imbricated scales, presenting below a longitudinal row larger than the others; chin and throat covered with small granulations of nearly equal size; the abdomen is covered with smooth and quite large imbricated scales, contrasting strongly with the small granulations upon the chin and throat; under surface of extremities covered with scales, those of the posterior much larger; granulations above; anterior surface of thighs with scales; the thumbs are deprived of nails, the remaining toes dilated with undivided subdigital lamine; no femoral or anal pores.

*Coloration.* Uniform brown above, with no lines or spots; lighter brown or greyish beneath.

*Dimensions.* Length of head 9 lines; greatest breadth 6; length of neck and body to vent 1 inch 8 lines; of tail 3$\frac{1}{2}$ inches; of arm 3 lines; of forearm 3; of hands to extremity of longest finger 4; of thigh 6 lines; of leg 4 lines; of feet to extremity of longest toe 5$\frac{1}{2}$ lines.

*Habitat.* Jamaica. Two specimens presented by Caspar W. Pennock, Esq., M.D.

*Gen. Remarks.* This species differs very much from the only species of Peropus heretofore described; among other particulars in the following: It has four scales behind the mental instead of six. In Ouallensis there are twenty-four superior labial plates and twenty-six inferior? and the scales upon the under surface of the animal are not represented as unequal in size.

**Fam. IGUANIDÆ.**

LÉZARDS IGUANIENS ou SAURIENS ECNOTES, Duméril et Bibron.  

**NOROPS,** Wagler.

The following are the characters of the genus Norops as given by Duméril and Bibron, (Erpét. Gen. Tome iv. p. 81.)

"Skin beneath the neck forming a salient fold; a sort of small throat pouch without denticulations; neither palatine teeth nor femoral pores. Fourth toe of the foot longer than the third. Scales of the body carinated, in part imbricate; those upon the sides much smaller than upon the back and abdomen. Tail moderate, not prehensile, destitute of crest like the back."

But one species of this genus has been described, viz., Norops auratus, from Surinam and other parts of Guiana. The specimen in our collection, received from the Garden of Plants, is from Mexico. The toes are dilated, but not to so great an extent as in many species of Anolis. The present species with the same generic characters, is totally destitute of any such dilatation.

**NOROPS MACRODACTYLUS,** no.  

*Char.* Scales upon snout tricarinate; those of supra-orbital ridges separated from each other by a row of smaller scales; twelve rows of dorsal scales distinctly carinated; scales upon abdomen carinated; upon flanks very small;
fingers and toes not dilated; color white above and upon abdomen; a lateral vitta passing over the tympanum, extending the whole length of the body.

Description. Head long and narrow, with a marked depression in front; nostrils lateral, in a single scale, about a line from the extremity of the snout, with several rows of small scales immediately behind them; their lower margin is on a line with the exterior ridge projecting over the orbit; the rostral plate is broad and narrow, its upper margin forming an obtuse angle; the scales upon the front part of the head are more or less hexagonal, depressed, tricarinate; the supra-orbital ridge on each side is composed of a ridge of larger scales, separated from each other by a row of smaller ones; eight larger scales upon the orbit; occipital plate quite distinct; six or seven supra-labials; 42 teeth in the upper jaw, the eleven or twelve posterior tricarinate; tongue triangular, smooth, deeply notched behind, very slightly in front, more or less adherent beneath; scales upon the temples subequal; auricular opening of moderate size; body slender, presenting above, twelve rows of distinctly larger scales; about as broad as long, each with a distinct carina extending its whole length. The scales upon the abdomen, of which from sixteen to eighteen rows may be counted, appear somewhat larger than those upon the back, and are also distinctly carinated; the scales upon the flanks are very small, quadrangular, carinated, presenting a very small spine posteriorly; extremities slender; toes not dilated, presenting a row of transverse scales beneath; tail of moderate length; a well marked gular pouch in the larger specimen, commencing at the chin and extending upon the abdomen, (in the smaller specimen, probably a female, this is scarcely visible.)

Coloration. Head, back and upper part of tail white above; abdomen and under part of tail of same color; the gular fold in the larger specimen is dark colored; sides brown, white spotted, a lateral white stripe extending from beneath the eye, along the side of the head, immediately above the tympanum, passing along the side of the neck, about a line above the shoulder, and extending the whole length of the side of the body, and becoming lost upon the tail. The white spots are upon either side of this white lateral line, but in the larger specimen they are absent, and the lateral line is of a brown color and more narrow, the ground color white.

Dimensions. Length of head 6 lines; greatest breadth 3; length of neck and body to vent 14 lines; of tail 1 inch 9 lines; of humerus 3 lines; of arm 3 lines; of hand to extremity of longest finger 2½; of foot to extremity of longest toe 6 lines. Total length 3 inches 5 lines.

Dimensions of a larger specimen. Length of head 7 lines; breadth 4; length of neck and body to vent 1½ inches; of tail —— ; of arm 3½ lines; of forearm 3½; of hand to extremity of longest finger 3½ lines; of thigh 5½ lines; of leg 5¼; of foot to extremity of longest toe 8½.


Gen. Anolis, Daudin.

Char.—"Fingers dilated beneath the anti-penultimate phalanx, forming a sub-oval disk, more or less enlarged, provided with imbricated scaly lamellae; beneath the neck a goitre, which when it is not distended assumes the form of a gular pouch more or less developed; palatine teeth, no pores to the thighs."—D. & B.

The genus Anolis is divided by Duméril and Bibron first into two grand divisions, viz., A. with fingers but slightly dilated, constituting the genus Draco-nura of Wagler and Wiegmann. This comprises but two species. B. with fingers distinctly dilated, constituting the genus Daetyloa. This latter division includes twenty-three species. These are again subdivided into (a.) species in which the abdomen is provided with flattened scales, smooth or carinated, and for the most part imbricated, of which there are twenty-two, and (b.) species with the abdominal scales granular, of which there is at present known but one, viz. Anolis camaleonides.

The subdivision a. is again divided into species in which the scales of the
sides are much smaller than those of the back and abdomen, (1 sp.) (b.) In which the scales of the sides are of about the same dimension as those of the back and abdomen; this group is again divided into (a.) species in which the scales upon the upper and lateral parts of the body are mingled with tubercles, (1 sp. lorisiana,) and (b.) in which the scales of the upper parts and sides of the body are homogeneous or not mingled with tubercles. This last division comprises by far the greater number, viz., twenty species. The genus Anolis is exclusively American; of the twenty-five species described by Duméril and Bibron, two are from Surinam; five from Cuba, exclusively; one from Cuba and the United States; one from Cuba and Mexico; one from Cuba and Jamaica; five from Martinique, exclusively; one from Martinique and St. Domingo, one from Chili; two from Brazil; two from the West Indies; one from the island of Tortola; one from St. Domingo, exclusively; one from Cayenne, and one of unknown origin.

Of these twenty-five species of Anolis, Duméril and Bibron represent at least one half as entirely new, (1837,) with the exception of two or three previously described by Wiegmann. One has since been described (1851,) by Prof. Ang. Duméril, in the Catalogue Methodique de la Collection des Reptiles des Museums d'histoire Naturelle de Paris. (A. Heterodermus from New Grenada.)

De la Sagra's work on Cuba contains figures of six species viz., vermiculatus, Carolinensis, lucius, Sagrei, Lorysiana, (A. cantholius,) Fernandina (Camelioptis,) (A. camelionides, D. & B.) Daudin has figured two species viz.: A. lineatus and punctatus. Anolis yellié is figured in Guerin Iconographie du Regne Animal, Tome 1, pl. 12. The Prince de Wied has figured two species of Anolis, viz.: A. gracilis, (nasicus,D. & B.) and A. viridis, punctatus, Daudin, according to Duméril and Bibron.

Among the reptiles belonging to this genus in the collection of the Academy, there are several well known species, viz.: Anolis equestris, (5 sp.) A. camelionides, (1.) A. carolinensis, (28 sp.) A. punctatus, (1 sp.) A. Edwardsii, (4 sp.) the last from Jamaica, and others from Cuba, Mexico and Jamaica, which we cannot make out as described in the systems. A number of these were collected in Jamaica at the instigation of my excellent friend, Dr. Caspar W. Pennock, and generously presented by him to the Academy, and others by another friend, Dr. Betton, of Germantown. These are the more valuable, inasmuch as the Herpetology of Jamaica appears to be but incompletely known; but one species of Anolis is described by Mr. Gray as inhabiting that island, viz.: A. stenodactylus.

Anolis (Dracornura, Wieg.) Tropidogaster, Nob.

Char.—Head of moderate size, covered in front with elevated scales or tubercles of nearly equal size; supraciliary ridges separated from each other by two rows of smaller scales; four or five large unicarinate scales upon each orbit; occipital plate not in contact with the supraciliary ridge; temples covered with small granulations; middle rows of dorsal scales the largest; scales upon abdomen strongly carinated; color brownish, extremities banded with brown.

Description.—This species of Anolis is readily distinguished by the remarkably strong carination of the ventral scales, being even more strongly carinated than those of A. carolinensis, resembling much the scales of Phrynosoma cornutum. The head is of moderate size, snout not prolonged; the rostral plate is broader than long, rounded above; the snout is covered with elevated scales or tubercles, of nearly equal size; the scales upon the front are unequil, tricarinate; this region presents a marked depression, bounded on each side by an indistinct ridge; the supraciliary ridge on each side is constituted by a row of five large and very distinct plates separated from each other in the middle by two rows of smaller scales; there is a group of four or five large unicarinate scales upon each orbit, bordered with others of a smaller size, with numerous granulations exteriorly, and a row of very small plates between these large plates and the supraciliary ridge; occipital plate rather large, triradiate in shape, very distinct, separated from the supraciliary ridges by several rows of smooth scales; nostrils lateral, circular
about a line from the extremity of the snout; eight small quadrangular plates
margin the upper jaw; 42 teeth may be counted in the upper jaw, the eleven or
twelve posterior on each side tricuspid, the intermaxillary very small, the suc-
cceeding ones pointed and conical, and considerably larger. 38–40 teeth in the
lower jaw; the twelve posterior tricuspid; tongue triangular, more or less adhe-
rent beneath, deeply notched posteriorly; temples covered with very small granu-
lations, a little larger above; tympanum of moderate size, scales on the flanks
small and granular, much smaller than those upon the back, of which the middle
rows are the largest; scales of the back carinated, not very dis-
tinctly; those upon the abdomen much larger than those upon the back, quad-
rangular, and very strongly carinated; body and extremities slender; a well de-
veloped gular pouch; fingers and toes without any dilatation whatever; third
and fourth fingers of equal length, fourth toe much the longest.

*Coloration.*—Brownish above with a greyish tinge upon the body, extremities
banded with brown; abdomen whitish.

*Dimensions.*—Length of head, 6 lines; greatest breadth, 3; length of neck and
body to tail, 13 lines; tail mutilated; length of forearm, 3½ lines; of arm, 3 lines;
length of thigh, 5 lines; of leg, 6; of hand to extremity of longest finger, 3
lines; of foot to extremity of longest toe, 7½ lines. An Anolis resplendens, D. & B?

*Habitat.*—New Grenada.

**Anolis punctatissimus,** nob.

*Char.*—Of moderate size, scales upon supra-orbital ridges separated from each
other by smaller polygonal scales; from nine to fifteen carinated polygonal scales
upon orbit; a well marked depression upon the occiput; occipital scale sepa-
rated from supraocular ridge by four rows of scales; temples granulated; ab-
dominal scales carinated; tail much compressed; color blue or light green,
covered above and upon the sides with minute white spots; total length about 6
inches.

*Description.*—Nostrils small, subcircular, their anterior margin about ½ a line
from the extremity of the snout; scales upon front polygonal, carinated; those
upon the supraocular ridge large, carinated, separated from each other by smaller
polygonal and more or less carinated scales; from nine to fifteen or more conglomera-
ted polygonal carinated scales over the orbit, surrounded with granules, the
greater number external; a very well marked depression upon the occiput; the occi-
ptal plate, which is smooth, is subcircular, occupying the bottom of the cavity,
and is separated from the supra-orbital ridge by four rows of scales; seven plates
upon the upper jaw, the third or fourth quadrangular, and remarkable for its ex-
treme length;* temples granulated, auricular opening suboval, rather large,
its posterior edge minutely denticulated; no crest upon neck or body; scales
upon sides granular, those upon back a little larger, especially the three or four rows
upon the middle line; scales upon abdomen with rounded posterior margins, im-
bricate, carinated, much larger than those upon sides and back; tail much com-
pressed, larger than head, neck and body, verticillate, covered with carinated
scales, the four or five inferior rows much the largest, its superior and inferior
margins denticulated; from sixteen to nineteen lateral rows of verticillate scales
may be counted, larger than the rest, the posterior extremity of the tail being
destitute of them; scales along superior border of thighs and forearms very dis-
tinctly carinated; a longitudinal fold under the throat.

*Coloration.*—Snout, front and sides of head whitish, with a tinge of yellow;
body above and upon the sides light blue, (probably green during life,) covered
all over with white spots; tail yellowish; no black marks or lines upon the
body.

*Dimensions.*—Length of head 9 lines; greatest breadth 5; length of body to vent
1½ inches; of anterior extremities to extremity of longest finger 1 inch; of pos-
terior to extremity of longest toe 1 inch 9 lines; of tail 4½ inches; total length
6½ inches.

* Not a constant character; in another specimen eight plates.
Habitat. Jamaica. Three specimens, two adult and one young presented by Dr. Betton.

Gen. Remarks. This species, although it might, with some propriety, be named punctatus, from the great number of small white spots with which it is covered, differs entirely in appearance from the punctatus of Daudin, of which we have one specimen from Surinam. The head in punctatus is much longer, the neck more contracted and the body and tail longer. The scales on the front of the head are smooth in punctatus, carinated in punctatissimus, and their shape and general arrangement are very different; the row of plates above the supra-orbital are larger in the former species; the scales upon the flanks are oblong in punctatus, those upon the back flattened; the tail is altogether different; it is sub- round in punctatus, with smooth scales, without verticillae, and the much larger row of scales along the median line. The one is an inhabitant of Jamaica the other of Surinam and Brazil.

Anolis leucocephalus, nob.

Char. Of larger size than usual among the smaller species of Anolis; head much depressed in front, covered with large and smooth polygonal scales; scales of supra orbital ridge in contact at the middle; temples covered with polygonal scales; upon sides suboval, smooth, larger than those upon back and abdomen, interspaces filled with small granules; abdominal scales smooth; no dorsal crest; tail compressed cyclo-tetragonal at base; color whitish with blotches of green.

Description. Head long and narrow, depressed in front, where it is covered with large and smooth scales, much larger than in most other species of Anolis; scales upon the snout on the contrary very small; nostrils small, suboval, their anterior margin a line from the extremity of the snout, situated on the side of a slight prominence, just within the ridge extending from the anterior margin of the orbit to below the nostril and terminating at its anterior border; the supra- orbital ridge is composed of four or five large scales; they are in contact at their middle, but not anteriorly or posteriorly; the supra-orbital ridge is not prolonged anteriorly, the front, as before stated, being covered with smooth and large scales; differing more or less in shape; ten or eleven quadrilateral plates may be counted upon the margin of the upper jaw, 44 teeth in the lower, the ten anterior on each side pointed, the 12 posterior tricuspid; 36 in the upper, eighteen on each side, the ten anterior pointed, the rest tricuspid; tongue slender, deeply notched posteriorly, entire in front, three rows of smooth scales upon the side of the head, between the supra-orbital plates and the anterior orbit ridge; temples covered with smooth polygonal scales, the superior and posterior rows the largest; auricular openings of moderate size, suboval, not denticulated; scales upon the sides suboval, smooth, separated from each other, the interspaces filled with small granules; these lateral scales are larger than those upon the back and abdomen; those upon the neck and back are more closely united; subround or polygonal; those upon the abdomen for the most part quadrangular, perfectly smooth; no crest upon the back or neck; a large goitre extending from the chin as far as the abdomen; a very large portion of its surface when distended appears to be destitute of scales; the scales upon the under part of the thighs and in front of the arms, as well as upon the under part of the anterior extremities are quite small, having the appearance of granulations; those along the superior margin of the thighs are quite large. Extremities slender; tail cyclo-tetragonal at base, compressed in the rest of its extent; longer than head, neck and body, slightly denticulated above, verticillate, seven distinct vertical rows of scales larger than the rest; four or five rows upon the under part of the tail strongly carinated.

Coloration. General color whitish, with blotches of green; abdomen white, with a shade of green; throat yellowish white; in another and smaller specimen the white is more pure and the blotches brown.

Dimensions. Length of head 8 lines; greatest breadth 5 lines; length of body
2 inches 9 lines; of anterior extremities 9 lines; of posterior extremities 1 inch; of tail 3 inches; total length 6 inches and \(\frac{3}{4}\).

**Habitat.** Jamaica. One specimen presented by Dr. Caspar W. Pennock, the other without a label.

**Gen. Remarks.** The scaling of the frontal region is so entirely different from that of the other species of Anolis being composed of flat and large polygonal plates, that with the large size of the scales upon the sides of the body, larger than those upon the back and abdomen, being just the reverse of what obtains in most of the other species of Anolis, it might, with some degree of propriety be considered as belonging to a subgenus; but as the multiplication of subgenera in our opinion tends only to confusion, and to discourage the young naturalist, and is in fact, at variance with a true and philosophical study of nature, we prefer not making one, leaving it to be placed in a group different from those already recognized, viz., with scales upon the sides \textit{larger} than those upon the back and abdomen, and larger and flat plates upon the head.

There can be no doubt, we think, that Anolis leucocephalus is a species new to Herpetology, the only one closely approaching it being that recently described by Prof. Aug. Duméréil, in his Catalogue Methodique de la Collection des Reptiles du Museum d'Histoire Naturelle de Paris, p. 59. (Anolis heterodermus, A. Dum.) who observes that the only species of Anolis previously described with scales upon the sides, surrounded with small granulations is the Anolis camaleonides or Chamelopis Fernandina of Cocteau figured in de la Sagra's splendid work on the Natural History of Cuba. Mr. Duméréil's species is found in New Granada, and differs from leucocephalus in having a small denticulated carina upon the neck and back, in its carinated scales upon the tail, in the absence of a large goitre, and the presence of the voluminous scales upon the supra-orbital ridges, and the margins of the snout.

**Anolis sericeus, nob.**

**Char.** Head small, scales upon muzzle carinated; supra-orbital ridges separated from each other by several rows of scales; supra-orbital scales nine in number; temples covered with granulations; scales upon back and abdomen carinated; tail not compressed, long; color brown, extremities banded and blotched with brown; brown bands upon the tail; total length 4\(\frac{3}{4}\) inches.

**Description.** The head is small, with a marked depression in front; the nostrils are quite small, circular, about half a line from the extremity of the snout; situated upon the side of a well marked prominence above and within the line of the orbital ridge, which does not extend so far as the nostril; scales upon the muzzle carinated, much smaller than those upon the front, which are subequal, polygonal, the exterior ones larger than those at the bottom of the cavities above mentioned; supra-orbital ridge low, in contact with the supra-orbital scales, and separated from each other by several rows of scales; supra-orbital scales nine in number; occipital scales thickly conglomerated, forming an almost triangular patch with the occipital in the middle, not depressed, and separated from the supra-orbital ridge by a row of three or four scales; temples covered with granulations; nine quadrangular plates upon the upper jaw; auricular openings quite large, suboval, not denticulated; tympanum distinct; body slender without a crest; scales upon the sides granular, smaller than those upon the back, which are imbricate and carinated; those upon the abdomen much larger than those upon the sides and back, quadrangular and very distinctly carinated; extremities slender, covered above with carinated scales, very strongly marked upon the thighs, below with granulations; tail very long, round and thicker at base, not compressed, tapering gradually to a point.

**Coloration.** Predominant color brown; a small brownish blotch upon the occiput, a much larger one across the neck, commencing behind the auricular openings and interosculating with one upon the anterior portion of the back; extremities banded and blotched with brown; brown bands upon the tail; under parts black, spotted and blotched with brown.

**Dimensions.**—Length of head 6 lines; greatest breadth 4 lines; length of body
Anolis acutus, ddb.

Char.—Head long and slender, with a longitudinal depression in front; snout prolonged, acute, supraciliary ridges in contact; temples granulated; dorsal scales carinated; the two or three middle rows the largest; abdominal scales carinated; tail much compressed; color brownish.

Description.—Head long and slender, with a longitudinal depression in front; snout prolonged, acute, rounded anteriorly; nostrils of moderate size, circular, their anterior margin nearly three-fourths of a line from the snout; they are situated upon a prominence, above and within the extremity of the supra-orbital ridge; scales in the depression immediately behind the nostrils smaller than those upon the snout; behind the latter a double row of large smooth hexagonal scales; these are a continuation of the supra-orbital ridge, which is composed of five or six large and smooth scales, the anterior one the largest; these ridges are closely in juxtaposition; the scales at the bottom of the frontal cavity are much smaller than those forming its borders; occipital plate longer than broad, sub-oval, surrounded with scales, its anterior angle almost in contact with the posterior border of the supra-orbital ridges; eight quadrangular plates along the margin of the upper jaw; three or four rows of scales between the superior marginal labial plates and the supra-orbitir ridge; temples covered with granulations; auricular openings large, circular, not distinctly denticulated; scales upon flanks granular, much smaller than those upon back and abdomen; dorsal scales carinated, larger than most of those upon the back; a moderately developed gular pouch extending from the chin to the abdomen; extremities slender; tail much compressed, except at the base, verticillate, the verticille near the root about 1 inch apart; three or four rows of large and carinated scales beneath the tail; under surface not denticulated, upper very slightly; scales upon superior margin of arms and thighs slightly carinated; posterior surface of thighs covered with granulations.

Coloration. General tint chocolate brown above with a tinge of green; under parts bluish; two brownish lines en chevron upon the neck; a brownish interrupted line stretching across the occiput; body brown spotted; snout of a lighter brown.

Dimensions. Length of head 9 lines; greatest breadth 5; length of body to vent 1½ inch; (tail mutilated.)

Habitat. Cuba?

Gen. Remarks. This species would appear to correspond with A. nasicus, D. & B., but in that the ventral scales are smooth.

Anolis augusticeps, nob.

Char. Head long and narrow, temples granulated; scales upon back and abdomen smooth; tail moderately compressed, with a larger row of scales above along the median line; color light pea green, with numerous black spots and undulating lines.

Description. Head long, narrow, snout acute, rounded in front; anterior margin of nostril situated about half a line in front of extremity of the snout; nostrils latero-superior, the prominence, which is usually observed near the extremity of the snout, being in this species scarcely observable; supra-orbital ridge composed of four or five large scales, in contact in front, separated in the middle by three very small scales; occipital plate much longer than broad, surrounded by polygonal scales differing much in size, separated laterally and anteriorly from the supra-orbital ridge on each side by a small plate; eight or nine plates along the margin of the upper jaw, on each side four or five posterior teeth larger than the others; temples covered with granulations; external
openings of the ears small, not denticulated; neck and body without a crest; a moderately developed gular pouch; body slender; flanks covered with granulations smaller than those upon the back, which are smooth; abdominal scales larger than those upon the flanks and back, smooth; tail of moderate length, cyclo-tetragonal at base, moderately compressed, presenting a row of scales above along the median line, much larger than the rest, and below four rows of large scales strongly carinated; extremities slender.

Coloration. General tint light pea green above, with numerous black spots and undulating lines; thighs black spotted posteriorly; head above dusky white; abdomen white; throat white, black spotted.

Dimensions. Length of head 7 lines; greatest breadth 3; length of body to vent 11 lines; (tail mutilated.)


Anolis Sagrei, D. & B.

Char.—Scales upon muzzle tricarinate, temples covered with granulations and larger scales; supra-orbital ridges not in contact; occipital plate well defined, suboval, separated from the supra-orbital ridge by three or four rows of scales; dorsal and abdominal scales carinated; tail compressed, a row of scales much larger than the others along the median line above; beneath four rows of larger scales more strongly carinated, the two inferior the largest; Color whitish with a tinge of green or brown. The young with green triangular markings along the back and tail.

Description. Head small, snout not prolonged, nostrils small, subcircular, about three-fourths of a line from the extremity of the snout; nostrils lateral, situated upon the side of a slight prominence; supra-orbital ridge composed of four or five scales, of which the anterior one is much the largest; this ridge is continuous with a curvilinear one upon the front, uniting with that of the opposite side at the posterior extremity of the snout, at its middle forming the external boundaries of a slight depression upon the front, at the bottom of which are several smaller scales; scales upon the muzzle smaller than those upon the front, tri-carinate; seven supra-orbital scales, four of them quite large, separated from the supra-orbital ridge by a single row of small scales in contact at one point only; occipital plate well developed, suboval, surrounded by small scales, separated from the supra-orbital ridge by three or four rows; supra-orbital ridges not in contact; seven distinct quadrangular plates upon the upper jaw; five upon the lower; temples covered with granulations and larger scales; auricular openings circular, denticulated anteriorly; of moderate size; tympanum distinct; scales upon the flanks quite small, granulated, smaller considerably than those upon the back, which are carinated; abdominal scales quadrangular, carinated, much larger than those upon the back; no crest upon neck or body; extremities slender; tail —— (mutilated.) scales carinated, a single dorsal row much larger than the others, four inferior rows larger and more strongly carinated than the other scales; the two middle rows the largest; a small gular pouch.

Coloration. Above whitish with a tinge of green, blotched with olive; sides marked with white spots and fasciae; under parts whitish with a tinge of green.

Dimensions. Length of head 5 lines; greatest breadth 3 lines; length of body 11 lines; of tail ——; of anterior extremities 7 lines; of posterior 13.

Habitat. Cienfuegos, Cuba. Two specimens presented by Capt. Baker.

In a smaller but more perfect specimen, the tail is longer than the head, neck and body, the former being 1 inch 4 lines in length, the latter 1 inch 8 lines, compressed laterally; in its posterior half very slender, almost filamentary.

Dimensions of a larger specimen. Length of head 7 lines; greatest breadth 4 lines; length of body to vent 1 inch 4½ lines; tail mutilated. The coloration of this specimen is whitish, with narrow brown interrupted bands upon the neck, with brownish longitudinal bands along the flanks, and transverse white spots and fasciae; extremities banded with brown above; under parts white without spots; in another there are dark triangular spots which coalesce upon the tail.
including hexagonal patches of white; extremities banded with olive, under parts white. *Habitat* the same. The specimens thus marked are probably the young, and we are inclined to think are, as well as the larger brown-colored specimens, identical with *Anolis Sagráe*.

Another specimen of intermediate size, characterized by the same difference in form of the scales and granulations upon the temples, tricarinate scales upon the front and muzzle, and carinated scales upon the back and abdomen, presents a coloration very much resembling that of fig. 2, in pl. xiii. of De la Sagra's work, viz., on each side of the body and tail a row of dark-colored undulated markings, and dark-colored bands upon the extremities; but the scales upon the head and body in this figure are not represented as carinated. In *Sagráe*, as before mentioned, the supra-orbital ridges are represented by Duméril and Bibron to be in contact; but in the text of De la Sagra's work, they are represented to be separated by a single row of scales; in our specimens we find one intermediate row of large scales, or two smaller rows, one of which is more or less imperfect.

*Anolis heterolepis*, nob.

Among the specimens in the collection of the Academy is one which at first, from the triangular markings upon the back, I supposed to be the young of the preceding species, but on closer examination I find that it differs very materially in the following particulars: 1st. The snout is evidently less acute, more depressed, and is covered with smaller scales; the scales between the supra-orbital ridges anteriorly are much smaller, these being but two rows in *Sagráe* and five in the species now under consideration; the occipital plate is larger; the granulations upon the flanks are much smaller and smooth instead of being carinated, and the ventral scales are smooth, whereas in *Sagráe* they are very distinctly carinated. The tail is considerably longer than the head, neck and body, cyclo-tetragonal at base, compressed in the greater part of its extent, quite slender posteriorly, with transverse rows of larger scales resembling verticilia, about a line apart; the three or four rows of scales beneath much larger than the others and strongly carinated. The present specimen differs also in a marked manner from *Sagráe* in having the plate immediately beneath the first infra-labial and behind the mental, much smaller,* this plate being remarkably large in *Sagráe*—and in having the scales upon the chin between the inframaxillary rows of scales much smaller.

We propose for this species the name of *Anolis heterolepis*. It is at once distinguished from angusticeps by the long and narrow head of the latter.

*Coloration.*—Light pea green above, with triangular spots of a deeper shade on each side of the median line of the back, the apices touching each other; chin and throat marked with green, presenting in the latter region irregularly longitudinal lines; somewhat similar markings upon the occiput, and a green colored blotch upon each temple; under parts of body and extremities white with a tinge of green, more marked upon the abdomen.

*Dimensions.*—Length of head 6½ inches; greatest breadth 3½; length of neck and body to vent 13 lines; of tail 2 inches 9 lines. Total length 4 inches 4½ lines.

*Habitat.*—Cienfuegos, Cuba. One specimen, presented by Capt. Baker.

*Adventura.*—In comparing the different species of *Anolis* above described with each other, the following remarks may aid in their future determination:—equestris, cameleonides, Edwardsii and Carolinensis, are so distinctly characterized as to be readily recognized from the descriptions of authors, more especially of Duméril and Bibron, the admirable descriptions of Bibron of these and the many other species throughout the work being beyond all praise. In *sericeus* the middle dorsal rows of scales are not sensibly larger than the others, and there is no larger row of scales along the middle line of the tail above; the

*This plate is also small in *A. sericeus.*
tail is round—in Sagræi it is high and very much compressed, with a dorsal row of larger scales. In acutus the scales upon the abdomen are indistinctly carinated, in tropidogaster strongly; the scales upon the frontal region are smooth in acutus, tricarbicus in tropidogaster; the supraocular ridges are closely in contact in acutus, separated by two rows of scales in tropidogaster. But although these species resemble each other much in color, the most marked point of difference is in the toes, which are dilated in acutus, as they most commonly are in the genus Anolis, but not in tropidogaster. Angusticeps is readily recognized by its small size and narrow head; heterolepis, by its smooth ventral scales and triangular markings, and the arrangement of scales upon the temples, which are composed of granulations and larger scales, as in Sagræi. The two median dorsal rows of scales in acutus are sensibly larger than the others, and the two plates behind the mental, beneath the first and second or pre-labials, broader than those which succeed them.

After a careful comparison of the descriptions of the species in Duméril and Bibron, I do not find any which present the same characters as those given above. Besides these, Mr. Gray has described seven species, viz.: A. occipitalis, porcatus, flavescens, lineatopus, stenodactylus, reticulatus, æneus. Of these the habitat of porcatus is Cuba; that of æneus, tropical America. Of the species of which an account is given by me, the most remarkable is A. leucocephalus, from the anomalous form of the plates upon the head and the scales upon the body, those upon the sides contrary to what usually obtains, being much larger than those upon the back and abdomen.

**Anolis alligator, Dum. et Bib.**

*Char.*—Head resembling closely that of Alligator; supra-orbital ridges closely in contact; occipital plate in contact with the supra-orbital ridge; scales upon temples of unequal size, with an anterior marginal row of larger scales; two or three middle dorsal rows of scales larger than the others; small granules interspersed between the scales upon the body; ventral scales smooth; no dorsal or caudal crest; tail slender, slightly compressed at its middle; color dark bluish, with black maculations; a black spot beneath each axilla.

*Description.*—Head not elongated, stout, thick at base, front very slightly ridged, with a depression in the middle, covered as well as the muzzle with rough but not carinated scales; rostral broad and narrow; immediately behind it two large quadrangular plates, with a smaller one between; posterior to this transverse row two longitudinal rows of quadrangular plates; front covered with polygonal plates of unequal size, many of them quite large; nostrils large, subcircular, rather more than half a line from the extremity of the snout, situated within the continuation of the supra-orbital ridge, at the anterior extremity of a slight prominence; supra-orbital ridge composed of five large plates, rough, but not carinated, with two smaller ones behind the anterior by far the largest; the two ridges closely in contact; from five to eight or nine supra-orbital plates not carinated, separated from the supra-orbital ridge by a single row of small scales; occipital plate ureculate, with large scales laterally, smaller ones behind, in contact in front with the supra-orbital ridges; eight quadrilateral plates margin the upper jaw on each side; three rows of scales above the marginal plates, in front of the orbit, the inferior the largest; scales upon the temples of very unequal size, with a distinct anterior marginal row of larger scales; auricular openings rather large, denticulated; body rather stout, covered above with scales elevated in the middle, but not carinated; the two or three middle rows a little longer than the others; scales upon the flanks smaller than those upon the back, but not granulated; each scale upon the body is surrounded by very small and scattered granulations, resembling in size, though not so closely approximated as in Varanus; ventral scales smooth, larger considerably than those upon the body, rounded posteriorly: no crest upon neck or back: tail longer than head, neck and body, thick at base, slightly compressed at its middle, very slender except toward base, covered with carinated scales; above a large median row, almost smooth beneath, and of nearly equal size in the specimen examined, except five or six rows on each side, about 5½ lines.
from the anus; scales upon the upper part of the thighs very slightly carinate, some of them with a double carina; a gular fold.

Coloration.—Above bluish, with black macule; under parts lighter, with a tinge of yellow and ferruginous; a black spot beneath each axilla.

Dimensions.—Length of head 8 lines; greatest breadth 5 lines; length of body to vent 1 inch 7 lines; of tail 2 inches 9 lines. Total length 4 inches.

Habitat.—Unknown. One specimen in Museum, belonging to the Green Collection, presented by Dr. Bache.

Gen. Remarks.—This species differs from Carolinensis in the less prolonged snout, the absence of the well-marked ridges upon it, the juxtaposition of the supra-orbital ridges, the smooth ventral scales, and in its mode of coloration. The specimen described by Duméril and Bibron was found in Martinique. The general resemblance of the head to that of Alligator is quite striking. According to Duméril and Bibron, who have given an excellent description of this animal, the black markings under the axillæ are constant.

**Anolis Carolinensis.**

We have twenty-eight specimens of Anolis Carolinensis from Cuba and the southern portion of the United States. These evidently belong to the same species; the specimens differ more or less in color, some being of a beautiful bright green with scarcely any spots, others more or less spotted and lined upon the back, throat and under part of the tail; nearly all have the dark-colored spot upon the temple; three or four of the specimens have a broad white band with irregular edges upon the middle line of the back, constituting a well-marked variety.

**Habits** The following remarks in regard to the habits of these interesting animals have been communicated to me by a friend in the South, who has had ample opportunities of observing them carefully:

1st. That they drink frequently.
2d. That when they shed they uniformly swallow their exuviae.
3d. That when they happen to break their caudal appendage it is renewed. The growth of the tail, it appears, is more rapid after the broken ends have united. I have myself had for a long time several of these beautiful creatures alive, and they became so tame as whenever a drop of water was presented to them upon the tip of the finger, to leave the part of the twig on which they happened to be and eagerly run up after it, protruding their tongues and lapping very much after the manner of the dog. They change their color, frequently being sometimes more or less brown, but are usually of a light and beautiful pea green. Their favorite food appeared to be flies, which they devoured greedily.

**Gen. Brachyaurus, nob.**

*Chor.* Head short, covered above with polygonal flattened plates of unequal size; nostrils tubular, in a single plate, near its posterior margin; no distinct occipital plate; a row of broad hexagonal scales over each orbit; a row of large and smooth plates upon the side of the head; no transverse folds upon the neck; scales upon back, sides and abdomen carinate; the dorsal and middle row larger than the others, tectiform; no pores upon thighs or in front of anus.

**B. erythrogaster, nob.**

*Description.* The head is of moderate size, short and thick, rounded above, longer than broad, covered above with polygonal scales of unequal size, uncarinate; the rostral plate is broad and narrow, very slightly elevated; immediately behind it are two triangular plates, with a larger one between them; the nostrils are circular, looking backward and upward, situated near the posterior margin of a quadrangular plate; the supra-orbital ridge on each side is constituted by a row of polygonal scales of unequal size, seven in number, in contact at their middle, there being no intermediate longitudinal row of scales; between the two posterior scales of the supra-orbital ridges are two large quadrangular
scales, with a broad pentagonal one behind them; a few small scales between the large supra-orbital plates—four or five in number—and the supraciliary ridge; five or six narrow quadrangular supra-labial plates, the fourth the longest; a long and smooth plate below the orbit, in front of it five others, the second, coming from the nostril, the highest, the first immediately below the nasal plates; beneath these plates and above the supra-labials a row of smaller plates; eyelids covered with granulations; mental plate triangular, five or six inferior labials; 36 teeth in the upper jaw, the seven or eight posterior tricuspid, the others pointed, conical, the anterior quite small; 40 in the lower, the twelve last tricuspid; a row of small palatine teeth, one on each side; tongue triangular, smooth above, deeply notched posteriorly, very slightly so in front; tympanum circular, of moderate size, somewhat depressed; neck slightly folded upon its sides; body moderately robust, covered for the most part with large scales broader than long, unicarinate, the carina strongly developed; the median dorsal row longer than the others, tectiform; extremities slender, covered with carinated scales; third and fourth fingers of equal length; fourth toe much the longest; tail cyclo-tetragonal at base; no femoral and no anal pores.

**Coloration.** Greyish white above, upon head, back and extremities brownish; beneath of same color, except upon chin and throat and sides of abdomen, which are of a beautiful pink red color.

**Dimensions.** Length of head 8 lines; greatest breadth 6; length of neck and body to vent 1 inch 8 lines; of tail — ; of humerus 5 lines; of forearm 4 lines; of hand to extremity of longest finger 6 lines; of femur 6 lines; of tibia 7 lines; of foot to extremity of longest toe 1 inch.

**Habitat.** New Grenada. One specimen received from Philadelphia Museum in exchange.

**Gen. Remarks.** The genus above characterized differs from Sceloporus, among other particulars in being destitute of femoral pores, in the presence of the row of larger scales along the median line of the back, and in the scaling of the head; from Proctrotretus, in having carinated and not smooth scales upon the abdomen, as well as in the two last mentioned particulars. In Ophryessa, in Enyalus, Wagl., and in Microlophus, there is a larger row of scales along the median line of the back, and in Dipso-saurus also, to which it has little or no other resemblance; but in Ophryessa the scaling of the head is quite different, presenting numerous small and rough polygonal tubercles above; the scales upon the back are not so broad, and are much more strongly carinated. Ophryessa is a much larger animal, and has a well marked though not elevated crest.

**Gen. PROCTROTRETUS,** Dumééril et Bibron.

**Char.** Head subpyramido-quadrangular, more or less depressed, cephalic plates moderate, polygonal, occipital in general not very distinct; palatine teeth; neck folded upon the sides, or entirely simple; tympanic membrane slightly depressed; body rounded or slightly depressed, covered with imbricated scales, the superior carinated, the inferior smooth; neither caudal nor dorsal crest; toes simple; tail long and conical, or moderate, slightly depressed; no femoral pores; anal pores in the males.—D. & B.

**Proctrotretus niger,** nob.

**Char.** Of small size; color black or dark brown above. Scales of moderate dimensions, quadrangular, strongly carinated, the margin of the scales distinct; a fold upon the side of the neck, bifurcating anteriorly; temples covered with scales; post-auricular regions with granulations, and sides of the neck with small scales; a single row of plates above the supra-labials; posterior surface of thighs granulated.

**Description.** Head small, depressed, with a rather acute snout, covered above with polygonal, unequal scales, not carinated; immediately behind the rostral are three plates, the two external much more extended transversely than the middle; behind these are three others, the two lateral more extended longitudinally, and more narrow than the middle one; exterior to these lateral plates,
and between them and the nasal, are two small quadrilateral ones; immediately behind the middle of the three plates described is a large heptagonal one, with a quadrangular plate situated obliquely, and much more broad than long, on each side, in contact with its antero-lateral facet; on the left side this contact is interrupted by a small supplementary quadrangular plate; the large hexagonal plate occupies the middle of the frontal region, and lies between the two large quadrangular plates, constituting the anterior extremity of the supraocular ridge; this ridge is composed of eight plates, more or less quadrangular, in contact in the middle, the upper surface of each plate, as well as that of the other plates of the head, presenting numerous verruculations; the nostrils are subcircular, each in a single plate, nearer its posterior margin; immediately behind the nasal is a very small plate, and immediately below it another, but larger, between it and the single row of plates above the supra-lobials; posterior to these two plates are five others of unequal size, occupying the interspace between those just mentioned, and the anterior inferior margin of the orbit; of these the uppermost is the largest; there are five superior labials; the superior surface of the orbits is protected by numerous plates, of which two rows are conspicuously larger than the others, the innermost, the most extended transversely, consisting of four or five large plates, more or less verruculated upon their upper surface; the external superior border of the orbit is composed of narrow longitudinal plates placed one above another; body slender, covered above and upon the sides with 33 rows of quadrangular carinated scales, the carina very distinct, those upon the back the strongest, arranged in ten longitudinal and parallel rows, each carina running along the middle of the scale, the margins of which are well defined, but not extending in a point beyond it; auricular opening rather large, a few scales in front; temples covered with scales; a fold upon the neck, bifurcating in front; post-auricular region granulated; immediately posterior to the mental are three or four large and mere or less quadrangular plates; extremities slender, upper surface covered with carinated scales; posterior surface of thighs granulated, tail of moderate length, longer than head, neck and body tapering to a point, cyclo-tetragenatal at base; posterior margin of anus granulated, the scales immediately behind the granulations smooth; scales of chin, throat, abdomen and under surface of extremities smooth; no transverse fold upon neck; no pores in front of the anus.

**Coloration.**—Very dark brown, or black above; a very narrow and somewhat indistinct yellow band, commencing at the axilla and extending along the flanks; a broader brownish one and less distinct above; under parts bluish mingled with copper color, with metallic reflections; chin and throat conspicuously black, spotted, the larger spots in front; minute black dots distributed over abdomen and under surface of extremities.

**Dimensions.**—Length of head 4½ lines; greatest breadth 2¾ lines; length of neck and body 1 inch; of tail 1 inch 9 lines; of arm 2 lines; of forearm 2 lines; of hand to extremity of longest finger 3 lines; of thigh 2¾ lines; of leg 3 lines; of foot to extremity of longest toe 6 lines; of tail 1½ inch. Total length 3 inches 1¼ line.

**Hab.**—Quinquina Island. A single specimen, presented by W. W. Raschberger, M.D., U. S. N.

**Gen. Remarks.**—The scales in this species are much smaller than in Proctotretus nigro-maculatus, Wiegmann, pictus or Chilensis, being about the size of those of P. tennis, but quite different in shape. It is perhaps the smallest of the Proctotretes, and is very readily recognized.

**ECPHYMOTES, Cuvier.**

**ECPHYMOTES TORQUATUS.**

A female specimen of Ecphymotes torquatus from Buenos Ayres, presented by Dr. A. Kennedy, presents the following appearances, in which it differs from those described. The rostral plate is more extended transversely and is less high; immediately behind the rostral are two large subquadrate plates instead of four
much smaller, and behind these two large subtriangular ones, resembling very much the anterior frontals in many species of serpents; these are separated from the rostral by two narrow plates on each side; posterior to these is a transverse row of five plates, the two external subequal, the middle one long and hexagonal.

Coloration. The black vertical band in front of the shoulder exists, but is not seen upon the upper part of the neck; the general color is olive, without spots or markings distinctly visible; anterior extremities banded in front; no brown marks in front of the anus or upon thighs, these portions of the animal as well as under part of tail being white without any spots whatever. The specimen is largely distended with eggs, one of which measures eight lines in length by five and a half in breadth. A younger specimen from the same locality is more or less spotted with black upon the back, the spots assuming somewhat the form of narrow irregular interrupted bands, upon a ground color of olive; extremities and tail black spotted, inner part of thighs and tail white; black band of neck interrupted in the middle. The plates upon the head in this younger specimen are arranged in the following manner: Four in a transverse row immediately behind the rostral; then two large quadrangular plates; then a transverse row of five, posterior to which is another row of larger plates, the two exterior forming part of the supra-orbital ridge.

URODELA, Duméril.

HEREDIA OREGONENSIS, Girard.

We received a few days ago, with a collection of Crustaceans and Fishes from California, a specimen of a Cadneibranchiate Urodele, which appeared to me to be new, and for which it occurred to me the name Heteroglossa might be proper to distinguish it from the ordinary Bolitoglossidae; but in looking into the last number of the Proceedings of the Academy of Natural Sciences, I find a description of a specimen from Oregon, by Mr. C. Girard, which corresponds in so many particulars with it, the chief point of difference being the length of the tail, which is represented as being longer than the head and body, that I hesitate to consider it as new.

Gen. char. Maxillary teeth small; two longitudinal patches of sphenoidal teeth, diverging posteriorly, arranged in oblique rows; a curvilinear series of vomero-palatine teeth on each side, almost in contact posteriorly, passing between the posterior nares and the anterior margin of the orbit, separated from the sphenoidal by an interspace without teeth; tongue supported by a cylindrical pedicel, attached in front; free posteriorly and at the sides; no parotids; toes 4-5.

Sp. char. Size moderate; tail cylindrical; color olive, or brownish yellow, minutely spotted with black above and upon the flanks; under parts Indian yellow.

Description. Head broader than body, truncate anteriorly, nostrils small and wide apart, about half a line from the margin of the upper jaw; eyes prominent, pupil elliptical; gape of the mouth linear throughout the greatest part of its extent; no parotids; no lateral lines of pores along the body; a transverse fold across the neck; maxillary teeth quite small, internal nares of moderate size, ovoid, a series of vomero-palatine teeth on each side meeting posteriorly, presenting the form of an arch, the convexity forward, passing immediately behind the internal nasal opening, between it and the anterior border of the orbit, extending about three-fourths of a line beyond the external margin of the nasal foramen. Two patches of longitudinal sphenoidal teeth, meeting in front, but diverging posteriorly, leaving an interspace in the shape of the letter V reversed; the teeth in these patches are arranged in oblique rows, converging on each side toward the longitudinal interspace between them, and are not closely set; the tongue is obcordate, entire, longer than broad, supported upon a central cylindrical pedicel as in the mushroom-tongued Urodèles, but is attached in front at the tip, and by a semi-transparent membrane along its middle as far as the
pedicel, the posterior portion and sides being free; body and extremities slender; four fingers and five toes; first finger very short, the third the longest; first toe quite short, considerably shorter than the fifth, third and fourth of about equal length; two well marked tubercles upon the palms of the hands, the one at the base of the first, the other at the base of the fifth finger; none are observed upon the toes; tail tapering, cylindrical, slightly compressed, not so long as head, neck and body.

Coloration. Brownish above, but on close inspection with a magnifying glass, the whole surface appears to be covered with minute black points upon an olive ground; the sides are also minutely punctated with black; under parts Indian yellow, without spots.

Dimensions. Length of head 5 lines; greatest breadth 4; length of neck and body to vent 1 inch 7 lines; length of tail 1 inch 7 lines; total length 3 inches 7 lines.

Habitat California? (This Urodele was sent from California without indication of locality, it may therefore have been found in Oregon.) One specimen presented by Mr. George B. Davidson, of the U. C. Survey.

Gen. Remarks This remarkable Urodele differs greatly in the arrangement of its teeth from Aneides, the rows of which are closely approximated and thickly set, (Fam. Plethodontidae,) but resembles more closely Scolopendra, but differs from it more especially in the tongue being tied down anteriorly, whereas in the ordinary Bolitoglossidæ it is mushroom-shaped, as the name indicates, and free all around; the tongue in the Bolitoglossidæ is for the most part entire, (in longicauda it is notched posteriorly,) but the minute arrangement of the sphenoidal teeth is different. This animal would appear to belong to the group Ensatinina of Mr. Gray, but in Triton ensatus (Ensatica Escholtzii, Gray,) there are no sphenoidal teeth.

Appendix. Since the above was written my attention has been directed by P. L. Sclater, Esq., of the Zoological Society of London, to the work of Mr. Gosse, entitled a Naturalist's Sojourn in Jamaica, by Philip Henry Gosse, F. L. S., &c., London, 1851, in which I find descriptions of the species of Anolis, iodurus and opalinus, (see also Annals and Magazine of Natural History, second series, 1850, p. 344, 345.) Anolis leucocephalus is identical with Placosipis ocellata; Gosse, p. 346. Besides the above, Mr. Gosse has described another species of Anolis inhabiting Jamaica, viz., Draconura catenata, and two species of Sphærio-dactylus, viz., S. argus and oxyrhinus. The author gives a very interesting account of the habits of the two species iodurus and opalinus described by him (p. 220, 227.) A figure is also given of Anolis, (Dactyloa) Edwardsii, pl. iv. The reptiles of Jamaica appear for the most part to be specifically distinct from those of Cuba. The following is a comparative list of those enumerated by Duméril and Bibron, Mr. Gray, Mr. Gosse, and others, including those described or mentioned in this paper. To these I have added a list of the reptiles of Martinique, for the habitat of which I am indebted to Duméril and Bibron.
CUBA.

CHELONIA.

Chelonia mydas.
Chelonia virgata.
Chelonia ceouana.

TESTUDINIDAE.

EMYIDÆ.

Emys decussata.
Emys rugosa.

SAURIA.

CROCODILIDÆ.

Crocodilus acutus.
Crocodilus rhombifer.

GECHELIANÆ.

Hemidactylus mabouia.
Spheroiodactylus sputator.
Spheroiodactylus cinereus.
Gymnodaectylus albogularis.

IGUANIDÆ.

Cyclura Harlani.
Anolis equestris.
Anolis aequosus.
Anolis (Acantholis) Loysiana.
Anolis chameleonides Cham.
Ilolotropis microlophus.

LACERTIDÆ.

Ameiva Auberi.

CHALCIDIDÆ.

Amphiboloea punctata.
Scincke.
Diploglossus Sagrei.

OPHIDIA.

Boa.â.

Tropidurus melania.
Leiostomus maculatus.
Epideres anguliferus.
Notophis bicanterus.

DIACRANTERIDÆ.

Dromicus antillensis.
Dromicus cursor.
Dromicus anguiler (Coluber canthericus).

TYPHLOPIDÆ.

Typhlops lumbricalis.
Typhlops richardi.

BATRACHIA.

HYLIDÆ.

Hyloides Ricordii.
Trachycophalus marmoratus.
Phyllobates bicolor.

BUFONIDÆ.

Bufo peltocephalus.

JAMAICA.

CHELONIA.

Chelonia mydas.
Sphargis corinnae.

TESTUDINIDÆ.

Testudo carbonaria.

EMYIDÆ.

Emys decussata.

SAURIA.

CROCODILIDÆ.

Crocodilus acutus.

GECHELIANÆ.

Hemidactylus mabouia.
Spheroiodactylus sputator.
Spheroiodactylus punctatissimus.
Spheroiodactylus argus, G.
Spheroiodactylus oxyrinhus, G.
Platydactylus theconyx.

IGUANIDÆ.

Anolis Edwardsii.
Anolis marmoratus.

SAURIA.

CROCODILIDÆ.

Crocodilus acutus.

GECKOIDÆ.

Hemidactylus mabouia.
Spheroiodactylus sputator.
Spheroiodactylus punctatissimus.
Spheroiodactylus fantasiticus.
Gymnodaectylus albogularis.
Platydactylus theconyx.

IGUANIDÆ.

Anolis alligator.

BATRACHIA.

HYLIDÆ.

Hyloides Ricordii.
Trachycophalus marmoratus.
Phyllobates bicolor.

BUFONIDÆ.

Bufo peltocephalus.

MARTINIQUE.

CHELONIA.

Chelonia mydas.

TESTUDINIDÆ.

Emys decussata.

SAURIA.

CROCODILIDÆ.

Crocodilus acutus.

GECHELIANÆ.

Hemidactylus mabouia.
Spheroiodactylus sputator.
Spheroiodactylus punctatissimus.
Spheroiodactylus fantasiticus.
Gymnodaectylus albogularis.
Platydactylus theconyx.

IGUANIDÆ.

Anolis alligator.
Anolis marmoratus.

BATRACHIA.

HYLIDÆ.

Hyloides Ricordii.
Trachycophalus marmoratus.
Phyllobates bicolor.

BUFONIDÆ.

Bufo peltocephalus.
Hence it would appear, that with the exception of Emys decussata, Crocodilus acutus, Sphenodactylus sputator, Anolis Sagrat, Leonotus maculatus, Dro- micus antillensis, and Typhlops lumbricalis, unless several of the others have been incorrectly determined, the species belonging to the Islands Jamaica and Cuba, although but 90 miles distant, are altogether different, and that several of the genera which exist in the one are wanting in the other. Besides the above we have in our collection a small serpent of the size of a Calamarian, with a very short and broad frontal (vertical) plate, a large pre-ocular, no lor sal and broad gastrostegia, carinated scales and a double row of black spots along the back, from Jamaica, included in the donation of Dr. Pennock, which is identical with Storeria DeKayi, B. & G. (lschognathus DeKayi, Dum. et Bib.* With the exception of Anolis Carolinensis, the reptiles of Cuba differ in their species altogether from those of the United States, even the southern portion of it; and not only so, but with the exception of Emys, Hylodes and Bufo, and perhaps Ischognathus, there does not appear to be even a genus common to the two countries. Were the Herpetology of each of the West India Islands fully known and very accurately determined, many highly interesting and important facts would be developed, tending much to elucidate the laws which govern the geographical distribution of species.

Notice of a Collection of Reptiles from Kansas and Nebraska, presented to the Academy of Natural Sciences, by Dr. Hammond, U. S. A.

By Edw. Hallowell, M.D.

Ord. CHELONIA, Brog.

Fam. EMYDID.E, Gray.

Elodites ou Tortues paludines, Duméril & Bibron.

Five specimens of Emys pseudo-graphica, (young.) The shell of the largest of these specimens measures two and a half inches in length, by two inches, five lines in breadth, and is almost orbicular; the carinae upon the vertebal plates are very distinct. Color of carapax olive, with orange colored concentric and irregular lines, most conspicuous when the epidermis is removed; an areola towards the posterior margin of each of the plates; sternum yellowish, marked with irregular dark colored lines; extremities and head and neck marked with longitudinal lines of yellow and black; a curvilinear transverse yellow band on each side, behind the eyes continuous with one running down the neck, and a longitudinal one between the eyes; 24 marginal plates. This species, according to Prof. Holbrook, is found in many of the rivers that empty into the Mississippi, but never east of the Alleghanies.

Ord. SAURIA, Brogn.

Fam. IGUANID.E.

Three specimens of Crotaphytus collaris, Holb. These differ from those from the Creek boundary presented by Dr. Woodhouse, and another large specimen in the collection of the Academy from Arkansas, in wanting the numerous spots with which the latter are covered. The black bands upon the neck and between the shoulders are very distinct; the general color above is blue, more or less deep, with a tinge of green, with transverse bands of white upon the body and tail; deeper bands of blue upon the posterior extremities; under parts white, with dark colored markings under the chin in two of the young; the plates upon the front in all the specimens are, for the most part larger than those upon the muzzle; those constituting the semi-circular ridges along the internal margin of the orbit quite large; occipital plate distinct;

*This species has a wide range, being found in Massachusetts and Georgia. Duméril and Bibron say they have received a specimen from Mexico.
many of the plates (11 or 12,) upon the orbits are much larger than the rest; this difference exists also in the Creek boundary specimens, but is not so well marked; femoral pores very distinct; these in some of the Creek boundary specimens are very large, (1\frac{1}{2} a line in diameter,) much larger than in any specimen of Sceloporus I have seen; eight eggs quite large, from eight to nine lines in length, were counted in the ovaries of the largest; in which also the femoral pores were very distinct, so that the femoral pores do not belong exclusively to the male in Crotaphytus; the stomach which is a large and rounded sac was distended with the debris of grasshoppers and coleopterous insects; one of the former nearly entire.

**Habitat.**—Arkansas, Louisiana near the confines of Texas, Western Texas, Kansas.

The two specimens of Holbrookia maculata (Cophosaurus Troschel) do not differ very materially from the many specimens we have from the Creek and Cherokee counties presented by Dr. Woodhouse; the marginal plates upon the upper jaw constituting the delicate fluting in that region are more narrow, and the markings upon the back are more regularly disposed, and the white spots are much less numerous than in some of the Creek specimens. The plates upon the head will be found to vary considerably in individual form and arrangement in the latter.

**Habitat.**—Creek boundary, Western Texas, New Mexico.

The specimens of Phrynosoma cornutum present nothing remarkable; the abdomen and chin of a young one are spotted all over with black spots, and lines of different shapes.

**Habitat.**—Arkansas, western country from Missouri to Texas, Creek and Cherokee countries, Western Texas, Santa Fe, New Mexico, Kansas.

**LACERTIDÆ.**

Seven specimens of Chemonorophous gularis, Baird and Girard. These are distinguished from C. sexlineatus by the broader stripes and larger size of the scales; the fronto-nasal plates appear also to be comparatively smaller in gularis.

**Habitat.**—Texas, New Mexico and Kansas.

**SCINCIDÆ.**

Five specimens of Plestiodon obsoletum, B. & G.—No two of them are colored precisely alike. They all have a general resemblance, yet each differs from the other. This difference is produced mainly by the greater or less extent to which the scales are spotted with black; in one specimen, the greater part of each scale upon the body being thus spotted; in another, the ground color, which is drab, greatly preponderates; head brown or olive, marked with dark lines and spots, under parts silvery white.

**Habitat.**—Borders of Rio San Pedro, Texas, Kansas.

**CHALCIDIDÆ.**

Ophisaurus ventralis, two specimens.

These present different markings; they both are drab colored above, with a brown band running from the occiput along the middle of the back to the extremity of the tail; sides black, with two narrow white vittae, the upper terminating five inches from the extremity of the tail; the lower on the left side 4 inches 2 lines from the anus; and on the right 1 inch 4 lines; three white lines upon the tail anteriorly; two narrow brown bands on each side of the abdomen. Length of head, neck and body 5\frac{1}{2} inches; of tail 1 foot 2 inches. The other specimen is olive above, with a brown band along the middle, but the neck and anterior part of the body is marked with white narrow ocellated spots, and instead of the lateral vitta there are upon the sides on a black ground, three rows of interrupted white spots, often united so as to form a line with very imperfect margins; under surface silvery white; length of head, neck and body 7\frac{1}{2} inches; of tail, 1 foot, 5 inches, 4 lines.

A specimen from Verdigris river resembles the first in its markings; another
and very large and stout specimen in the collection of the Academy is black above without any vitta whatever, but marked with transverse longitudinal rows of small spots; in another, the ground color above is brown, and black upon the sides with longitudinal lines of black expanded at intervals, and in these places surrounded with light colored spots, the spots upon the black ground and on the sides much larger; in another, there are longitudinal lines of white spots upon a black ground upon the back, with narrow lines of the same color upon the sides; in another, there are transverse bands of white spots on each side, upon the back, which is of a beautiful light brown, and white spots upon the head, the lateral white lines barred at intervals with cross bars of the same colors, with ten rows of dark brown spots upon the middle of the tail. A specimen from South Carolina is light brown above with lateral rows of darker brown; another from North Carolina is of a uniform drab color above, the scales upon the sides which are greyish marked with numerous black spots of different dimensions and irregular in shape, the abdomen dark slate color; under part of tail olive with four longitudinal lines of black spots, so that it will be seen that this species varies much in its mode of coloration. According to Dr. Holbrook, the under surface during life is bright yellow, most remarkable at the abdomen. Duméril and Bibron describe four varieties, including two nominal species, (punctatus and striatulus,) mentioned by Cuvier.

Habitat.—From Southern Virginia to Cape Florida, Alabama, Mississippi, Louisiana, and in many of the States bordering on the Missouri and Ohio rivers. Its Northern range west of the Alleghanies is Michigan, according to Dr. Holbrook.

Ord. OPHIDIA.

Serpentes innocui.

Fam. CALAMARIDÆ.

The Calamarians belong to the second section or sub-order of Ophidians, the Aplyphonodont or Azemiophid Serpents of Duméril and Bibron, characterized as having "recurred, conical, rounded, full and smooth teeth, without crenulation at their points, implanted in both jaws." The serpents belonging to this family have the "body very slender, rounded, and almost of the same thickness from the head to the tail." Duméril and Bibron assert that all the serpents belonging to it are terrestrial, and divide the family into nine genera, distributed in the E. Indies, (Oligodon without palatine teeth,) (4 sp.) Java, Sumatra, Borneo and Celebes (Calamaaria,) (12 sp.) Mexico, Cayenne, Surinam, Santa Cruz, Bolivia, New Granada, Java, (Rabdosoma,) (6 sp.) Cape of Good Hope, (Homalosoma,) (1 sp.) Celebes, Macassar, (Rabdion,) (2 sp.) Java, (Elapoidis,) (1 sp.) Ceylon, and the Phillipines, (Aspidurum,) (1 sp.) N. America, (Carphophis,) (2 sp.) and (Conecephalus) (1 sp.) To the two last, originating in N. America, we add the following, contained in the Kansas collection, and which, in its general characters, bears a strong resemblance to Homalosoma, but differs from it in the carination of the scales, the acuteness of the snout, the shape of the frontal (vertical) plate, &c.

Gen. MICROPS, nob.

Char. Head small, flattened above and posteriorly, depressed in front; snout acute; nine plates upon the top of the head, the pre-frontal considerably larger than the internasals; frontal plate short, but longer than broad, the two lateral margins nearly straight; nostril in a single plate, near its anterior margin; a frontal, one anterior ocular and two posterior oculars; seven superior labials, the fifth and sixth the largest, the sixth intercalated between the fifth and seventh, the eye resting on the third and fourth; occipital plates margined externally by a row of four or five plates; pupil circular; posterior genial very long, anterior small and transverse; teeth minute, existing both in the palate and maxillaries; scales strongly carinated, except the two inferior rows, elongated, slightly notched posteriorly; gastrostega not ascending high upon the flanks; tail short and pointed, with a double row of scutes.
MICROPS LINEATUS, nob.

Char. Size about the same as that of Homalosoma lutrix.

The head is quite small, slightly rounded above, depressed in front; nine plates; snout acute; nostril in a single plate, which is more or less quadrangular, quite near its superior margin, and very much nearer its anterior than its posterior extremity; on the left side this plate is cleft inferiorly below the nostril; a lower; one anterior orbital; two posterior orbitals; seven superior labials, the eye resting on the third and fourth, the sixth acutely angular, intercalated between the fifth and the seventh, not reaching the margin of the jaw; body slender, thicker in the middle, covered with 19 rows of scales, all of which are very strongly carinated, except the three or four inferior rows, the last being quite smooth and larger than the others; scales with the exception of the three inferior rows on each side narrow, subelliptical, bi-punctate posteriorly, the carina reaching the entire length of the scale; tail short and tapering to a point; abdomen scut. 138, subcaud. 34; a single preanal.

Coloration. Brown above, with three narrow yellow dorsal vitæ; the middle occupying one row and half of the adjoining row of scales; head above brown; upper jaw light yellow; abdomen and under part of tail yellow, with a double row of triangular spots of a bluish green color along the middle and base of tail; these spots are sometimes confluent at their bases; the spots beneath the epidermis are perfectly black.

Dimensions. Length of head 4 lines; greatest breadth 2; length of body to vent 7 inches 5 lines; of tail 1 inch 4 lines.

Habitat Kansas. One specimen in Mus. Acad., presented by Dr. Hammond.

Gen. Remarks. At first sight this serpents might be taken for a young Tropidonotus, but a close inspection of the frontal and sides plates and the shape of the head indicate the difference. It is of nearly the same size as Homalosoma lutrix of the Cape of Good Hope, but in that genus the snout is obtuse and the shape of the frontal plate not the same, and that of the scales, which are smooth, is very different; the nasal, however, is in a single plate. In Ischognathus Dekayi the frontal plate is broader, the nostrils between two plates, and there is no loral (Leptognathien, D. & B.) In Conocephalus the snout is acute, and the frontal plate similar but more narrowed, but there is no pre-ocular and but one post-ocular, a long frenails and the nostril between two plates. In Stretophorus (Leptognathien) the frontal is broader, the pre-frontals very greatly larger than the inter-nasals; the nostrils between two plates; no pre-ocular, two post-oculars and a long frenail.

Fam. CORYPHODONTIDE.
CORYPHODON FLAVVENTRIS.

Among the reptiles presented to the Academy by Dr. Hammond is one specimen of the Coluber flaviventris of Say, (Say’s Expedition to Rocky Mountains, vol. i. p. 185.) This specimen is olivaceous above, yellow beneath, except upon chin and throat, and along margins of lower jaw, which are white; under part of tail of a lighter yellow than that upon abdomen; seven superior labials, the eye resting on the third and fourth; a small supplementary plate on each side, below the anterior frontal, intercalated between the second and fourth labials; a quadrangular frenail, two post-oculars; nostrils between two plates; plates upon temples as described by Say; 17 rows of smooth elongate scales near the middle of the body; the inferior row the largest; 17 rows upon neck, 15 near the tail; tail of moderate length, longer than in Abalaces. 171 abdomen. scuta; a bifid preanal; 56 sub-caud. (tail mutilated). Total length 2 ft. 6 inches; of head, neck and body 2 ft.; circumference 2 inches. Say describes the posterior and basal edge of the scales as black, and in one specimen an indistinct double row of reddish brown spots irregurally alternating on each side of the abdomen; these markings are not observed in Dr. Hammad's specimen.

The genus Coryphodon of Duméril and Bibron takes its name from two Greek words Koryphos, Caracmum, summum in juavis re, summit, and odous, tooth, in-
dicating the progressive augmentation or length of the teeth as they recede backward, the following being the essential characters as given by the learned authors, Erpet. Gen. Tom. vii. p. 178.

Les Coryphodontis.

Char. "Serps with smooth unequal teeth; the anterior much shorter than those which follow, and increasing successively in length from in front posteriorly." They constitute the seventh family of the great sub-order of Aglyphodont Ophidians. The characters of the genus are the same as those of the family. The scales of this genus are more or less elongated, smooth or carinated. It is the only one of the family, and comprise six species, inhabiting North and S. America, the E. Indies and the Indian Archipelago, (Sumatra, Phillipines). Several serpents have been described under the generic name Bascadian by Prof. Baird and Girard, having all smooth scales, but as the characters are drawn from the external forms alone and not the teeth, and inasmuch as many of these are of secondary importance, and not always constant, this genus, it appears to us, cannot be retained. e. g. The head in Coryphodon pantherinus, a South American species, is not narrow but broad, the supplementary plate beneath the ant-orbitar is absent, and there are but 15 rows of scales, &c. In a specimen of Coryphodon constrictor before me, the eye rests on the fourth and fifth superior labial, which is prolonged upward, and the supplementary plate below the large anterior orbitar is between the third and fourth upper labials; the same occurs in another specimen belonging to the Bonaparte collection. This arrangement, however, is probably exceptional. In the young specimen found at Beesley's Point, and which does not differ materially in its coloring from that discovered in Kansas, there are but 5 superior labials, the third and fifth greatly prolonged, the eye resting solely on the third, and there are three posterior labials. The external characters of Masticophis apply almost equally well to Psammophas, an African and Asiatic genus, yet how different the form and arrangement of the teeth in Masticophis flagivularis (Herpetodryas) and in the latter genus.

Among the specimens is one which appears to be a young Coryphodon constrictor; the general coloration resembles very much that of Ablabes triangulum, but it is at once distinguished by the shape of the head and the form of the frontal plate. The following are its characters, which may be interesting, showing the great change which age sometimes develops in the coloration of serpents: Head long, flattened above, depressed in front; frontal long and narrow, narrower behind, excavated laterally; eye large, seven superior labials, the eye resting on the third and fourth; nostril between two plates; a more or less quadrangular loral; one large ant-orbitar, very narrow below, broad above, appearing upon the top of the head, between the prefrontal and supraorbitar; a small supplementary plate beneath it; two post-oculars; two rows of plates upon each temple between the occipital and superior labials; scales perfectly smooth, 17 rows near the middle of the body; inferior lateral rows the largest. Total length 1 foot 7½ lines; length of head 6 lines; greatest breadth 3; length of tail 3 inches.

Coloration. Head above brown, occipital and frontal plates marked with yellow; chin, throat and superior labials yellow, the posterior edges of the latter black; a red and ash brown circular spot immediately behind the occipital plates; 54 well marked transverse reddish brown blotches upon the back, not reaching to the tail, becoming indistinct in a space of 2½ inches; the lateral extremities of the transverse blotches are separated from the abdominal scutes by four and a half rows of scales; sides covered all over with brown spots; a black spot near the exterior extremity of each abdominal scute, at its posterior margin, and one or more smaller near the middle, upon the anterior part of the abdomen; rest of abdominal surface and of under part of tail yellow, in the latter region almost white. Ab. scut. 171; one bifid preanal; 80 subcaud.

Gen. Remarks. The colors of this animal are so different that it might be readily mistaken for a distinct species. The Col. vernalis of Dekay has been
taken for the young of the Constrictor, which hardly differs more in color from the adult than does Col. vernalis, but Col. vernalis is no doubt the adult age, and appears to belong to a different genus, viz., Herpetodryas.

**Herpetodryas vernalis.**


Two specimens. These do not differ from the other well known individuals. This serpent has a wide range, being found in New York, Maine, Pennsylvania, Wisconsin, Massachusetts, (Baird & Girard,) Connecticut, (Holb.) We have one specimen from Rhode Island presented by Mr. S. Powell. Wagler gives as the type of his genus Chlorosoma the Coluber viridissimus of Linnaeus, (habitat Surinam,) which is a serpent about three feet in length, the Col. vernalis a little more than one. The two serpents belong to different families, the one being an Isodontian, according to Duméril and Bibron's arrangement, having the teeth smooth, alike, equally spaced, and the head larger than the neck, and is innoxious, the other belonging to the suborder of Opisthoglyphes, having one or more posterior teeth longer and channelled, and is venomous. (Fam. Dipsadiens.) The Col. viridissimus of Linnaeus (Chlorosoma viridissimum, Wagler,) belongs to the genus Dryophylyax of Duméril and Bibron, characterized as having the "head conical, rather long, but little distinct from the trunk, in which the inferior region is separated from the flanks by a more or less salient line which the gasostega form toward their extremities; tail usually long, tapering and rather slender; eyes of the ordinary size, pupil round, subcaudal; scutes bifid." (Tome vii. p. 1103.) Duméril and Bibron state that they do not retain the generic name of Chlorosoma of Wagler, he not having characterized it with sufficient precision. In Dryophylyax viridissimus the eye rests on the fourth and fifth superior labials, (third and fourth in vernalis,) there is but one anterior orbital, (two in vernalis,) and there is no loral, the posterior frontals passing down alongside of the head to join the superior labials. There is but one temporal plate, (three in vernalis,) and there are eight superior labials, (seven in vernalis;) tail 9 inches 8 lines in viridissimus, 3 inches 4 lines in vernalis.

Sub-Gen. ELAPHIS, Aldrovandi.

**Char.** "Head usually but little distinct from the body, and for the most part slightly conical, with a snout inclined a little downward; trunk almost always cylindrical; sides of the abdomen but little angular; scales of the trunk strongly or feebly carinated."—D. et B.

**Elaphis Alleghaniensis.**

**Syn.** Scotophis Alleghaniensis, B. & G.

Two specimens. The coloration of these corresponds very well with the descriptions of Coluber Alleghaniensis by Prof. Holbrook, of Scotophis Alleghaniensis, by Baird and Girard, except that the posterior part of the abdomen and under part of tail is not uniformly slate black, being tinged to a certain extent with yellow; the number of superior marginal labial plates in these specimens is eight, the seventh the largest; the two inferior rows only appear to be smooth, except upon the neck, (according to Holbrook four, and Baird and Girard seven;) near the occiput the scales are perfectly smooth. Total length 3 feet 81 inches, (Fr.;) of tail 5½ inches; of another 3 feet 6½; of tail 5½. Abdom. scut. 221 in one; 1 bifid preanal; 66 subcaudal; in the other, ab. scut. 227; subcaudal 178. Circumference of first specimen at its middle 3 inches 7 lines; of second 2 inches 4 lines. Subcaudal scutes larger in the larger specimen.

The genus Elaphis appears to be very well characterized, and comprehends, according to Duméril and Bibron, thirteen species distributed in various parts of the world—Montevideo, (pleurostictus,) borders of the Caspian, Persia, S. Europe, Japan, (virgatus,) N. America, islands south of Japan, (conspicillatus.) It is one of the very few genera of serpents common to Europe and America.
The species inhabiting the United States are Elaphis Alleghaniensis, guttatus, quadrivittatus and vulpinus; three others have been described by Duméril and Bibron, viz., E. spiloides, ruriceps and Holbrookii; and Profs. Baird and Girard describe also three, viz., Scotophis Lindheimerii, confinis, ietus; the only specimens of these we have at present in our collection beside the three first enumerated, are two of vulpinus, presented by Dr. Gavin Watson, from the neighborhood of Buffalo, New York, which are readily determined from the description of Baird and Girard, and which undoubtedly belong to the genus Elaphis, which, according to Duméril and Bibron, was established by Aldrovandi in 1640 for the quadri-radiatus of Gmelin, (Elaphis cervone.) Elaphis Holbrookii is represented as without spots or bands upon the flanks.

The geographical range of Alleghaniensis, according to Prof. Holbrook, is the Blue Ridge, Virginia, Highlands of the Hudson, N. Y., and Mountains of Carolina, and according to Profs. Baird and Girard, Carlisle, Penna., Creek boundary, (Hallowell.)

Ablabes, D. & B.

Char.—"Colubriform serpents with a moderate head, generally somewhat distinct from the trunk, which is almost cylindrical; abdomen separated from the flanks by an angle but little salient, the scuta being scarcely elevated upon the sides; snout short, smooth and rounded; eyes rather small; tail of moderate length, somewhat tapering; scales of the trunk rhomboidal, for the most part short and without carina."—D. & B.

Ablabes triangulum. Var. calligaster.

Among the collection of reptiles presented by Dr. Hammond, are three snakes resembling the Coluber eximius of Dekay, but which differ in the markings about the head, in the general color, but more especially in the number of scales, there being but twenty-one rows in eximius, and from twenty to twenty-seven, (20 towards the tail and 25 upon the neck,) in one of these specimens; 25 in the others. The blotches upon the back, of which there are fifty, are more narrow than in that species; their external margins being separated from the abdominal scutes by seven rows of scales; the blotches are from three to five lines in length by, eight in breadth; there are eighteen transverse spots upon the tail; two rows of lateral spots, the superior much larger than the inferior; the head is long, the frontal (vertical) plate longer than broad, the gape of the mouth extensive, the eye resting on the 4th and 5th superior labials in advance of the middle of the gape; scales perfectly smooth, more narrow and elongate than in eximius; 210 abdom. scut. 1 bifid praeanal; 65 subcaudal; total length 2 feet 7 inches, (Fr.); of tail 5 inches 3 lines; another 2 feet 6½ inches, and a third, 2 feet 6½ inches in length; in another 200 ab. scut.; a single praeanal, 243 subcaud.; and in a third 198 abdom. scut. one single praeanal and 41 subcaudal. These numbers agree sufficiently well with those of calligaster, as given by Harlan, viz. abdom. 213, caudal 52, (Med. & Phys. Research. p. 122.) whereas in eximius the abdominal plates, according to Harlan, run as high as 250 in number. Dr. Holbrook, however, gives 193 abdom., 1 praeanal, 247 subcaudal, and Harlan states that in a living one which he observed, there were only 53 pair of caudal scutes. In Professor Baird and Girard’s specimens of eximius, the number of abdominal plates varied from 200 to 214, and the abdominal from 49 to 55; the total length from 2 feet 4½ inches to 3 feet 10 inches, corresponding in this respect with Harlan’s description of calligaster, which he says was about 4 feet long; so that there does not appear to be any material difference between the eximius of Dekay, and the specimens under consideration, either in the number of plates or in the length of the animal, but chiefly, as before stated, in the greater number of rows of scales of the latter; in all Profs. Baird and Girard’s specimens of eximius, and in those of the Academy, the number being but 21. There can be little doubt, we think, that the specimens from Kansas are identical with the calligaster of Say, for Dr. Harlan, who appears to have first described those in the Philadelphia Museum, is of opinion that they may be a variety of eximius. Prof. Holbrook,
who examined the originals of Say, states that they are the same, differing only in the greater number of plates in calligaster; but it is quite possible that he may not have counted the rows of scales. In all of the Kansas specimens, the coloration of the head and neck is different from that usually observed in eximius, and in two of them entirely so, there being in each two dark brown longitudinal blotches upon the temples, and on the neck, one on each side, and another about half the length of these between them, the triangular spots described by Lacepédé, being altogether absent. Ground color of head above brown, with no white stripes or bands, but a band of dark brown extending across the posterior margin of the pre-fronital plates. The ground color of the body and tail above is brown, the transverse spots or blotches much darker, each with a slight margin of a lighter brown than the ground color; the blotches are more narrow than in eximius, occupying from two to three rows of scales only in length, and from eight to ten in breadth; 45 in one, (the 45th opposite the anus,) upon the body; 18 upon the tail; 47 in another, and 18 upon the tail, and in a third 49; the 49th opposite the anus, and 14 upon the tail; blotches upon tail quite narrow, minutely black spotted and maculated, as well as interspaces and sides; color of abdomen as in eximius. Notwithstanding the great resemblance in the number of abdominal and subcaudal plates, and general appearance, we are inclined to consider the above specimens as belonging to a variety distinct from eximius, being, in fact, the calligaster of Say. We have recently received from Kimball's Museum, Boston, (whether the originals of Say had been transferred,) through Dr. Holbrook, one of the originals of Say's calligaster; the tail is broken off with a small portion of the body, but it corresponds with Dr. Harlan's description, and Prof. Holbrook's notice of it, the scales, of which there are twenty-five rows, being perfectly smooth. We therefore have a confirmation of the statement of Prof. Holbrook, of the specific identity of eximius and calligaster, and of the opinion of Duméril and Bibron, who place it, as well as clericus, among the synonyms of Ablabes triangulum, and I am happy to agree with those learned and very eminent Herpetologists.

The following may be given as the characters of Ablabes triangulum, var. calligaster.

Char.—Head rather long; seven superior labials; body of moderate thickness, with from 25 to 27 rows of smooth scales; tail about 1-6th of the total length; color brown above, with from 45 to 49 rows of black transverse narrow blotches upon back and 14 to 18 upon tail; two lateral rows of smaller blotches upon sides; under part of body beautifully tesselated with black and white; abdom. sc. 198, 210, subcaudal 41, 65; length 2 feet 6\(\frac{1}{4}\), 2 feet 8\(\frac{1}{2}\) and 3 feet 10 inches, (Fr.)

Geographical Distribution.—Kansas, Missouri.

Gen. Remarks.—Dumeril and Bibron state that the name triangulum has precedence over that of eximius of Decay, having been applied to the same species by Count Lacepédé, in his Hist. des Serpents, published in 1789, Tome, 2. p. 331. The description of Lacepédé is very precise, but it appears to us that it applies, not to the eximius as usually described, but rather to the clericus of Baird and Girard. The description of Lacepédé is as follows: "Nous nommons ainsi (triangle,) cette espece de couleuvre parce qu'on voit sur le sommet de la tête, qui est garni de neuf grandes ecailles une tache triangulaire chargé dans le milieu d'une autre tache triangulaire plus petite et d'une couleur beaucoup plus claire ou quelquefois plus foncée; des ecailles unies et en lozange couvrante, dessus du corps, qui est blanchâtre avec des taches rouges irrégulières et bordées de noir; on, voit un rang de petites taches de chaque coté du dos et une tache noire allongée, et placé obliquement derrière chaque œil." The length of Count Lacepédés specimen was 2 feet 7 inches 2 lines, tail 3 inches. Abdom. sc. 213, subcaud. 48 pair. There can be no doubt therefore of the priority of Lacepédè's description which is very accurate, but inasmuch as but one row of lateral spots is mentioned, there is some doubt whether it applies to eximius or to the serpent described by Baird and Girard, having only one row of lateral spots, (Ophibolus clericus.) We have a number of specimens with but a single row of
lateral spots with transverse blotches much broader, and reaching to the abdominal rows of scales, but in which the size and position of the eyes do not appear to form constant characters. The blotches in a recent specimen are of a bright red, a very inappropriate color for a clericus, according to our present notions. The specimens marked eximius are all immature, with one exception, but all have the double row of spots.

**Ablabes[triangulum, var. clericus]**

Char.—A large triangular red blotch upon posterior part of head and neck, with a smaller one of a lighter color in the middle; a black band from the eye to the angle of the mouth; 27 rows of quadrate blotches upon the back, of a bright red color bordered with black; the 27th opposite the anus; eight upon the tail; the blotches upon the back separated from the abdominal scuta by a row and one half of scales, and sometimes reaching as far as the last row; a single row of much smaller lateral spots of a red color bordered with black, intermediate as respects the position of the larger ones, occupying the last or abdominal row of scales, and a portion of the abdominal plates; 21 rows of scales; abdom. scut. 196, preanal single, subcaud. 44; circumference 2 inches 7 lines. Total length 2 feet 7/4 inches, of tail 3 inches 11 lines.

It will be observed that these characters differ very little from those given by Count Lacepède.

**Habitat.**—Clark county, Virginia, Mississippi and neighborhood of Haddonfield, New Jersey.

For description of var. eximius,* see Dr. Holbrook's work, N. American Herpet., vol. 3, p. 69.

The geographical range of eximius, according to Prof. Holbrook, is Maine, Rhode Island, Massachusetts, Pennsylvania, Maryland, Illinois, and high up the Missouri, (calligaster, Say,) and New York, (Prof. Baird.)

**Gen. TANTILLA, B. and G.**

Among the Ophidians of Dr. Hammond's collection is a very small Calamarian, resembling in its general appearance Carphophis amena, Dum. and Bib., but much more slender and of a lighter brown color. The arrangement of the plates upon the head, however, is quite different, and I cannot find a genus into which to place it, among those of the Calamarians characterized by Dum. and Bibron, in the Catalogue of North American Serpents of Baird and Girardi, unless it be Tantilla, or of the snakes in the British Museum, by Mr. Gray. The following are its characters:—Head small, slightly rounded above, depressed in front; snout smooth, rounded, nine plates upon the top of the head, the two anterior frontals much smaller than the posterior, which pass down on each side of the head between the posterior nasal and the anterior orbitar plates, and are in contact with the superior labials; nostrils between two plates, situated in the anterior of the two for the most part, at its posterior edge; vertical or frontal plate short and broad, hexagonal, the posterior angle much more acute than the anterior; occipitalis rather long, pentagonal; the supraoculars do not project over the eye; but two temporal plates; no loral, the posterior frontal taking the place of it; one ant-orbital and one post-orbital, the latter somewhat larger than the former; six superior labials, the eye resting on the third and fourth, the fourth, fifth and sixth much larger than the preceding ones; eye small; six inferior labials, the fourth the largest; body slender, somewhat thicker near the middle, with 15 rows of smooth and rhomboidal scales; five longitudinal rows of smooth rhomboidal scales, four scales in each beneath the neck, between the posterior general and front abdominal scuta; three inferior lateral rows of scales larger

*Dr. Dekay says of the eximius, "it is rare to find them exceeding 4 feet; the more usual length is about two."
than the others; color light brown or olive above, lighter beneath, approaching to white, a narrow dark colored line along the middle of the back, commencing at the occiput; head of a darker brown than the rest of body; ab. scut. 130; one single praanal and 42 bifid sub-cand.

**Dimensions.** Length of head 3 lines; greatest breadth 2; length of neck and body 5 inches; of tail 1 inch 6½ lines; total length 6 inches 9½ lines.

**Habitat.** Kansas.

**Gen. Remarks.** This serpent corresponds very closely with Tantilla of Baird and Girard, and may be their Tantilla gracilis, which, however, wants the vertebral line. In their species the posterior frontal do not come in contact with the labials and the vertical plate is represented as anteriorly acute. The number of rows of smooth scales, of orbitar plates and abdominal and sub-caudal scutes agree very well, there being 129 of the former and 45 of the latter.

We do not find, however, that the inferior row of scales is considerably broader than the others, if indeed so broad as the row above it.

**Habitat.** Indianola.

**CORONELLA LAURENTI, 1768.**

Char. "Serpents with posterior superior maxillary teeth longer and on the same line with the others, without interval; trunk elongated; scales smooth; snout rounded and but little elongated." D. & B.

**CORONELLA DOLIATA, var.**

There is one specimen of Coronella doliata, one foot three inches in length; and two specimens resembling the Calamaria elapsoida of Holbrook, which appear to be the young of the former. They do not belong to the genus Calamaria, which has but one nasal plate and no frenal, elapsoida having no frenal and the nostril between two plates. We have also in the collection of the Academy a specimen marked elapsoida from the Creek boundary, which, however, has a loral plate and is no doubt a young coronella. The following notes may characterize sufficiently these specimens: Cor. doliata, adult. Head resembling that of Elaps; vertical (frontal) plate a little longer than broad; two lines in breadth; occipitals short; pre-frontals (posterior frontals) much larger than the internasals (ant. frontals); nostrils between two plates; a small and narrow frenal; one anterior and two posterior oculars, seven superior labials, the eye resting on the third and fourth; 21 rows of smooth, quadrangular, elongated scales; tail short, 3 inches 3 lines in length. Abdom. scut. 200; one single praanal; 52 subcaudal.

**Coloration.** Twenty-nine red spots upon the back, bordered with black; interspaces between the black bands white; the red spots are for the most part more narrow in the middle, more extended laterally; the black bands occasionally almost touching each other; the black bands coalesce with black, sub-quadrate spots upon the abdomen, having other black spots intermediate; a black, transverse band across the occipital plates; a few black spots upon the upper labials; ground color below light yellow; the black bands upon the back are from two to two and a half lines measured longitudinally, being about thrice the dimensions of those of a specimen from Delaware. The red spots or transverse bands occupy from two to two and a half rows of scales, as do also the black bands upon the margins. In the specimen from Delaware the red spots occupy a much greater space, the first comprising 11 rows of scales, but 6 in the Kansas specimen; the second six, in the Kansas specimen three, and the black margins are also much more narrow, occupying 1½ rows of scales; the black tesselated markings upon the abdomen also differ, and the alternate black spots are not seen except towards the tail; the snout is more acute, and the number of rows of scales is less, viz.: 19. Ab. scuta 186; one single praanal; and 42 sub-caudal.

In the specimens of Ophibolus gracilis, B. and G., the anterior black rings so extend as to cover the whole head above, except the very tips; in other specimens the black rings run into each other. In another there were only 21 pairs.
of rings. They are from Arkansas and Louisiana; number of rows of scales not mentioned, (Cat. N. Am. Reptiles in Smith. Inst. p. 91). Ophiobolus is not characterized with sufficient precision to be retained, including as it does two genera, Ablabes and Coronella, belonging to different families, the one (Ablabes) an Isodontian, with teeth of equal length, the other (Coronella) a syncraterian, (posterior teeth in the latter much larger and stronger than those which precede them, a well marked character in our specimens). The one from Delaware corresponds very well with Prof. Holbrook's Coronella doliata, though the rings are not so generally confluent with the spots upon the abdomen.

In one of the younger specimens, one 9\(\frac{1}{2}\) the other 7\(\frac{3}{4}\) inches in length, the red blotches are much wider apart, the black rings more narrow in proportion and the white interspaces wider than in the other. The black rings in rows, in these specimens entirely surround the abdomen. (We need for the thorough elucidation of the natural history of the Coronellians resembling each other so much in color, a greater number of specimens and of all ages. Our friends would confer a favor upon science would they take care, as has been the case to a great extent in the Kansas collection, to send us numerous specimens of the same species.)

Gen. Remarks. The coloration of this serpent differs very considerably from that of the figure of Ophiobolus gentilis, B. and G., in the exploration of the Red river of Louisiana, by Capt. Randolph B. Marcy and George B. McClellan. The blotches in that figure are much more extended, and the black marginal rings much wider apart. In one of these specimens there were 25 instead of 29 pairs of black rings, the red portion occupying a much greater space; but in another there were 28; dorsal row of scales 21; Ab. scut. 198; sub-cand. 45; total length 20 inches. These black ringed Coronellians will probably, when a sufficient number of specimens shall have been procured from different parts of the Union to determine the question, turn out to be for the most part varieties of one and the same species.

Gen. Tropidonotus, Kuhl.

The genus Tropidonotus belongs to the family of Syncraterians of Dum. and Bibron, in which the teeth are in a continuous row without interval, and the posterior longer than the others; the scales in this genus, as its name indicates, are always carinated, more especially those upon the flanks. The tail is of moderate length. Three species in the collection belong to this genus, viz.: Tropidonotus parietalis of Say, of which there are three fine specimens; a much larger one, (Trop. obliquus.) and Trop. ordinatus.

Tropidonotus parietalis, Say.

The collection made by Dr. Hammond includes two specimens of Tropidonotus parietalis. Both these serpents correspond with the short but clear description of Say. The red spots on the sides are very apparent; one of the specimens is quite stout, the circumference being 31 inches at the middle; 147 abdom. scut. a single preanal, (tail mutilated) 19 rows of scales, the inferior row smooth, the middle stripe broad, occupying one and the half of each adjoining row of scales. In the smaller specimen, Ab. sc. 155., and 83 sub-caudal; tail of moderate length, rather long and tapering.

Habitat. Between San Antonio, El Paso, Missouri (Say); Kansas, California, (Dr. Heermann); Rio San Pedro, Texas, (Woodhouse.)

There is but one specimen of Tropidonotus ordinatus (young) with the lateral stripes very distinct, three rows of alternate black spots; extremities of abdominal scales black spotted anteriorly; occipital plates bi-punctate; 21 rows of scales all carinated, inferior row largest; ab. sc. 167, a single preanal, 78 sub-caudal. Total length, 1 foot 1 inch 7 lines, of tail 3\(\frac{1}{4}\) inches.

Tropidonotus obliquus, nob.

Char. Head long, flattened above, nostril between two plates, a loral, other plates normal, 8 superior labials, the eye resting on the 4th and 5th, 6th and 7th
the largest; immediately behind the middle post-ocular one temporal plate between the occipital and the superior labials; 23 rows of carinated scales, the inferior row but slightly carinated and larger than the others; scales strongly emarginate posteriorly, the carine running the whole length of the scale; scales long and rather narrow upon the back, broader towards the abdomen. 140 ab. sc. 1 bifold preanal, and 69 sub caudal; tail rather long, tapering to a point; body robust, size about that of Tr. sipedon.

Coloration. Greyish above, with large transverse and more or less oblique blotches of the same color bordered with black, extending as far as the abdominal scales; they are quite broad, occupying about five rows of scales, and have very irregular margins; the interspaces between them are comparatively very narrow, from a scale to nearly two in width; 32 of these oblique blotches may be counted, the 32d opposite the anus; 18 or 19 transverse brownish bands upon the tail; under surface resembling very much that of sipedon, the ground color yellow, which predominates greatly at the anterior part; throat and under jaws quite yellow, the posterior margins of the inferior labials bordered with brown.

Dimensions. Length of head 1 inch 5 lines; greatest breadth 9; length of body 2 feet, 1 inch, 7 lines; of tail 8 inches; total length, 2 feet, 10 inches, 1 line; circumference 3 inches, 1 line.

Gen. Remarks.—This serpent differs from Trop. rhomibifer and transversus. It resembles very much a specimen in the possession of Dr. Holbrook from Chicago, sent to him some time ago by Prof. Kirtland, and which he has kindly permitted me to examine. They both are of the same length, have similar markings, and the same number of rows of scales. It may be a variety of Trop. sipedon.

Heterodon nasicus.

There are three specimens of Heterodon nasicus B. and G., in very excellent preservation. These Heterodons are remarkable for their prominent rostral plate and bulging cheeks, giving them a physiognomy, to use the expression of Prof. Schlegel, quite different from that of our ordinary Heterodons. The abdomen and under part of tail is almost entirely black. In two of the specimens the vertical (frontal) plate is as broad as long, in one broader by about half a line; the shape of the vertical plate differs entirely from that of simus, but much more from that of niger and platyrhinos. In a specimen of simus there are eight small plates between the frontal and rostral, and the anterior nasal and supero-nasals; in nasicus fourteen, in platyrhinos and niger there is but one, (the asygos) immediately behind the rostral. In a specimen of niger there is but one loral plate, the posterior supra-nasal (posterior frontal) passing down upon the side to take the place of the upper one in simus; and in platyrhinos two. The entire length of the largest of these specimens of nasicus is one foot, three inches, tail 2 inches 7 lines, circumference 1 inch 7 lines. It appears to be a smaller species than simus, and much smaller than platyrhinos and niger. Prof. Baird and Girard, however, give over two feet as the dimensions of a specimen from Sonora. Ab. sc. 137, 1 bifold preanal, 43 sub-caudal. In 2d. 137, ab. sc. sub-caud. 43. In 3d. 137, ab. sc. sub-caud. 44.

Habitat. Rio Grande, Red River, Arkansas, Fort Webster, Sonora.

Gen. Remarks. The figure in Capt. Marcy's report does not accurately represent this animal; the bulging of the cheeks, a prominent characteristic, is not sufficiently shown, and the nostril is in a single plate, which is not the case.

VENENOSI.

Trigonocephalus contortrix.

There are four specimens of Trigonocephalus contortrix, which present nothing very peculiar. In one of them the black color predominates greatly upon the abdomen; dorsal rows of scales near the middle in all 23. In a fine specimen from Pottsville, Pa., presented by Mr. C. T. Hughes, the dorsal rows are but 21,
ab. sc. 146; a single preanal, 38 sub-caud. followed by 7 bifid near the posterior extremity of the tail; in the Pottsville specimen, 148 ab. sc. 1 bifid near the anus, 21 single and 20 bifid plates at the end of the tail. In a 2d 142, ab. sc. 1 bifid near the anus, 25 single and 21 bifid. In all the specimens the sub-caudal scales are single anteriorly and bifid posteriorly. The Trigonocephali, like the Crotali, have a deep pit between the eye and the nostril, in which they differ from the Vipers. They have plates upon the head, unlike Bothrops and several other genera, and are destitute of rattles. This serpent was first described by Linnæus under the name Boa contortrix; and afterwards by Pali- sot de Beauvois, who calls it Angistrodon mokeson. It has been placed in no less than five different genera, viz.: Boa, Angistrodon, Cenchris, Scytalus, and Tri- gonocephalus, with three different specific names.

Habitat. This serpent has a very wide geographical range. From N. Eng- land to Florida, and the shores of the Atlantic to Alleghanies, (Holbrook) Ohio, Penn., S. Carolina, Louisiana, Texas, (B. and G.)

Crotalus confluenss.

There is one specimen of Crotalus, which corresponds sufficiently well with Say's description of Crotalus confluentus. The spots are more crowded together anteriorly than in the specimen described in Sitgreave's report; the interspaces between the first fourteen being much more indistinct than between those which follow, especially the first seven which present the appearance of narrow white transverse bands; they are confluent only to a slight extent. Total length including rattle, 1 foot 8½ inches; of tail including rattle 1 inch 8 lines; of rattle 3 lines; (4 rattles and terminal appendage) of head 1 inch, breadth 3; 25 or 27 rows of scales. 178 ab. sc., a single preanal, 1 bifid, 14 single and 2 bifid sub-caudal, the last near the rattle; circumference 2 inches. 40 brown subquadrate spots, more or less margined, may be counted upon the back and four or five upon the tail; the last nine or ten have the appearance of bars than regular blotches. A much larger Crotalus than the above is found in California, of which an excellent figure is given in Capt. Marcy's Exploration of Red River, pl. 1, under the name of Crotalus confluentus. We have several in the collection of the Academy, presented by Dr. Heermann, of which a notice will be given in the forthcoming volume of the Pacific Railroad report, under the direction of Capt. Williamson. These are of a yellowish color be-neath, with brownish maculations; the subquadrate spots upon the back a deep brown bordered with orange. One of these specimens measures more than 3 feet in length; 23 rows of scales. The predominating color in the specimens, ex-cept that of the dorsal subquadrate blotches, is sulphur yellow. The name of Cro- talus Lecontii might perhaps with propriety be given to this species from Cali- fornia, and that of confluentus be retained for the smaller crotalus with quad- rangular as in the larger animal.

Ranidæ.

There is in the collection a specimen of Rana halecina, which does not differ in any important particular from the R. halecina found in the neighborhood of Philadelphia, unless it be that in the latter the internal nares appear to be larger, and the tongue more narrow. The vocal vesicles are quite distinct, the pores upon the orbit conglomerated and very apparent; others are observed upon the neck and anterior part of the back, and a band extends along the upper margin of each flank, from the posterior angle of the eye to near the thigh; Duméril and Bibron state, that it is with some doubt that they separate this species (the halecina,) from palustris, but admit that they are, and they are no doubt distinct. They are both very common in the neighborhood of Phila- delphia. The Rana halecina has vocal vesicles, the palustris has none; the
spots as Duméril and Bibron observe, are subquadrate in palustris, but round in halecina; the thighs are very differently marked in the two species, and the tympanum, as stated by the authors above mentioned, is smaller in palustris, but it appears to us that the snout is more acute in the latter than in halecina, being the reverse of the diagnosis as given by them.

**Rana pipiens.**

There is but one specimen of *Rana pipiens* in the collection, and that is about half grown. It does not differ materially from one of the same dimensions from Absecom, N. J., except in the size of the tympanum, which in the Kansas specimen is not more than 2½ lines in diameter; whereas in the one found at Absecom it is 6 lines, being the same as in a very large and full grown specimen from Buffalo, New York. The general color is olive above, minutely and sparingly spotted with black, with very indistinct bars of a deeper olive upon the posterior extremities. The mottlings below resemble each other, except that in the Absecom specimen they are of a chocolate color, and the color of the abdomen less clouded; they both appear to be females. The difference in the size of the tympanum is certainly remarkable, but without a greater number of specimens, we are unwilling, on that account, to give it a new specific name. Besides the above, there are several other smaller specimens of the same olive color above, the rows upon the posterior extremities of a darker color, the body covered with minute black spots, in the youngest resembling the *R.* conspersa of Major Le Conte, which is, probably, the young of *R.* pipiens. According to Major Le Conte, conspersa wants the ridge upon the tympanum. Under part mottled as in the larger individual.

There is a single specimen of a very small Batrachian resembling the *Acris gryllus*, grey spotted above with the triangular spots upon the head; thighs and eyes obliquely spotted with brown; under parts white; length from snout to posterior extremity of body 6 lines; length of anterior extremities 3 lines; of posterior 9½.

**Bufonidæ.**

**Bufo americanus.**

There are in the collection of Dr. Hammond, two very large toads, larger than any specimens of *Bufo americanus* that I have seen. They measure 3 inches 11 lines in length, (from snout to vent,) the dimensions of the *Bufo americanus*, as given by Prof. Holbrook, being but 2½ inches. The longitudinal ridges upon the head are as in Americanus, and there is a narrow vertebral line running from the extremity of the snout to near the posterior extremity of the body; the general color is dusky above mingled with olive, with a few subround black spots and linear maculations; the black colored maculations are more distinct upon the sides; under part yellow, mingled with orange posteriorly; the warts upon the sides of the body above and upon the posterior extremities are remarkable for their large size.

The *Bufo punctatus* of Profs. Baird and Girard appears to be the young of this species; they are of an ash grey with subround spots, and irregular markings of black, containing one or more prominent red colored points or tubercles. Under parts white, with a tinge of blue upon the abdomen, except posteriorly, the under surface of the posterior extremities of a yellow color. I cannot make out that this toad differs essentially from *Bufo americanus*, and in this my friend Major Le Conte agrees, who also examined the specimen.

The most striking difference between this species and the Americanus, consists in the much greater breadth of the tongue, and its greater comparative evirtility; in two specimens of equal size, the tongue in the Kansas specimen is six lines in breadth, in *Bufo Americanus* but three. In the largest specimen the tongue measures 7 lines in breadth, and is somewhat less everteite than in the smaller specimen. This species is very different from *Bufo halophilus*, B. & G., inhabiting California; the latter is much more warty, the warts being
very numerous and much developed along the middle of the back; the markings beneath are also different, balophila being largely maculated beneath.

_Engystoma olivaceum_, blb.

There is a single specimen of _Engystoma_, one inch one line in length by seven lines in breadth; the anterior extremities 6; the posterior 1 inch 10 lines in length. The general color above is olive, with dark colored spots posteriorly; these are observed in considerable number upon the posterior part of the body and upper part of the thighs; a few also are seen over the shoulders; the sides are obscurely marbled with brown; under surface yellow, immaculate; a well marked fold passes across the head behind the eyes, extending down alongside of the head.

This specimen is larger than any of those in the collection of the Academy, and the coloration is quite different from that of Dr. Holbrook's figure (N. Am. Herpet. vol. v. pl. vi.) and the specimens from Georgia in the collection presented by Maj. Le Conte. These are all more or less mottled with brown beneath and brown or chestnut colored above.

_Dimensions_. As above, length of tarsus and toes 9 lines; of leg 4 lines; of thigh 4; of arm 2, of forearm 2.

_Gen. Remarks_. Duméril and Bibron describe five species of _Engystoma_—two from N. America, (carolinense and rugosum,) two from S. America, (ovale and microps,) and one from Malabar, (ornatum.)

_Habitat_. According to Dr. Holbrook, _Engystoma_ Carolinense has never been found north of Charleston, its range extending westward to the lower Mississippi.

_URODELA._

_AMBYSTOMIDÆ._

_Ambystoma luridum_, var. _fasciatum._

There is but one specimen of _Urodela, viz_, an _Ambystoma_. This is the same animal apparently figured in Duméril and Bibron's work, pl. 105, under the name _Ambystome abandes_, (variété,) but it differs entirely from _Ambystoma fasciatum_, (opacum,) not only in coloring but in the arrangement of the teeth; these in fasciatum are placed in three distinct groups, whereas in the present specimen they are in a continuous series, forming a very obtuse angle, the lateral prolongations passing behind the internal nares and terminating in a line with their external margin, presenting the same arrangement as in _Ambystoma luridum_, of which it is probably a variety, having nothing to distinguish it from that species but the coloration. Duméril and Bibron state that their specimen was received from the neighborhood of New Orleans.

One cannot but remark, in studying the collection of reptiles above noticed, the great difference in the geographical range of the genera and species composing it. The _Emys_ does not exist with us, neither does a single one of the genera of the lizards, unless it be _Cnemidophorus_. Of the innocuous serpents four are common to Pennsylvania and Kansas, viz., _Elaphis Alleghaniensis_, _Ablabes triangulum_, _Tropidonotus ordinatus_ and _Herpetodryas vernalis_. The others, viz., _Tropidonotus parietalis_, unless it be considered a climatal variety of _sibalis_, _Tropidonotus obliquus_, _Microps lineatus_, _Coryphodon flaviventris_, _Corolla dollicata_, _Tantilla gracilis_ and _Heterodon nasicas_ are unknown to us. The _genera_ of innocuous serpents in the collection common to Pennsylvania and Kansas, are _Elaphis_, _Ablabes_, _Tropidonotus_, _Coryphodon_ and _Heterodon_. Of the venomous serpents, _Trigonocephalus contortrix_, which is one of the most widely diffused of our serpents exists in both regions, but _Crotalus confluens_ is found only in the far west and south-western portions of North America. Of the _Ranidae_, _R. halecina_ and _pipiens_ are common to both, and of the _Bufoideae_ B. Americanus; but we have no _Engystoma_, and among the _Urodela_ no _Ambystoma_, with an arrangement of teeth and system of coloration in all respects.
similar to the specimen in the collection, which appears to us, as above mentioned, to be closely allied to luridum.

We have not at present the materials for a complete representation of the Herpetological fauna of America either North or South, but these will hereafter no doubt present some very curious results, when compared with the fauna of the West India Islands, and other parts of the globe. In order, however, to arrive at the truth in a matter so important, it will be necessary to determine with the utmost precision the characters both of the genera and species, and this cannot be done without a knowledge of the anatomy, as well as of the external forms.


By John Cassin.

1. Buteo Cooperi, nobis.

About the size of Buteo borealis. Bill strong, edges of upper mandible lobed, wings long, quills wide, fourth quill longest, tail moderate, legs rather long, tarsi feathered in front slightly below the joint, behind and remainder in front naked, with about 13 transverse scales in front and 11 behind.

Total length (skin) 21½ inches, wing 15, tail 9 inches.

Tail white at base, external feathers with their outer webs cinereous and their inner webs white mottled with cinereous, other feathers of the tail mottled and striped longitudinally with white, bright rufous, dark brown and cinereous, darker on the outer webs. A subterminal transverse band of dark brown, tip white.

Plumage of the head above white at base, tipped, and with longitudinal stripes of brownish black; back and rump brownish black, upper tail coverts white, transversely barred with dark brown and tinged with rufous, wing coverts and quills cinereous darker on outer web of primaries and lighter on their exposed ends. Under parts white, with narrow stripes of dark brown, numerous on the neck, throat and flanks, (breast, abdomen and under tail coverts pure white.) a few of the same on the under wing coverts, tibiae faintly tinged with yellowish. Bill dark bluish, tarsi yellow.

Obs. This is the young plumage, and the present specimen is the only one that I have ever seen. It is from California, and is in the collection made by Dr. J. G. Cooper, while attached to Lieut. Williamson's party that surveyed a route for a railroad to the Pacific Ocean.

This bird belongs to the same group as Buteo cyatholus of South America and has nearly the same light cinereous color of the wings, quite different from any other North American species. I have named it in honor of Dr. Cooper, a talented and active young naturalist, the son of William Cooper, Esq., one of the most eminent of American Naturalists.

2. Eopsaltria cinerea, nobis.

Bill thick and rather long, distinctly notched near the end, wing rather long, first quill spurious, fourth slightly longest, tail moderate, tarsi and toes slender, feathers of the head above slightly lengthened.

Total length (of skin) 5 inches, wing 2½, tail 2 inches.

Entire upper parts cinereous, feathers on the head with faint lines of brown on the shafts. Quills dark ashy brown, edged externally with pale ashy, tail dark ashy brown, narrowly tipped with white. Throat and abdomen white, breast pale ashy, under wing coverts white. Observe line from the bill to the eye, and ring around the latter, white, spot in front of the eye, dark ashy brown. Bill dark, base of lower mandible white, feet dark.

Hab. Moonda river, Western Africa. Discovered by Mr. P. B. DuChaillu.

Obs. This little bird is nearer the genus Eopsaltria, than any other that I can find at present, though perhaps not strictly. Two specimens in the collection of Mr. DuChaillu are all that I have seen. It is a plain little bird, having the general appearance of Virgo and Eopsaltria.
   About the same size as *Sitta carolinensis* and much resembling it, but with the bill longer and much more slender. The colors of the upper parts are darker than in *S. carolinensis*, and the white of the tail of less extent.


_Obs._ This is the western style of *Sitta*, nearly allied to the common species of the States on the Atlantic. It may very readily be distinguished by its long, slender and pointed bill, which is a constant and unvarying character. Numerous specimens are in the collections above referred to, and it appears to be a common bird of the western regions of North America.


_Blyth_ Jour. As. Soc. Bengal, xv., p. 11.

Whatever may be the bird described by Mr. Eyton as above, it is quite certain that Mr. Blyth as cited, describes *Halecyon concreta*, Temm. Pl. Col. iv., pl. 346. The latter describes at length, and the species can readily be identified with Temminck's plate, even without specimens. We regard it as quite probable, too, that Mr. Eyton alludes to the same bird, and at present regard his name as a synonyme for *Halecyon concreta*.

This bird does not belong to the genus *Todiramphus*.

5. *Columba iridifrons*, nobis.

About the size of *Turtur cythroprys*. Wing rather long, quills broad, second quill longest, tail rather short, feathers broad, legs short.

Total length (of skin, male) about 10½ inches, wing 6½, tail 4 inches. Female smaller.

Neck behind with a wide collar of cinnamon color, with golden violet and green metallic lustre. Entire head cinereous, light on the throat and in front, darker and with a green metallic lustre on the occiput, other upper parts very dark, nearly black with a tinge of cinereous, and on the back and rump with green and violet metallic lustre, especially next to the nuchal collar. Under parts vinaceous, under tail coverts light chestnut, under wing coverts dark cinereous. Two central tail feathers dark cinereous, others same color on their outer webs, and dark chestnut on their inner webs, and widely tipped with yellowish white. Legs yellow.

_Hab._ St. Paul's river and Moonda river, Western Africa. Dr. MacDowell's collection and Mr. DuChaillu's collection. Spec. in Mus. Acad. Philada.

_Obs._ This handsome species of Dove has been in the collection of the Academy for some years, having been collected by Dr. MacDowell, but I have never succeeded in finding a name for it. It is not given in the *Columbidae* of the Prince Bonaparte's Conspectus Avium.

Several specimens are in Mr. DuChaillu's collections. This species does not intimately resemble any other known to me, and may be immediately recognized by its wide nuchal collar, the colors of which are very brilliant. The back and rump and some of the wing coverts have also brilliant metallic lustre.


About the size of *Z. spilonota*, Gould. Bill rather long, membrane of the nostril very large, wing rather long, third quill longest, tertiaries long, tail short, legs moderate, toes long.

Total length (skin) 5½ inches, wing 3, tail 2 inches.

Entire upper parts reddish brown or snuff color, darkest on the rump, which color is continued on the sides below the lower edges of the wings. Under parts dark cinereous, lighter on the throat, under tail coverts brownish black with transverse stripes of white, under wing coverts brown edged with white, feet light colored, bill darker.

_Hab._ Feejee Islands. Specimens in the collection of the U. S. Exploring Expedition, (Vincennes and Peacock.)
1856.]

Obs. This bird was given in Mr. Peale's volume on the Birds and Quadrupeds of Capt. Wilkes's Expedition, as Zapornia spilonota, Gould, but though very probably of the same genus, is distinct, and we have not found it described.

7. TACHYPEPES PALMERSTONI, (Gmelin.)

Pelecannus Palmerstoni; Gen. Syst. Nat. i. p. 573, (1788.)

Obs. This is a species quite distinct from T. aquila, and is apparently exclusively an inhabitant of the Pacific Ocean. From that species the present bird may readily be distinguished by its much larger gular pouch, which in the living bird is of a red color. Its quills and tail feathers are much narrower and the latter is longer. So far as can be determined from preserved specimens, the two species are nearly of the same size, though the present bird is the more slender.

Numerous specimens are in the collection of the Exploring Expedition, (Vincennes and Peacock.)

Notices of Remains of Extinct Vertebrated Animals discovered by Professor E. Emmons.

By Joseph Leidy, M. D.

CETACEA.

1. OXYCTEROCETUS CORNUIDENS, Leidy.


The genus was originally proposed on several long horn-like teeth, together with fragments of jaws found in the miocene deposit of Virginia. Prof. Emmons has also discovered a tooth, apparently of the same species, in the miocene deposit of North Carolina. The tooth bears a wonderful resemblance to the horn of a young ox. It is nearly 5 inches long in the curve and over an inch in diameter at base, which is hollowed into a deep conical cavity, as in the spermaceti whale.

SAURIA.

2. DREPANODON IMPAR, Leidy.

This species is founded on the crown of a tooth discovered by Prof. Emmons in the miocene deposit of Cape Fear, North Carolina.

The specimen, in form, bears a strong resemblance to the crown of the inferior canine tooth of a bear, but it has only one trenchant ridge, and this is situated posterio-internally. The enamel is thin and smooth; the base of the crown is hollowed conically. Length of specimen 10 lines; breadth at base antero-posteriorly 7 lines, transversely 5 lines.

3. PLOIOXODON PRISCUS, Leidy.

Founded on two much mutilated specimens, consisting of the crowns of teeth, discovered by Professor Emmons in a miocene deposit of Cape Fear, in North Carolina.

Teeth elongated conical, nearly straight or only slightly curved in wardly, in section circular, with a pair of opposed carinae on the inner side; surfaces divided into numerous narrow planes, with a few vertical interrupted plicae, which are more numerous on the inner side. Enamel finely wrinkled; and the dentine concentric. Base of crown hollowed. Probable length of crown when perfect 2 inches, breadth of base \( \frac{3}{4} \) of an inch.

The teeth differ from those of Mososaurus in their narrower proportion, straightness, circular section, and plicae of the enamel; from those of Polypedodon in the possession of divisional planes and opposed carinae; and from those of Pleiosaurus in the former character and the circular section.


Half a dozen isolated teeth of this saurian are contained in the collection of Prof. Emmons.
5. Omosaurus perplexus, Leidy.

An enaliosaurian, based upon a number of teeth of varied character, vertebrae, fragments of ribs and other bones, and the impression of a dermal plate, obtained from the coal field of Chatham Co., North Carolina, by Prof. Emmons and also by Prof. M. Tuomey.

Teeth elongated conical, pointed, nearly straight, or more or less moderately curved inwardly, with opposed carinae on the inner side, which are entire or denticulated; transverse section subcircinal, flattened internally; surfaces even, or more or less distinctly fluted on the outer side and all around, and covered with minute interrupted ridges, which are vertical on the even surface, oblique on the fluted surface, and divergent downward in the vicinity of the carina. Crown solid, enamel thin, dentine concentric; fang sub-cylindrical, hollowed at base. Length from 5 lines to 1 1/2 inches, breadth from 2 lines to 4 1/2 lines.

Bodies of the vertebrae bi-concave and much constricted, as in Palaeosaurus? and Clepsysaurus. Length of one of the posterior cervical bodies 16 lines, depth of its articular surfaces 17 lines, width 15 lines.

Dermal plate covered with radiating, bifurcating and anastomosing ridges.

Allied to Clepsysaurus and Centemodon, Lea, and probably identical with them.

Labyrinthodontia.


Founded on the upper portion of a cranium discovered by Prof. Emmons in the coal field of Chatham Co., N. C. Plates of the cranium covered with reticular ridges in a general radiant manner. Parietals comparatively short, broader in front than behind; parietal foramen near the centre of the bones. Occipitals quadrate, a little longer than broad. Posterior outline of the cranium with a superficial transverse concavity on each side and not a deep sinus as in Trematosaurus and Archeosaurus. Breadth of occipital outline 28 lines; length of parietals 8 1/2 lines, breadth anteriorly 3 1/2 lines, posteriorly 3 lines. Probable length of head, considering it to have had nearly the proportions of Trematosaurus, 4 inches, breadth 2 1/4 inches.

Pisces.

7. Ischyrohiza antiqua, Leidy.

The genus was originally based on a tooth found in the Green Sand of New Jersey. Two teeth apparently of a second species have been obtained by Prof. Emmons on the Neuse River, N. C.

Crown of the teeth, when perfect, apparently, laterally compressed conical. Fang robust, quadrately pyramidal, curved; with a rugged base which is bifurcated antero-posteriorly and more deeply before than behind. Pulp cavity entirely closed at bottom. Probable length of specimens when entire 11 1/4, and 2 inches; length of fang 10 lines, and 1 inch; breadth of crown at base antero-posteriorly 5 lines, 6 lines; laterally 3 3/4 l., 4 1/4 l.; breadth of fang at bottom antero-posteriorly 7 l., 8 1/2 l.; laterally 6 1/2 l., 7 l.

Notice of some Remains of Fishes discovered by Dr. John E. Evans.

By Joseph Leidy, M. D.


Founded on an impression of the fish upon one half of a clay stone nodule from a tertiary deposit of Green river, Missouri.

Length 3 1/2 inches; greatest depth 16 lines. Dorsal fin with 15 rays; abdominal 7, anal 14; caudal 29. From the head to the position of the anus 25 abdominal spines may be counted.


Based on specimens of isolated scales, attached to masses of an ash-colored chalk, from the cretaceous deposite of the upper Missouri.
The scales are almost the size of, and bear considerable resemblance to, those of *Catastomus bivalis*. A nearly circular scale is about 1½ inches in diameter, and an oval scale has been nearly 2 inches wide and 1 inch long. Deep radiant grooves mark the uncovered portion, and minute granule-like points the opposed portion, while the intermediate tracts are smooth.


Based on the specimen of a right dental bone found in company with *Cladocycylus occidentalis*. The bone has been about an inch in length, and in the specimen it supports a series of six large teeth, of which the first one is 2 lines long and the last one ¾ of a line. The border of the bone outside of the long teeth is fringed with minute teeth.

The species is named in compliment to Dr. Benj. F. Shumard, of St. Louis, who assisted Dr. Evans in his important explorations.

The Secretary announced the death of Mr. Samuel B. Ashmead, late a member of the Academy.

**ELECTION.**

Drs. Ellwood Wilson and Robert E. Griffith, of Philadelphia, and Dr. Eugene Francfort, of Middletown, Conn., were elected members of the Academy.
November 4th, 1856.

Mr. Lea, Vice-President, in the Chair.

Letters were read—

From the Imperial Academy of Science and Belles Lettres of Lyons, dated July 14th, 1856, transmitting its Memoires.

From the Linnean Society of Lyons, dated July 9th, 1856, of the same tenor.

From the Imperial Society of Agriculture, Natural History, and the Useful Arts, of Lyons, dated July 8th, 1856, of the same tenor.

A paper was read, entitled "Description of a new Species of Tanager of the genus Saltator, by Philip Lutley Sclater." Referred to a committee consisting of Dr. T. B. Wilson, Mr. Cassin, and Dr. Hallowell.

Mr. Lea presented a paper entitled "Descriptions of Eleven new species of Unionea from Georgia, by Isaac Lea." Referred to a committee, consisting of Dr. T. B. Wilson, Mr. Binney, and Dr. Leidy.

Mr. Lea read portions of a letter from Dr. J. Lewis, dated Mohawk, N. Y., October 28th, 1856, giving a list of living mollusca in "Little Lakes," Otsego, County, 'N. Y. Referred to the Committee on Proceedings.

"The geological character of the basin in which the upper or northern Lake lies, is sufficiently explained by the out-cropping rocks of "Coriferous limestone" that appear near its eastern and western shores. The bottom of the lake was formerly, no doubt, either a stratum of the "Coriferous" or the "Onondaga Limestone" of the New York Geological surveys.

The lake is fed by a few small streams that drain a considerable extent of territory of the same geological character, and it is fair to presume that a considerable quantity of lime enters the lake in solution, where, by the influences of light, heat, evaporation, and animal and vegetable life, most of the lime is deposited in the form of a greenish grey mud, in which are immense numbers of shells, which are perhaps the accumulation of ages, and form in the lake and the surrounding marshes beds of marl, in many places over 20 feet deep. In such a locality the mollusca might be expected to exhibit some unusual or singular features, and such indeed is the case.

The species that have fallen under my observation have been sought only in the upper lake. The lower lake (which does not exhibit the mari of the upper to any remarkable extent) is so variable in its depth, from being raised or lowered to meet the requirements of a mill on its outlet, that a favorable opportunity for examining it has not occurred at such times as could be made available. The species do not differ, so far as known, from those of the upper lake.

Unio radiatus (var?) Lam.
Anodonta ——-? between fragilis and fluviatilis.
Cyclas similis, Say. In shallow water.
Cyclas rhomboidea, Say. Borders of marshes.
Cyclos croceus, Say. Borders of marshes.
Pisidium variabile. Prime.
Pisidium compressum. Prime.
Pisidium ventricosum. Prime, (obtusale ? Pff.)
Lymnaea gracilis, Jay. Dead shells only seen in fragments.
Lymnaea columella, Say. On aquatic plants.
Lymnaea appressa, Say. One dead shell seen only.
Lymnaea. Small and white; rarely seen except in marl.

Lymnaeae desidiosa, Say. Shores.

Lymnaeae humilis, Say. Shores.

Planorbis trivolvis, var. corpulentus, Say. Rarely seen.

Planorbis campanulatus, Say.

Planorbis bicarinatus, Say. Small and white.

Planorbis hirsutus, Say. Borders of marshes.

Planorbis deflexus, Say. Borders of marshes.

Planorbis parvus, Say. Borders of marshes.

Physa heterostropha, Say.

Ancylus, two species. On rushes.

Valvata decisa? Say. Shell coated with a fine red pigment, very adherent; animal of a lighter color than any variety of decisa I have seen.

Amnicola limosa, Say.

Am. (Pal.) pallida? Lea. (Small, acutely conic;) rare.

Valvata tricarinata, Say.

Valvata, var. bicarinata, Lea. Runs into every change of carination that can be supposed. Sometimes one, sometimes two of the carina are absent.

Valvata sincera, Say. Animal blue, seen through the shell, which is white and translucent, while the shells of tricarinata, bicarinata and varieties are of usual characteristic green. Shells smooth, polished.

Valvata striata, Lewis. Undescribed. Shell conical, depressed, umbilicate, aperture round; epidermis brown and very regularly striate. Has all the other features of sincera, except color and translucency. Animals not observed. Very rarely seen. Of several hundred living specimens of Valvata, only seven were of this species. These are all the aquatic species yet observed."

Mr. Lea also read a letter from Thomas Biddle, Jr., Esq., U. S. Consul at Singapore, dated August 21st, 1856, enclosing one from Prof. Oldham of Calcutta, offering to exchange the publications of the Asiatic Society, and of the Geological Society of British India, for those of the Academy. Referred to the Publication Committee with power to act.

November 11th.

Mr. Lea, Vice-President, in the Chair.

A paper was presented for publication in the Proceedings, entitled "Characters of an undescribed Bird, belonging to the genus Campylorhynchus of Spix, with remarks upon other species of the same group. By Philip Lutley Sclater, M. A." Referred to a committee consisting of Dr. Wilson, Mr. Cassin and Col. McCall.

Mr. Cassin presented for publication in the Proceedings, a paper entitled "Birds of Southern Indiana, by Rufus Hayden." Referred to Mr. Cassin, Dr. Wilson and Col. McCall.

Dr. Leidy presented a paper for publication in the Proceedings, entitled "Notice of remains of two species of Seal, by Joseph Leidy, M. D." Referred to a Committee consisting of Dr. Bridges, Mr. Vaux, and Dr. Hallowell.

Dr. Leidy presented a paper for publication in the Proceedings, entitled "Descriptions of new Fossil Species of Mollusca, collected by Dr. F. V. Hayden, in Nebraska Territory, under the direction of Lieut. G. K. Warren, of the U. S. Topographical Engineers, with a catalogue of all the remains hitherto described and identified from the Tertiary and
cretaceous rocks of that region. By F. B. Meek and F. V. Hayden, M. D.” Referred to a committee consisting of Dr. Leidy, Mr. Lea and Dr. Bridges.

Dr. Carson exhibited a specimen of cochineal received by him from Prof. Henry, and accompanied by a letter from Capt. A. W. Bowman, U. S. A., dated Fort Stanton, New Mexico, September 13th, 1856, stating that the specimen was collected on Sept. 9th, in about lat. 34° from the most common variety of Cactus, known as “prickly pear,” Dr. C. remarked that the specimen was interesting in consequence of exhibiting the webby matter thrown out by the insect at a certain period of its growth.

Dr. Uhler called attention to a second specimen of red and black catfish, similar to and obtained from the same locality as the one presented by him some weeks ago.

**November 18th.**

**Mr. Lea, Vice-President, in the Chair.**

Dr. Hallowell presented a paper entitled, “On a new and remarkable genus of Ranidae, from the river Parana, by Edward Hallowell, M. D.” Referred to a committee consisting of Maj. Le Conte, and Drs. Leidy and Uhler.

Dr. Rand announced the death, on the 16th inst., of Edmund Lang, M. D., late a member of this Academy.

**November 25th.**

**Dr. Bridges, Vice President, in the Chair.**

The Committees to which were referred Messrs. Sclater’s and Lea’s papers read 4th inst.; Messrs. Sclater’s Haymond’s, Leidy’s, Meek and Hayden’s papers read 11th inst.; and Dr. Hallowell’s paper read 18th inst.; severally reported in favor of publication in the Proceedings.

*Description of a new species of Tanager of the genus Saltator.*

**By Philip Lutley Sclater.**

_Saltator atripennis._

Suprà olivaceo-viridis; capite alis et caudâ nigris; vitta superciliari longâ et maculâ auriculari utrinque albis; subtus pallidè cinerascenti-albus, gulâ albâ, crissō ochracecente; rostro nigro; pedibus nigro-fuscis. Long. tota 7-4, alae 4-2, caudae 3-6 poll. angl.

*Hab.* in Novâ Grenada, Popayan.


Two specimens of this very distinct species of Saltator are in the Academy’s collection, one marked “Popayan,” the other “New Grenada.” There is no known bird of the genus to which it shows great resemblance, but I think it may be most naturally arranged near to _S. orenocensis._
Description of eleven New Species of Exotic Uniones, from Georgia.

By Isaac Lea.

Unio Elliottii. Testa grandè plicatà, subquadratà, infulatà, valdè inaequaliterali; valvulis percrassìs; natibus prominentibus, tumidis; epidermide nigrà, nitidà; dentibus cardinalibus permagnis, duplicis; lateralibus crassìs, longis, lamellatis subcurvisque; margaritâ argenteâ et iridescente. 

Hab. Othcalooga Creek, Gordon Co., Georgia. Bishop Elliott.

Unio gracilior. Testà levi, ellipticà, infulatà, inaequaliterali; valvulis tennibus; natibus prominiulis, ad apices undulatis; epidermide luteo-olivaceà, virido-maculata; dentibus cardinalibus curta; crasis, duplicis; lateralibus crassis, longis subrectisque; margaritâ vel purpureâ vel salmonis colore tintà et iridescente. 

Hab. Buckhead Creek, Burke Co., Georgia. Bishop Elliott.

Unio Pullatìs. Testà levi, transversà, infulatà, valdè inaequaliterali; valvulis crassis; natibus prominentibus; epidermide tenebroso-nigrà; dentibus cardinalibus curtis, crasis, duplicis; lateralibus crassis, longis subrectisque; margaritâ vel purpureâ vel salmonis colore tintâ et iridescente. 

Hab. Creeks near Columbus, Georgia. Bishop Elliott.

Unio favosus. Testà levi, subtriangulari, subcompressà, inaequaliterali; posticè subangulata; valvulis subcrassis; natibus prominentibus, ad apices undulatis; epidermide luteo-olivaceà, virido-maculata; dentibus cardinalibus magnis, erectisque; lateralibus crassis, sublongis subrectisque; margaritâ argenteâ et valdè iridescente. 


Unio rutilans. Testà levi, ellipticà, infulatà, valdè inaequaliterali, in medio ad basim paulisper compressà; valvulis tenuibus; natibus prominiulis; epidermide luteo-viridi et valdè radiatà; dentibus cardinalibus parvis, compressis, duplicis; lateralibus pràlongis, lamellatis subcurvisque; margaritâ caruleo-albâ et valdè iridescente. 

Hab. Othcalooga Creek, Gordon Co., Georgia. Bishop Elliott.

Unio errans. Testà levi, oblongà, compressà; valdè inaequaliterali; valvulis subcrassis; natibus prominentibus; epidermide tenebroso-fuscà, obsoletè radiatà; dentibus cardinalibus parvis, compressis; lateralibus pràlongis, lamellatis subrectisque; margaritâ vel purpureâ vel salmonis colore tintà et iridescente. 

Hab. Tobsaufkie Creek, near Macon, Georgia. Bishop Elliott.

Unio vicinus. Testà levi, oblongà, compressà, inaequaliterali; valvulis subcrassis; natibus prominentibus; epidermide virido-fuscà, obsoletè radiatà; dentibus cardinalibus parvis, acuminatis compressisque; lateralis longis subcurvisque; margaritâ argenteâ et valdè iridescente. 

Hab. Swift Creek, near Macon, Georgia. Bishop Elliott.

Unio subellipticus. Testà levi, ellipticà, infulatà, inaequaliterali, ad basim rotundà; valvulis crassis; natibus subprominentibus; epiderme tenebroso-brunneà, polità, radiatà; dentibus cardinalibus brevibus, tumidis, sublevatisque; lateralibus pràlongis subrectisque; margaritâ argenteâ et iridescente. 

Hab. Creeks near Columbus, Georgia. Bishop Elliott.

Unio geminus. Testà levi, ellipticà, infulatà, inaequaliterali; valvulis crassis; natibus prominentibus; epidermide tenebroso-castaneà, obsoletè radiatà, ad umbones polità; dentibus cardinalibus magnis, acuminatis, duplicis; lateralibus longis, crassis subcurvisque; margaritâ purpureâ et iridescente. 

Hab. Buckhead Creek, Burke Co., Georgia. Bishop Elliott.

Unio rostriformis. Testà levi, valdè transversà, compressà, at latere planulatà, valdè inaequaliterali, posticè acutè acuminatà; valvulis tenuibus; natibus vix prominentibus, ad apices undulatis; epidermide tenebroso-fuscà, obsoletè rad-
diatā, dentibus cardinalibus parvis, acuminitis, duplicis; lateralibus praelongis, lamellatis rectisque; margaritā subpurpureā et iridescente.

_Hob._ Swift Creek, near Macon, Geo. Bishop Elliott.

Unio Blandianus. Testā tuberculatā, quadratā, infecta, subinaequilaterali, posticē trunctatā et emarginatā, ad basim emarginatā, in medio sulcatā; valvulis percrassīs; natībus prominentibus, incurvīs, ad apices rugoso-undulatīs; epidermide tenebroso-castaneā; dentībus cardinalibus crassissimis, crenulatīs, duplicīs; lateralibus brevibus, percrassīs rectisque; margaritā argenteā et iridescente.

_Hob._ Othcalooga Creek, Gordon Co., Geo. Bishop Elliott.

Characters of an apparently undescribed bird belonging to the genus Campylorhynchus, of Spix, with remarks upon other species of the same group.

_By Philip Lutley Sclater, M. A._

_Campylorhynchus humilis._

Suprà rufescenti-griseus albo et nigro mixtus; dorsi et scapularium pennis medialiter albis indē nigrīs hoc colore rufescenti-griseo undique limbatis: nuchā cum cervicis posticā et lineā postoculari rufa; capitis antici pennis nigrīs rufō terminatis: alīs caudāque nigrīs suprā albidō regulariter transfasciatās, subūtūs autem fērē unicoloribus, rectricebus omnibus albo lateri terminatis: lineā latā et elongatā supercilīari et corpore subūtūs lactescenti-albis; crissō nigro regulariter transfasciato: strār parvā gutturali utrinque nigrā: rostro plumbeo: pedibus bruneis: long. totā 5.5, alae 2.5, caudae 2.2, rostri a rictu .75 poll. ang. 

_Hob._ in Mexico Boreali propē Mazatlan (Bell).

This bird nearly resembles the _Campylorhynchus capistratus_, of Southern Mexico and Central America, figured by Des Murs in his Iconographia Ornithologica (pl. 63), but may be at once distinguished by its diminutive size and the rufous head and post-ocular stripe, these parts being black in the other species. There are three specimens of it in the Academy's collection. One of these was obtained by Mr. Bell, near Mazatlan, a second is marked "California, Dr. Gambel's collection," and the third is one of the birds procured during the voyage of the Venus, but has no locality affixed. The Academy's collection, likewise, contains six examples, which I consider referable to _Camp. capistratus_. Four of these present the usual normal appearance of that bird, but the remaining two are considerably inferior in size, and but slightly exceed the present species in dimensions. One of these latter birds is also much spotted and blotched on the lower surface, and seems to be in that state of plumage in which it was characterized by Lesson as _Picolaptes rufinucha_. But as the black head is persistent in all these examples, even in such as are in manifestly immature plumage, I am induced to believe that the present bird with its rufous head and size, still more diminutive than in the smallest examples of _C. capistratus_, is really to be regarded as a distinct species.

I think it very probable that this is the _Campylorhynchus_ described, but not named, by Prince Bonaparte, in his Notes upon Delattre's collections, (p. 43.)

The genus _Campylorhynchus_ was established by Spix in the first volume of his Birds of Brazil. In the Magazin de Zoologie in 1835, M. de Lafresnaye, proposed to use Lesson's term _Picolaptes_, for the same group. This is not proper, as M. de Lafresnaye has himself subsequently acknowledged, because, in the first place, Spix's name has the priority; and secondly, Lesson's term was applied by him originally to a particular genus belonging to the different subfamily (Dendrocolaptinae) for which it should be retained, although the same author subsequently described several typical members of the group as being _Picolaptes_. Many species of this genus present very great similarity in plumage, and from this fact and from their being considerable variation in the size and coloring of individuals, in some of the species, there is often much difficulty in determining them satisfactorily.
As to the true position of the group, I quite agree with M. de Lafresnaye, who first described the greater part of the species, that its natural place is among the true wrens near the genus *Thryothorus*, though pointing through the closely-allied forms *Heloodytes* and *Donacobius*, towards the mocking-birds (*Mimus*.)

The following is a list of the species of *Campylorhynchus*, which I consider to rest on good authority:

1. *C. scolopaeus*, Spix, Av. Bras. i. pl. 79, fig. 1. (Opeitorhynchus turdinus, P. Max.) from Brazil: one specimen in the Academy's collection. The synonyms of this bird in Prince Bonaparte's Conspectus, have been somehow mixed up with those of the last species of the genus next preceding it. Spix has figured it with tolerable accuracy. *Turdus variegatus*, of Gmelin, is] sometimes considered to be identical with this species.

2. *C. hypostictus*, Gould, P. Z. S., 1855, p. 68, from Eastern Peru. An ally of the preceding, but having the body below much more thickly covered with spots. The only specimens I have seen of it were those received by Mr. Gould, which were obtained by Hawkins, on the Ucayali.

3. *C. unicolor*, Lafr., R. Z., 1846, p. 53. (Picolaptes scolopaeus, Lafr. & D'Oorb., Syn. Av. in Mag. de Zool., 1837, p. 49. Anumbius scolopaeus, D'Orb. Voy., p. 266), from Bolivia. Two specimens of this bird are in the Academy's collection. They may be distinguished from *C. scolopaeus*, to which they are most closely related, by their nearly uniform white under-surface.

4. *C. unicoloroides* (?) Lafr., R. Z., 1846, p. 316, from Bolivia. I am not acquainted with this species. It would seem, from its curious name, to be closely allied to the last.

5. *C.zonatus*, (Less. Cent. Zool., t. 70.) A Mexican species not uncommon in collections. The Academy possesses three examples, one of which, was obtained by Mr. Pease, in the province of Vera Cruz.

6. *C. zonatoides* (?) Lafr., R. Z., 1846, p. 92, from New Grenada. I have not yet seen this bird in very perfect plumage. There is one specimen in the Academy's collection probably referable to this species.

7. *C. megalopterus*, Lafr., (Des Murs, Icon. Orn., p. 54.) A large species, recognized by its being wholly spotted and barred with black and white. There are examples in the Academy's collection, probably from Mexico.

8. *C. pallescens*, Lafr., R. Z., 1846, p. 93. One specimen in the Academy's collection. which I take to belong to this species, seems to be closely allied to the preceding, but distinguished by its nearly uniform head, more obsoletely spotted under-surface, and differently marked tail. It is labelled "Guyaqui.""

9. *C. nuchalis*, Cab. Orn. Notiz. in Weigm. Archiv. I., p. 206.—This bird is very like *C. megalopterus*, but much smaller in size, and with the head and nape unstriped. There are examples in the Academy's collection from Venezuela, and I have often seen it from Trinidad.


11. *C. brunnicepilus*, (Picolaptes brunnicepilus, Lafr., et Cass. B. Cal. pl. 25, p. 156), from Texas and Northern Mexico. There are specimens of this bird and of its eggs in the Academy's collection. The latter are rather peculiar in coloring, and somewhat resemble those of the European Redbreast—(Erythacus rubecula.)


13. *C. humilis*. [November,
Besides these species, *Thryothorus guttatus*, Gould, P. Z. S., 1836, p. 39, and *Pisolautes cinnamonoeus*, Less. R. Z., 1844, p. 433, are sometimes considered as probably referable to species of this group.

A very closely allied form is *Helodolys*, of Cabanis. I have made remarks on the synonyms of the type of this genus (*H. griseus*), in *Proceedings Zool. Society*, 1856, p. 97.

**Notice of remains of two species of Seals.**

*By Joseph Leidy, M. D.*

**1. Phoca Wymani.**


A tooth, apparently an inferior canine, from the miocene deposite of Virginia, recently presented to the Academy by Prof. Tuomey, I suspect to belong to the same species as the remains of a seal from the same deposite, described by Prof. Wyman. The tooth is 14 lines long, and about as robust in its proportions as the corresponding tooth of *P. barbata*. The crown is 4½ lines long and 2½ broad at base; and it presents an anterior and a posterior ridge, of which the former is denticulated, and bifurcates half way towards the base. The enamel is rugose, especially towards the base of the crown internally; and at one or two points in front and behind it presents a short inconspicuous tubercle.

**2. Phoca Debilis Leidy.**

A species of seal is apparently indicated by three specimens of molar teeth obtained by Capt. Bowman, U. S. A., from the sands of Ashley River, South Carolina. The teeth bear considerable resemblance to the corresponding ones of *Otaria jubata*, having small, compressed conical crowns, tuberculate in front and behind, and single, long, gibbous fangs. The smallest specimen is 5½ lines long, and the largest, when perfect, was about an inch long.

**Descriptions of new fossil species of Mollusca collected by Dr. F. V. Hayden, in Nebraska Territory; together with a complete Catalogue of all the remains of Invertebrata hitherto described and identified from the Cretaceous and Tertiary Formations of that region.**

*By F. B. Meek and F. V. Hayden, M. D.*

Since the publication of our former papers on the Nebraska fossils, some additional collections have come to hand, containing new species, which we here propose to describe. Along with these we also find better specimens of some of the species previously investigated by us, than those first received, so that we are now able to correct a few errors into which we had been led, in consequence of having only imperfect specimens to examine. The extensive material at our command, also enables us to rectify some little confusion in the labors of others, which doubtless resulted from the same cause. In order to do this, as well as to furnish a convenient index to these Nebraska species, we append to this paper a complete list of all the fossil invertebrata now known from the rocks of that country.

In glancing over this catalogue, the palæontologist will not fail to be struck with the great preponderance of *Lamellibranchiata*, *Gasteropoda*, and *Cephalopoda* over all the other invertebrate forms of life. Among all the collections we have yet seen from this region, the *Bryozoa* are represented by but one rare species of *Reticulopora*, and the *Brachiopoda* by only one species of *Caprinella* and one of *Lingula*, both so rare that but a single specimen of each has been found; while of the whole great class of *Echinodermata*, which existed in such vast numbers, and presented such an infinite variety of beautiful forms, during these epochs in
some parts of the world, we have yet only seen from this region, a single fragment, too imperfect to give any clue to its generic relations. The paucity of some, and entire absence of others, of the more common genera of Mollusca, such as Ostrea, Graphia, Exogyra, &c., in these collections is worthy of notice. Future investigations, it is true, may add more species to our present meager list of these rare forms, yet it is probable we have here something like an expression of the numerical proportions in which many of the lower types of life existed in these ancient seas.

Of the one hundred and ninety-one species enumerated in this catalogue, forty-four belong to the Tertiary system, and one hundred and forty-seven to the Cretaceous. None of the former are known to occur in the States, or on the other side of the Atlantic, while of the Cretaceous species, nine appear to be common to the Nebraska formations and those of the States, and four are identical with forms occurring in the old world. Of these nine species having so great a geographical range, six, or nearly one-third of all that class of Mollusca contained in the list, belong to the Cephalopoda, while nearly all the remaining one hundred and seventy-six species, which appear to be restricted to the north west, belong to the Lamellibranchiata and Cephalopoda. This, however, is not so surprising when we bear in mind the fact that the habits and organization of these ancient Mollusca must have been such, from what we know of their existing analogues in our present seas, that the former depended on accident, or feeble locomotive organs, for their gradual distribution over the world from their various centers of creation, while the Cephalopoda, owing to their superior locomotive powers, were capable of wandering freely far out over the most profound parts of the ocean.

In order to convey a clear idea of the relative positions and vertical range of the fossils enumerated in this catalogue, as well as of the nature and order of succession of the various strata from which they were obtained, we give at the end of these remarks, a more complete section of the Nebraska formations than has been yet published. Future investigations may, it is true, show a more intimate relation between the sub-divisions represented in this section than we are aware of at this time, yet so far as we now know, each one of them appears to have been formed during the prevalence of physical conditions so widely different from those in existence at the time of the deposition of each of the others, that not a single species of the fossils found in them seems to be common to any two, excepting No. 4 and 5, and perhaps No. 2 and 3. We think, however, when more is known in regard to the range of species in these rocks, it may be found convenient to group them together as follows:

Group A. Miocene.

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At any rate, by such a classification, we would have divisions which, so far as our present knowledge extends, appear to be characterized, not merely by distinct species, but by rather different types of fossils.

In one of our former papers, we mentioned the fact that some of the forms in division No. 4 resemble those of the upper Green Sand of English geologists. Although this is the case, later collections appear to show that many species we had supposed restricted to the upper of these two rocks, also occur in the lower. In addition to this, we have more recently ascertained that Pleurotoma minor (Evans and Shumard's unpublished MSS.) as well as a species of Fasciolariidae

* It is quite probable a few other species may yet be found in Nebraska that will prove to be common to the Cretaceous rocks of that region and those of the States, as well as with those of the old world. We look for them chiefly amongst the Cephalopoda.

† These genera are generally regarded as having been introduced towards the close of the Cretaceous epoch.
perhaps identical with our *E. buccinoides*, both of which were at first only met with in the bed of No. 5, likewise occur in No. 4. From these facts, we are inclined to regard these two rocks as only well marked subordinate members of the same natural group, which is of the age of the true chalk.

Too few fossils have yet been found in No. 2 and No. 3 to settle very definitely their position in the Cretaceous system, though the late discovery by one of us* of *Inoceramus problematicus*, near the base of the first, appears to show that this bed is not, at any rate, older than the upper Green Sand, and that it may also belong to the chalk.

In our section of the Nebraska formations, given in a paper published in the 8th vol. of the Proceedings of the Academy, page 63, it will be remembered we placed provisionally the beds of sandstone and clay composing formation No. 1, seen at the mouth of Big Sioux river and below there, along with the Cretaceous strata, stating at the same time that they were not positively known to belong to that system. We still think it barely possible these beds may be older than Cretaceous, though if represented, as we think they are, by similar beds seen holding about the same position near the mouth of Judith river, far up towards the sources of the Missouri, we must either refer them to the Cretaceous system, or admit the introduction of the genus *Baculites* before that epoch, as we have fragments of a small species of that genus from the Judith river beds. At the same time it should be borne in mind that these strata at the last named locality are characterized by a group of fossils remarkably distinct from those in the rocks above, and that one species belongs to the genus *Hettangia*, a type of bivalves, not known to occur, in the old world, in more modern formations than those of the age of the Lias. If not older than Cretaceous, we think, from these facts, as well as from the stratigraphical position of these beds, they probably represent some of the older members of that system. What relation they bear to the formations near the same locality, in which the saurian remains were found, supposed by Prof. Leidy to be allied to the genera *Iguanodon* and *Megalosaurus*, is still an unsettled question.

Should these Big Sioux and Judith river formations prove to be Jurassic, or even to represent both the Jurassic and Triassic systems, it would not conflict with the statement made by us in our last paper, that Mr. Marcou was mistaken in coloring as Triassic and Jurassic the immense extent of country referred to by us between these two localities, as we know this great area to be wholly occupied by well marked Cretaceous and Tertiary strata, while the above named doubtful beds, no where come to the surface near the Missouri, between these two widely separated localities, excepting for a short distance below the mouth of Judith river.

It would, perhaps, be premature to attempt, at the present time, the task of tracing out in much detail the parallelism of the various members of the Cretaceous system in Nebraska, with those of New Jersey and other well known districts in the States, or with those of the south western Territories; yet the occurrence of several of the more common and characteristic fossils of the upper two Nebraska formations, such as *Ammonites placenta*, *Scaphites Conradi*, *Baculites ovatus*, *Nautilus Dekayi*, &c., in the first and second Green Sand beds and intervening ferruginous stratum of New Jersey,† as well as in the "Rotten Limestone" of Alabama, clearly indicates the synchronism of these deposits, notwithstanding their widely separated geographical positions.

At the same time the total absence of the above named fossils, and indeed so far as we yet know, of all the other species of the lowest and upper two Nebraska Cretaceous formations, in the rocks from which Roemer and others collected so many species in Texas, and other south western localities, renders it highly probable that if the latter occur at all in Nebraska they must be represented by

* Dr. Hayden.

† For our knowledge of the geological positions of these fossils in New Jersey, we are indebted to Prof. Geo. H. Cook, of the geological survey of that State.
the beds No. 2 and 3 of our section. This conclusion is further strengthened by the fact that the only Nebraska species yet found in the south west, so far as we know, are *Inoceramus problematicus* and *Ostrea congesta*, both of which are unknown in the north west excepting in the above named beds, and are mainly restricted to the latter. The well marked specific characters of these two fossils, and their limited vertical range, together with their extensive geographical distribution, render the bed in which they occur a horizon of the highest importance in the identification of strata at remotely separated localities in these far western territories.

That these beds, or formations of the same age, are widely distributed over a vast area of country, extending from near the great bend of the Missouri in lat. 44° 15', long. 90° 20', westward to, and perhaps beyond, the eastern slope of the Rocky mountains, and far south into Texas and New Mexico, is highly probable, from the occurrence of their characteristic fossils at many widely separated localities in this region. At any rate, we know, from information obtained through Mr. Henry Pratten, of the Geological Survey of Illinois, that *Inoceramus problematicus* is found in a light colored limestone overlying a red sand stone on Little Blue river, a tributary of Kansas River. Col. Fremont also collected specimens of the same shell from a similar rock on Smoky Hill river, in lat. 39°, long. 98°, and at other localities between there and the Rocky mountains.*

More recently, Lieut. Abert found the same, or a closely allied species, at a point as far south west as lat. 35° 13' N., long. 107° 2' W., and apparently on the western declivity of the anticlinal axis of the Rocky mountains.† Roemer likewise collected in Texas specimens of a shell he refers to *Inoceramus mycteloides* of Mantell, which is considered identical with *I. problematicus* of Schlotheim. In addition to this, we have seen, in Mr. Marcou's collection, specimens of *Ostrea congesta*, from Galisteo, between Fort Smith and Santa Fe, where it probably holds the same geological position as the so-called *Gryphaea dilatata*.

The formations from which the above named fossils were obtained in the south western Territories, appear, from the statements of the various explorers of that region, to repose on a series of red, yellow, and whitish sandstones and various colored clays, which are referred by Mr. Marcou to the Jurassic and Triassic systems. These lower beds we think are represented wholly, or in part in Nebraska, by our formation No. 1, which, as previously stated, we regard as probably belonging to the lower part of the Cretaceous system, though it may be older.

In the remarks accompanying our paper on the fossils of the Lignite Tertiary formations of Nebraska, although satisfied they must be middle or lower Tertiary types, we refrained from the expression of any opinion as to the exact age of the beds in which they were found; not having been able to identify positively any of the species with characteristic forms of either of these members of the Tertiary system in other countries. Being all specifically distinct from previously known forms, and belonging nearly exclusively to land and fresh water genera, we could of course base no conclusions on comparisons with the fossils of the Tertiary formations hitherto most successfully investigated on other parts of this continent, since the latter deposits are almost wholly characterized by marine genera. So far as we had been able to compare them with figures and descriptions of foreign species, the evidence appeared contradictory, some of them being like Miocene and others like Eocene types. As we now have, however, the additional weight of evidence derived from Dr. Newberry's investigations of the fossil flora of these formations, in favor of the conclusion that they are of Miocene age, we can no longer hesitate in referring them to that epoch. Dr. Newberry's opinion on this point is worthy of the highest confidence, since, in addition to an extensive and accurate general knowledge of fossil botany, he has had the advantage of being able to make direct comparisons of these plants with the flora of well determined Miocene deposits in California.

* See Prof. Hall's figures and remarks in Fremont's report, p. 174, pl. 4.
† Lieut. Abert's report of explorations in New Mexico and California, p. 547.
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<th>Subdivisions</th>
<th>Localities</th>
<th>Estimated thickness</th>
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<tr>
<td>Beds of clay, sandstone and lignite, containing numerous remains of plants, and land and fresh water, with a few marine or estuary <em>mollusca</em>.</td>
<td>Great extent of country on both sides of the Missouri, between Heart and Milk rivers.</td>
<td>200 to 400 feet</td>
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<td>Light colored indurated clays, with occasional beds of sandstone, conglomerate, and white limestone, the latter in thin layers. Numerous remains of <em>Mammalia</em> and <em>Gelatinas</em>, with a few land and fresh water <em>mollusca</em>.</td>
<td><em>Mauraises Terres of White River</em>.</td>
<td>260 to 300 feet</td>
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<td>Gray and yellowish arenaceous clays, sometimes weathering to a pink color. Great numbers of marine <em>mollusca</em>, with a few land plants, bones of <em>Mosasauros</em>, &amp;c.</td>
<td>Moreau Trading Post and under the Tertiary at Bear and Sage Creeks. Fox hills.</td>
<td>100 to 150 feet</td>
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<td>Bluish and dark gray plastic clay, containing numerous marine <em>mollusca</em>.</td>
<td>Great area about Fort Pierre and along the Missouri below. Under No. 6, at Sage and Bear Creeks. Great Bend of the Missouri. Near Milk and Muscle shell rivers.</td>
<td>230 feet</td>
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<td>Lead gray calcareous marl, weathering to light yellowish tint. Scales of fishes—<em>Ostrea congeta</em>, <em>Inoceramus problematicus</em>, &amp;c.</td>
<td>Bluffs along the Missouri below Great Bend.</td>
<td>100 to 120 feet</td>
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<td>Dark gray laminated clay. Scales of fishes, with a few small <em>Ammonites</em>, &amp;c.</td>
<td>Along Missouri Bluffs, below mouth of James River.</td>
<td>100 to 120 feet</td>
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<td>Heavy bedded yellowish sandstone, passing downwards into alternations of sandstone and clay, containing bits of water-worn lignite and bands of dark carbonaceous matter. This formation is not positively known to belong to the Cretaceous System.</td>
<td>Near the mouth of Big Sioux River, and between there and Council Bluffs. Near Judith River?</td>
<td>Unknown</td>
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<td>Yellow limestone, containing <em>Fusulina cylindrica</em>, <em>Terebratula subtila</em>, <em>Spirifer Mousebachanus</em>, <em>Allorisma regularis</em> and other fossils of the Coal measures.</td>
<td>Forms shales in the Missouri near Black Bird Hills. Eight or ten feet above low water mark at Council Bluffs.</td>
<td>Unknown</td>
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Descriptions of Species.

Natica Tuomyana.

Shell subglobose, thick and solid; spire not much elevated; volutions four to four and a half, convex, last one crossed by strong folds; suture distinct or slightly grooved; surface marked with fine closely arranged lines of growth, crossed by flat revolving bands; aperture apparently ovate; umbilicus very small or only rudimentary. Length and breadth about .88 inch; apical angle slightly convex; divergence about 110°.

We have seen but one specimen of this species, a portion of the body voluton of which is broken away. The outer lip seems to have been bevelled, and joins the body whorl above, at an angle of about 90°. The revolving bands are generally faint, and wider than the grooves between them on the upper part of the whorls, but more distinct and about equal to, or smaller than, the depressions near the middle and below. The inner lip is not callous in the umbilical region.

This species may be at once distinguished from any other known to us from the Nebraska formations, by its greater thickness, and the strong vertical folds and revolving bands. We name it in honor of Prof. M. Tuomy, State Geologist of Alabama and South Carolina.

Locality and position. Mouth of Judith River, in a sandstone, probably the same as No. 1 of the section.

Bulla subcylindrica.

Shell elongate oval, or subcylindrical; spire umbilicate; surface (of cast) marked with faint remains of lines of growth, crossed by about forty revolving striae, generally a little narrower than the elevated spaces between. Aperture very narrow, arcuate, extending a little above the summit of the body, and increasing in breadth very gradually from the upper to the lower extremity. Umbilicus small or closed. Length .91 inch; breadth .48 inch. Breadth of aperture near the centre .12 inch; breadth at the widest place below .24 inch.

This species, of which we have seen only a cast, is near Bulla pupa of Evans and Shumard, (unpublished MSS.,) but the form of the aperture is quite different, being very narrow, almost linear, excepting at the lower end, where it widens out gradually, on the inner side, to about twice its breadth near the middle, while that of B. pupa is "elongate ovate." From our B. volvaria (Proceedings of the Academy of March last, page 69,) it may be distinguished by its larger size, and the equal breadth of the two ends; it differs from all the other Nebraska species we have seen, in its greater size and much more elongate form.

Locality and position. Near mouth of Milk River, formation No. 4 of the accompanying section.

Panopaea occidentalis.

Shell elongate ovate; posterior end broader than the anterior, subtruncated and gaping; buccal end narrowly rounded, almost closed; base straight along the middle, rounding up abruptly behind, and gradually in front; cardinal border nearly parallel with the base behind the beaks, and sloping in front; beaks small, rather depressed, incurved, approximate and located a little in advance of the center; surface ornamented by irregular concentric wrinkles or undulations, most distinct on the upper half.

We have but one specimen of this species, which shows none of the internal characters, and has lost its finer surface markings, if there were any, by the exfoliation of the external lamina. It is too imperfect to give exact measurements, though it must have been about 3:10 inches in length, 2 inches high, and 1:42 inches wide. We are in some doubt whether or not it is distinct from a species described by Prof. Tuomy under the name of P. cretacea, (see Proceedings of the Academy, Sept., 1854, page 170,) though it is much larger; and it is hardly probable, had his species differed much in the breadth of the two ex-
tremitities, he would have omitted to mention it. It is more narrowly rounded in front than any of the casts we have seen from the New Jersey formations, or than any species we have seen figured in foreign works.

Locality and position. Sandstone near mouth of Judith River, probably No. 1 of the section.

Mactra formosa.

Shell thin, triangular oval, somewhat compressed; cardinal border sloping from the beaks at an angle of about 115°, straight in front, and slightly convex behind the beaks; extremities narrowly rounded, almost angular, nearly alike; base forming a broad regular curve; beaks small, elevated, approximate, central or a little in advance of the middle; surface marked with fine lines of growth, which become stronger and more regular on the large lanceolate lunule and escutcheon. Length 1-70 inches; breadth .82 inch; height 1-36 inches.

The lunule and escutcheon extend from the beaks to the extremities of the shell, the former being slightly impressed, and the latter bounded by a very obscure ridge. By grinding down upon the cardinal edge of a right hand valve, we found it thin, and having under the beaks apparently an oblique cardinal tooth and a small ligamentary pit, the former being divided into two diverging parts; while the anterior and posterior portions of the edge have each a long groove, probably for the reception of slender lateral teeth in the other valve.

Locality and position. Same as last.

Mactra Warrenana.

Shell triangular oval, moderately compressed; cardinal border sloping from the beaks at an angle of about 110°; anterior end narrowly rounded; posterior end wider, rounded or very slightly truncate, and gaping a little at the extremity; base forming a broad curve; beaks elevated, rather small, incurved, nearly central; surface marked with fine lines of growth, which become stronger and more regular on the large lanceolate lunule and escutcheon. Length 1-55 inch; height 1-20 inch; breadth .85 inch.

The muscular impressions are oval or ovate; the anterior one being rounded below, and contracted and prolonged above. The sinus of the pallacal impression is small, obtuse at the extremity and nearly horizontal.

This species is nearly related in most of its characters to the last, but may be distinguished by its less compressed form, more elevated and gibbous beaks and thicker shell. We have had no opportunity of comparing their internal characters, nor have we seen the hinge of this species. Their distant geographical, and widely separated stratigraphic positions, in addition to the above named differences, lead us to regard them as distinct.

We name this species in honor of Lieut. G. K. Warren, of the U. S. Topographical Engineers.

Locality and position. Yanktonin trading post, No. 5 of the accompanying section.

Mactra alta.

Shell thin, subtriangular, compressed; cardinal border sloping from the beaks at an angle of about 80°; base forming a broad regular curve; extremities narrowly rounded or subangular, and nearly alike; posterior slope having an obscure ridge or angle passing obliquely backwards and downwards from the beaks; umbones much elevated, (pointed?) nearly central; surface marked with concentric striæ. Length about 2-62 inches; height 2-15 inches; breadth 1-15 inch.

We have not yet had an opportunity of seeing the interior of this shell, nor the details of its hinge, and all our specimens are worn so as to obscure the surface markings. It resembles the last two species, but is larger and much more compressed than either of them, and the much greater elevation of its beaks gives it more nearly the form of an equilateral triangle.
Localy and position. Bad Lands of Judith River; in a sandstone, the position of which is doubtful, but probably No. 1 of the series.

Tellina subtortuosa.

Shell elliptical or narrow ovate, compressed; anterior end rounded; posterior side obliquely truncate at the extremity, and having (in the cast) an obscure ridge passing obliquely backwards and downwards from the beaks; base forming a broad curve, a little more prominent before than behind the middle; beaks small, very slightly elevated above the dorsal margin, located a little in advance of the center; surface unknown. Length 2·23 inches; thickness 1·27 inch; breadth (of left valve) about 22 inch.

The only specimen of this species we have seen is an internal cast of a left valve, with a few fragments of the inner lamina of the shell adhering. On these fragments indistinct traces of radiating lines are visible, though they may have had no connection with external markings. The anterior muscular impression is narrow ovate, placed near the front margin, with the narrow end above, and slightly inclined backwards. The posterior muscular impression is round ovate, located near the upper margin, and about one eighth the entire length of the shell in advance of the posterior extremity; the narrower end being above and inclined obliquely forwards. Sinus of the pallial impression deep, nearly horizontal and apparently rounded at the end. From the inward warping of the back part of the lower border, and the general flatness of this valve, it is probable the other was more convex.

The compressed narrow elliptical form, and slightly elevated beaks, will distinguish this from all the other species known to us from the Nebraska formations.

Localy and position. Mouth of Judith River, from a sandstone supposed to be No. 1 of the series.

Venus? circularis.

Shell very thin, subcircular, rather gibbous; cardinal border rounding from the beaks; extremities and base rounded; beaks located about half way between the center and the buccal border, elevated, pointed, incurved and directed obliquely forwards; muscular impressions very faint, anterior one almost marginal, and near the beaks; surface ornamented with fine concentric lines; sinus of the pallial impression funnel shaped, the apex being directed obliquely upwards towards the beaks. Length 74 inch; thickness 67 inch; breadth 45 inch.

Not having seen the hinge of this species, we refer it with doubt to the above genus. It may be distinguished from any of the allied Nebraska forms known to us, by its greatest diameter being from the beaks obliquely downwards to a point a little behind the middle of the base, and by its more elevated, pointed, gibbous and oblique beaks.

Localy and position. Just above the mouth of Milk River, No. 4 of the section.

Cytherea pellucida.

Shell extremely thin and fragile, broad ovate or subcircular, compressed; extremities rounded, the posterior end being a little wider than the anterior; base semiovate or semicircular; beaks moderately elevated, placed about one-third of the distance from the center towards the anterior end; surface marked with fine regular concentric striae; muscular impressions very faint; sinus of the pallial impression triangular, longer than wide, not quite reaching the middle of the shell, and if continued across would strike the opposite border below the beaks. Length (of ovate variety) 1 inch; height 83 inch; breadth 40 inch.

Amongst the shells we refer to this species, there are two varieties of form, one being less compressed and more nearly circular, with more gibbous beaks than the other; but as there are some intermediate forms, and they agree in all other respects, we are at present inclined to regard them as identical. More
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extensive collections, however, may hereafter prove them to be distinct species. This shell may be readily distinguished from a species described by us in the Proceedings of the Academy in April last, under the name of *Cytherea Deweyi* (page 83,) by its extreme thinness; and from *Venus circularis* of this paper, by its less elevated and more obtuse beaks, as well as by the widely different form and direction of the sinus of the pallial impression. It is more liable to be confounded with *Cytherea* Deweyi of Hall and Meek, (Mem. Am. Acad. Arts and Sci. p. 383, plate 1, fig. 8,) but presents in some of its varieties a more oval or ovate form, and is always less broadly rounded at the extremities. In addition to these differences, it comes from a distant locality, and from a higher bed, in which not a single species known to occur in that in which *Cytherea* Deweyi is found, has yet been recognized. This and the following species are referred to the genus *Cytherea*, chiefly from external characters, as we have not seen the hinge of either.

**Locality and position.** Two hundred miles above the mouth of Milk River, No. 4 of the series.

* Cytherea Owenana.*

Shell round oval, compressed; beaks moderately elevated, placed about half way between the center and the anterior end; cardinal border convex behind and concave before the beaks; extremities rounded, the anal end being broader than the buccal; base semi-oval; anterior muscular impression narrow ovate, and the posterior round ovate, both pointed above and very shallow; sinus of the pallial impression narrow and deep, directed obliquely upwards towards a point a little in advance of the beaks. Length 1'56 inch; height 1'35 inch; breadth about 1'66 inch.

The surface markings of our specimen are almost entirely carried away by the exfoliation of the outer lamina of the shell. A small remaining portion near the lower border is marked with small concentric wrinkles and much finer lines of growth. We have not had an opportunity of examining the hinge.

The greater thickness of the substance of the shell will at once distinguish this species from all the allied Nebraska forms known to us, excepting our *Cytherea Deweyi* (see Proceedings of the Academy, April last, page 83) and *Cytherea orbiculata* of Hall and Meek, (Mem. Am. Acad. Arts and Sciences, page 382.) From the former it may be known by its much deeper and relatively narrower pallial sinus; that of *Cytherea Deweyi* being in the form of an equilateral triangle, and not reaching the center, while in this it is about one-third deeper than wide, and extends beyond the middle of the shell. They are, moreover, from distant localities, and widely separated stratigraphical positions. From the latter it will be distinguished by its more oval and compressed form and less elevated beaks.

We name it after Dr. David Dale Owen, of New Harmony, Indiana.

**Locality and position.** Mouth of Judith River, from a sandstone supposed to be the same as No. 1 of the series.

*Lucina occidentalis.*


Mould of *Lucina*? (Owen.) Report Wis., Iowa and Min. tab. viii., fig. 8.

Shell rather thick, transversely oval, compressed; cardinal border slightly concave, and sloping very little in front of the beaks, convex and declining behind; anal end vertically subtruncated at the extremity, and having sometimes a very obscure ridge passing obliquely backwards and downwards from the beaks; anterior end rounded and a little wider than the posterior; base semi-ovate, more prominent before than behind the middle; beaks small approximate, little elevated above the hinge, slightly in advance of the center; lunule very small, lanceolate; surface ornamented by distinct irregular concentric lines. Length (large specimen) 1'90 inch; height 1'56 inch; breadth 1'94 inch.

By breaking open some of the specimens, we find under the beaks two diverging cardinal teeth in each valve; and in front of these one anterior lateral tooth in the right valve, which fits between two smaller ones in the left. If
there are any posterior lateral teeth they must be small and remote from the beaks. At the anal extremity of each valve there is one shallow muscular impression, of an oval or subquadrate form, with a faint slender ridge passing from its inner side obliquely up towards the beaks. At the buccal end there is in each valve one long shallow, arcuate muscular impression, with its narrower end downwards, and directed a little back, so that more than half of its lower part is detached from the pallial impression. Immediately behind the upper end of this, a second very small circular muscular impression may be seen in each valve. The ligament was chiefly external, and occupied a narrow lanceolate depression behind the beaks; a portion of it, however, was partly internal, being deeply seated between the beaks. Exfoliated specimens show on the internal lamina of the shell, faint radiating lines, which are never visible on the surface.

From the foregoing description it will be seen this species unites characters belonging to two genera. Its form and general appearance, as well as its hinge, and elongated anterior muscular impression, partly detached from the pallial line, are all characters that would place it in the genus *Lucina*; while its double anterior muscular impressions indicate an affinity to the genus *Corbis* of Cuvier.

We are in doubt whether or not this is the shell figured by Dr. Morton under the name of *Tellina occidentalis*. Although certainly not very nearly like his figure, it resembles it more than any other shell we have seen in all the Nebraska collections. It cannot be a *Tellina*, as the pallial impression is unquestionably simple.

**Locality and position.** Near Milk River, and eighty miles above on the Missouri, also on the Yellowstone and Missouri rivers. Formaon No. 4 of present section.

**Hettangia Americana.**

Shell rather thick, ovate or subrhomboidal, compressed; posterior end much broader than the anterior, obliquely subtruncate and gaping; buccal side long, rostrated and closed, very narrowly rounded at the extremity; base forming an elliptical curve, excepting near the anterior end, where it is slightly contracted; dorsal border elevated in the umbonal region, concave in front and convex behind; beaks small, approximate, located a little behind the middle, surface marked with rather faint lines of growth, and sometimes, near the border, with small obscure concentric wrinkles. Length 2'63 inch; height 1'76 inch; breadth 1'25 inch.

We have but one specimen of this species showing the hinge. This is a left valve, in which there is one strong cardinal tooth located very slightly in advance of the point of the beak. Immediately behind this tooth, and directly under the beak, there is a distinct pit, from which a shallow depression passes round the upper side of the tooth. This pit was doubtless occupied by a strong tooth in the other valve. The posterior lateral tooth is prominent, obtuse and compressed, while the cardinal edge between it and the depression under the beak is somewhat callous.

This shell is closely related to two or three of the species figured by Terquem in the Bulletin of the Geological Society of France, (2d ser. t. x. pl. 1, 2) but is relatively higher in the umbonal region, and more distinctly rostrated in front than any of them. It is also more strongly truncate behind than any of Terquem's species, though it varied somewhat with age in this character.

It is an interesting fact that this, the first species of the genus recognized in this country, is found associated with a small *Baculite*, while all its known congers in the Old World are peculiar to the Lias.

**Locality and position.** No. 1. Mouth of Judith River.

**Cardium speciosum.**

Shell circular or round oval, higher than long, gibbous in the central and umbonal regions; buccal border a little more rounded than the anal; base regularly rounded; beaks elevated, slender, pointed, incurved and nearly central,
very slightly oblique; surface ornamented with numerous simple, slender, radiating costae, alternating with rows of elevated points of about their own breadth; border crenulated? Length \( \cdot57 \) inch; height \( \cdot67 \) inch; breadth \( \cdot48 \) inch.

In different conditions of weathering the surface markings of this species present a variety of aspects. In some cases the elevated points look as though arranged on costae, instead of between them, while in other instances only the costae are to be seen. Usually, however, these elevated points are quite distinct on casts, and so regularly disposed that worn fragments, when seen embedded in the matrix, present much the appearance of bits of Fenestella. On some specimens traces of fine concentric striae are visible, curving strongly upward in crossing the ribs. The shell is so nearly equilateral, and the beaks so slightly oblique, that when viewed on the side it looks much like a Brachiopod. We know of no species with which this is liable to be confounded, amongst all the Nebraska shells, and it differs from the allied forms we have seen figured from foreign localities, in having the rows of elevated points of uniform size, and not alternately larger and smaller.

**Locality and position.** Bad Lands of Judith River, from a sandstone, the position of which is doubtful, but probably No. 1 of the series.

**Nucula obsoletastriata.**

Shell thick, oval ovate or elliptical, moderately compressed; surface ornamented with fine concentric striae and obscure traces of small closely arranged radiating lines; buccal end obliquely truncated from the beaks forward to a point nearly half way down the front border, where it is narrowly rounded; posterior end more broadly rounded; base semiovate, most prominent behind the center; cardinal border sloping from the beaks at an angle of about \( 120^\circ \). Beaks small, rather depressed, nearly touching, and placed a little in advance of the middle; lunule narrow ovate, deeply impressed. Length \(1\cdot20 \) inch; height \(\cdot81 \) inch; breadth \(\cdot60 \) inch.

The cardinal edge is thinnest near the beaks, from which point it gradually thickens towards the extremities, especially towards the posterior end. We have had no opportunity of ascertaining whether or not the edge of the lower border is crenulated. As the radiating striae are very obscure, it is probable they are obsolete on worn specimens, though on the surfaces of internal laminae they are usually quite distinct. The anterior muscular impression is deeply impressed, of a narrow ovate form, and placed near the edge of the buccal extremity; while the posterior one is a little narrower, less deeply impressed, and located close up under the back end of the hinge. There are about thirty hinge teeth in each valve behind, and nearly half as many before the beaks, all of which are curved in crossing the edge, so as to present the concave sides towards the extremities.

This species will be easily distinguished from all the others known to us from the Nebraska formations, by its larger size and other obvious characters.

**Locality and position.** Great Bend of the Missouri, No. 4 of the series.

**Cuculla exigua.**

Shell thick, very small, oval cordiform; posterior end obliquely truncate; anterior extremity rounded; base nearly straight; ligament area rather short and straight, marked with longitudinal lines, and in the middle with exceedingly small, regular, closely set transverse striae. Umbonal region gibbous. Beaks elevated, incurved, rather distant, and located a little in advance of the center. Surface ornamented by irregular concentric wrinkles, and very fine lines of growth, crossed by small, regular, faint, closely arranged radiating striae. Length \(\cdot30 \) inch; breadth \(\cdot27 \) inch; height \(\cdot27 \) inch.

The ligament area, which is not much more than half the entire length of the shell, is often bounded by a slightly elevated border. That portion of it marked with transverse striae is margined by a fine impressed hair line, and has in each valve a broad triangular form. The longest sides of these two triangles are
joined together at the hinge, when the valves are united, while the opposite angles terminate immediately under the beaks. Muscular impressions shallow, ovate or oblong, and having a very slightly elevated line passing from the lower inner border of each up towards the beaks. Lateral teeth of the hinge oblique, but not horizontal. The beaks are curved at right angles to the hinge, and slightly angular behind. A neat little shell, not apt to be confounded with any other species known to us.

**Locality and position.** Quite abundant at the mouth of Milk River, in formation No. 4 of the series.

**Mytelus subaequatus.**

Shell narrow ovate, arcuate; posterior end compressed and rounded; dorsal edge regularly arched and sharp; base nearly straight or slightly arcuate, scarcely carinated; the two edges converging towards the nearly straight, pointed beaks, at an angle of about 35°. Surface unknown. Length 1·03 inch; breadth 2·7 inch; height 3·06 inch.

The beaks are nearly or quite terminal, and appear to have been straight or but slightly declining. Our specimen being only an internal cast, shows none of the surface characters, excepting traces of concentric lines of growth. The dorsal border looks as though it had formed a regular curve, without any angle marking the posterior termination of the hinge.

This species is very near *M. lanceolatus* of Sowerby, (Min. Con. pl. 439, fig. 2,) but is proportionally wider behind, and not quite so pointed at the beaks. It is about intermediate in form between that species and *M. edentulus* of the same author.

**Locality and position.** Dog River, near mouth of Judith River, from sandstone supposed to be No. 1 of the series.

**Gervilia subtortuosa.**

Shell thick, lanceolate, tortuous and laterally curved. Beaks terminal? pointed? posterior end narrow, the widest part being at the back end of the hinge; hinge line straight, forming an angle of about 20° with the longitudinal axis of the shell; ligament fossa about six, nearly equalling the spaces between. Surface unknown.

Our specimens of this shell consist of fragments, from which it is impossible to make out a complete diagnosis of the species. None of them show the hinge teeth, and they have all lost the surface markings. The largest fragment we have seen (which is imperfect at both extremities) is four inches in length by 1·63 inch in height at the posterior end of the hinge. It retains 2·70 inches in length of the hinge, which is 4·44 inch in thickness, though some of the outer lamina are wanting, and shows five of the ligament fossae, of which there may have been one or two more.

When viewed on the side, the outline of this shell is much like *G. aviculaides* of Sowerby, (Min. Con. vol. 6, page 16, pl. 511,) but it is much more curved and twisted, though not so much so, nor so obtuse at the anterior extremity as *Gervilia (Gastrochana) tortuosa* of the same author. So far as we know, this is the first species of the genus described from the cretaceous rocks of this country. Prof. Tuomy informed us he has found a species in Alabama, but as he has not yet published a description of it, we have no means of instituting a comparison.

**Locality and position.** Three hundred miles above Fort Union, on the Missouri, No. 4 of the series.

**Inoceramus pertainus.**

Shell very thin, broad ovate or oval, somewhat compressed; cardinal border straight; anterior end rounded; posterior extremity broad, obtusely rounded; base broadly curved. Beaks near the anterior end, rising above the hinge line, nearly touching. Surface irregularly and rather faintly undulated, marked with fine lines of growth. Length about 4·30 inches; height 3·40 inches; breadth 2·20 inches,
It is possible this shell may prove to be only a variety of *I. ventricosus*, described by us from the same locality, in a paper read before the Academy last April. It differs, however, from all the specimens we have seen of that species, in being broader, much more compressed and more regularly marked with concentric undulations. The beaks are also smaller, more elevated above the hinge line, and located a little further back from the anterior margin. It has likewise much the form of *I. convexus* of Hall and Meeke, (vol. 5, Mem. Am. Acad. Arts and Sc. page 386, pl. 2, fig. 2,) but may be at once distinguished from that and *I. sagensis* of Owen, as well as from all the other species we have seen from the higher formations of Nebraska, by the extreme thinness and entire fibrous structure of the shell.

**Locality and position.** Mouth of Judith river, in a sandstone probably the same as No. 1 of the series.

**Ostrea incurvus.**

Shell ovate, globose or cordiform, equivale. Beaks located a little behind the anterior end, strongly incurved; umbonal region very gibbous and much elevated above the hinge line. Surface ornamented with regular distinct concentric undulations, strongest near the beaks, where they are directed very obliquely inward toward the hinge, in passing round from the front to the posterior side. Length unknown; breadth 2 inches; height 1-80 inch.

The young of this species, judging from the curve of the undulations near the beaks, must have been of an ovate form, being a little broader behind than in front. As the shell advanced in age it became rapidly more globose, and the beaks curve so strongly inwards, as to bring the umbonal regions of the two valves nearly, if not quite, in contact behind and above the points of the beaks, which are directed away from each other. The substance of the shell is composed of an external fibrous, and an internal lamellar portion, the former being generally exfoliated. The surface was probably marked with concentric striae, though not preserved on our specimen. This shell may be distinguished from all the other species we have seen from this region, by its more globose form, as well as by its strongly incurved and gibbous umbones.

**Locality and position.** Little Bear's village, between Fort Pierre and Fort Clark, formation No. 4.

**Ostrea patina.**

Shell circular, oval or ovate, oblique, rather compressed. Superior valve concave above, thin, excepting at the beaks, where it is suddenly thickened and truncate. Inferior valve thicker, concave on the inner or upper side, sometimes auricled; beaks triangular, flat, slightly curved upwards and turned a little towards the anal side. Muscular impression oval or circular, shallow nearest the anal margin. Surface of both valves marked with imbricating lines of growth, and faint irregular concentric undulations. Greater diameter of largest specimen (inferior valve) 3-50 inches; smaller do. 3'10 inches; depth of concavity 70 inch.

The usual form of the shell is nearly circular or broad ovate. The buccal side is short and rounded, while the anal border is longer and sometimes (especially in the inferior valve) contracted above just behind the beaks. The areas of both valves are broad triangular, and as usual depressed in the middle, and transversely striate.

This species is evidently related to *O. vissicularis* (Lamk.) of which it may be considered a far western representative. It always differs from that species, however, in having the inferior valve much less concave, more distinctly auricled, and never characterized by a posterior lobe. The beak of this valve is also much less curved upwards, being often almost horizontally flattened. We have some fifteen or twenty specimens of this species, in a good state of preservation, all of which are quite uniform in their characters. None of the beaks show marks of the fracture by which the shell became detached.

**Locality and position.** Two hundred miles above the mouth of Milk River, No. 4 of the series.
Catalogue of all the invertebrate fossil remains hitherto described and identified, from the Tertiary and Cretaceous formations of Nebraska Territory.*

**TERTIARY SPECIES.**

Gen. *CYPRIS.*


Gen. *HELIX.*


Gen. *BULIMUS.*


B. ? *VERMICULUS*, Meek & Hayden, " " " " " 118

B. *LIMNEAFORMIS*, Meek & Hayden, " " " " "

B. *NEBRASCENSIS*, Meek & Hayden, " " " " "

Gen. *PUPA.*


Gen. *LIMNEA.*

L. *DIAPHANA*, Evans and Shumard, Proc. Acad. N. S. Phila. vol. 7, p. 165 *

L. *NEBRASCENSIS*, Evans & Shumard, " " " " " *

L. *TENUCOSTA*, Meek and Hayden, " " " vol. 8, p. 119 *

Gen. *PHYSa.*


P. *LONGIOSCULA*, Meek and Hayden, " " " vol. 8, p. 119 *

P. *RHOMBOIDEA*, Meek and Hayden, " " " " " *

P. *NEBRASCENSIS*, Meek and Hayden, " " " " " *

P. *SUBELONGATA*, Meek and Hayden, " " " " p. 120 *

Gen. *PLANORBIS.*

P. *NEBRASCENSIS*, Evans and Shumard, Proc. Ac. N. S. Phila. vol. 7, p. 164 *

P. *SUBUMBILICATUS*, Meek and Hayden, " " vol. 8, p. 120 *

P. *CONVOLUTUS*, Meek and Hayden, " " " " *

Gen. *VELLETIA.* (Ancylus.)

V. *MINUTA*, Meek and Hayden, Proc. Acad. Nat. Sc. Phila. vol. 8, p. 120 *

*In addition to the fossils included in this catalogue, we have received from Drs. Evans and Shumard, of St. Louis, a descriptive list of eight new species of *Gasteropoda* and nine of *Acephala*, from the cretaceous formations of Nebraska, which they have not yet published.
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1856.}
CRETAEOUS SPECIES.

Gen. CALLIANASSA.


Gen. BELEMNITELLA. D'Orbigny.

B. MUCRONATA* Schl. Petr. p. 47, No. 4.


Gen. NAUTILUS.


Gen. AMMONITES.


A. LENTICULARIS, Owen, Rept. Iowa, Wisconsin and Min. tab. 8, fig. 5.


A. PECARINATUS, Hall & Meek, vol. 8, p. 70.


Gen. TURRILITES.

T. NEBRASCENSIS†.


T. CHEYENNESSIS.


Note.—This mark (||) indicates that the species is also known to occur in the States; this (?) that it is common to this country and the old world; and these two (||?) that it occurs both in the States and on the other side of the Atlantic.

* We place this species in the list of Nebraska Fossils, on the authority of Dr. Morton, (see Belemnitae mucronatus, Jour. Acad. Nat. Sc. vol. 8, p. 211) not having recognized it in any of the collections we have seen from that region.

† Adult specimens of this shell almost equal in size the largest individuals of A. placenta, with which species it is apt to be confounded. They may always be distinguished, however, by external characters, even when the septa cannot be seen; the dorsal margin of the former being thin and sharp, especially in young individuals, while that of A. placenta is always flattened immediately on the edge. It is a little remarkable that Dr. Dekay's original description agrees more nearly with this shell than with that referred by Morton and others to A. placenta, while his figure is more like the latter. Possibly he may have had fragments of both species before him.

Suspecting our Nebraska shell might be identical with a species indicated by Prof. Tuomy, from Mississippi, under the name of A. lobatus, we sent him drawings of one of our specimens, showing its form and all the details of the septa, since which he writes he has no doubt of their identity. As the name lenticularis was previously applied to one or two other species, that given this shell by Prof. Tuomy will have to take precedence, though published after Dr. Owen's.

† Having at first only unsatisfactory fragments of this and the following species, we were much puzzled in regard to their affinities, and referred them provisionally to the genus Ancyloceras. Better specimens recently received, prove them to be Turrilites.
Gen. ANCYLOCERAS.


Gen. BACULITES.


Gen. SCAPHITES.

|| S. Conradii, Morton, sp.
| A. Nebrascensis, Owen, Report Iowa, Wis. and Minn. tab. 8, fig. 3 and 3a, tab. 8a, fig. 2.
| A. Nebrascensis? Owen, Report Iowa, Wis. and Minn. tab. 8, fig. 2.
| A. Moreauensis, Owen, “ “ “ fig. 7.
| A. Cheyennensis, Owen, “ “ “ tab. 7, fig. 2.
S. Mandanensis,† Morton, sp.
| Ammonites Mandanensis, Morton, Jour. Acad. N. S. Phila. v. 8, p. x. fig. 2.
| A. Mandanensis? Owen, Report Iowa, Wisc. and Minn., tab. 7, fig. 5.
S. Nicolloti, Morton, sp. 1841, Journ. Acad. N. S. Philad. vol. 8, pl. 10, fig. 3.
| S. comprimus, Owen, 1852, Report Iowa, Wisc. and Minn., tab. 7, fig. 5.
| Ammonites Nicolliti, Morton, Jour. Acad. N. S. Phila. vol. 8, pl. x. fig. 3.
S. nodosus Owen, (not of others.) Rep. Iowa, Min. & Wis. tab. 8, fig. 4 and 4.

* Of this truly protean species we have a fine collection of beautiful specimens from the same locality and position as those investigated by Dr. Owen. These we find agree in all respects with his figures, and only differ from his descriptions in always exhibiting, when the matrix is cleared out from the umbilicus, six or seven volutions, instead of one and a half to three and a half. A critical comparison of our specimens, with Dr. Owen’s figures and Dr. Morton’s original specimens in the cabinet of the Academy at Philadelphia, as well as with others from Alabama, loaned by Prof. Winchell, leads us unavoidable to the conclusion, that they all belong to one exceedingly variable species, in which opinion Mr. Conrad, who has looked over our specimens, concurs with us. *A. Nebrascensis, A. Moreauensis,* and *A. Cheyennensis* of Owen, are the inner volutions of one strongly marked variety having a larger umbilicus, narrower volutions and stronger costae. It is difficult to believe this is not a distinct species, yet after a very careful comparison, we cannot see any difference between the septa of shells having these characters, and those of well marked specimens of *S. Conradii.*

† We have perfect specimens of this species, which prove it to be a true Scaphite. Like *S. Conradii,* it invariably shows, when the matrix is removed from the umbilicus, about seven volutions. When divested of the outer whors, it is so nearly like Dr. Morton’s figures of his *Ammonites abyssinus,* that we cannot see the slightest difference; the perforate character of the umbilicus in the specimen figured by him, being probably due to accident. The lobes of the septa of this species are very nearly like those of *S. comprimus* of Owen, yet we have seen no intermediate gradations of external form connecting those two, like those between the different varieties of *S. Conradii.* We find it exceedingly difficult to define limits between species amongst these Nebraska Scaphites. The position and relative size of nodes and costae, as well as the more or less compressed form of the shell and relative size of the umbilicus, are not, within a considerable range of limits, characters that can always be relied upon. One of our specimens of *S. nodosus,* (Owen) for example has near the dorso-lateral margin of one side, the usual row of nodes, and none at all on the other.
Formations in ascending order.

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<th>Gen. SCALARIA.</th>
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<td>S. cerithiformis, Meek &amp; Hayden, Proc. Acad. Nat. Sc. Phila., v. 8, p. 63</td>
<td>1 2 3 4 5 *</td>
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<td>Gen. TURRITELLA.</td>
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<td>T. moreauensis, Meek &amp; Hayden, “ “ “ “ “</td>
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<td>Gen. ACTEON.</td>
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<tr>
<td>A. concinnus, Hall &amp; Meek, Mem. Am. Arts &amp; Sci. Bost., v. 8, N. S., p. 300</td>
<td>1 2 3 4 5 *</td>
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<td>A. subellipticus, Meek &amp; Hayden, Proc. Acad. Nat. Sc. Phila., v. 8, p. 63</td>
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<td>Gen. AVALANA.</td>
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<td>A. subglobosa, Meek &amp; Hayden, Proc. Acad. Nat. Sci. Philada., v. 8, p. 64</td>
<td>1 2 3 4 5 *</td>
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<td>Gen. NATICA.</td>
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<td>N. Tuomyana, Meek &amp; Hayden, (see accompanying paper.)</td>
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<td>N. concinna, Hall &amp; Meek, “ “ “ “ “</td>
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<td>Gen. TURBO.</td>
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<td>T. nebrascensis, Meek &amp; Hayden, Proc. Acad. Nat. Sci. Phila., v. 8, p. 64</td>
<td>1 2 3 4 5 *</td>
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<td>T. tenellusatus, Meek &amp; Hayden, “ “ “ “ “</td>
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<td>Gen. ROSTELLARIA.</td>
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<td>R. biangulata, Meek &amp; Hayden, Proc. Acad. Nat. Sci. vol. 8, p. 65</td>
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<td>Gen. FUSUS.</td>
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<td>F? tenulineatus, Hall &amp; Meek, “ “ “ “ “</td>
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<td>F. galpinanus, Meek &amp; Hayden, “ “ “ “ “</td>
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<td>F. culbertsoni, Meek &amp; Hayden, “ “ “ “ “</td>
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<td>F. flexuosostatus, Meek &amp; Hayden, “ “ “ “ “</td>
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<td>F. newberryi, Meek &amp; Hayden. “ “ “ “ “</td>
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<td>Gen. BUSYCON.</td>
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<td>Pyrula Bairdi, Meek &amp; Hayden, “ “ “ “ “</td>
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<td>F. buccinoides, Meek &amp; Hayden, “ “ “ “ 67</td>
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Gen. BUCCINUM.

B. CONSTRICTUM, Hall & Meek, " " " p. 391

(See correction at end of that memoir.)


Gen. CAPULUS.


Gen. HELCION.

H. BOREALIS, Morton sp.
Hippomyz borealis, Morton, Jour. Acad. Nat. Sc. Phila., v. 8, p. 11, fig. 6
H. PATELLIFORMIS, Meek & Hayden, " " " " "
H. ALVEOLIS, Meek & Hayden, " " " " "
H. SUBOVATIS, Meek & Hayden, " " " " "
H. CARINATUS, Meek & Hayden, " " " " "

Gen. DENTALIUM.


Gen. BULLA.

B. MINOR, Meek & Hayden, " " " " "
B. OCCIDENTALIS, Meek & Hayden, " " " " "
B. SUBCYLINDRICA, Meek & Hayden, accompanying paper.

Gen. PHALODOMYA.

P. (Goniomya) AMERICANA
P. UNDATA, Meek & Hayden, " " v. 8, p. 81
P. FIBROSA,
Avicula? fibrosa, Meek & Hayden, " " v. 8, p. 86

Gen. PANopeA.

P. OCCIDENTALIS, Meek & Hayden, (accompanying paper)

Gen. SOLEMYA.

S. SUBPLICATA,

Gen. MACTRA.

M. FORMOSA, Meek & Hayden, (accompanying paper)
M. WARRENANA, Meek & Hayden, " " " " "
M. ALTA, Meek & Hayden, " " " " "

* This species, of which we only had imperfect specimens, we had referred with much doubt to the genus Avicula, mentioning at the same time that we had not seen any specimens showing indications of an anterior wing. Recently we have been informed by Dr. Shumard, who has better specimens of it in his possession, belonging to the collection of Dr. Evans, that it is a Photodomya; consequently we place it in that genus on his authority.
November,

Formations in ascending order.

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Gen. **TELLINA**.


T. **EQUILATERALIS**, Meek & Hayden, " " " " p. 82.

T. **SCITULA**, Meek & Hayden, " " " " " p. 83.

T. **SUBELLIPTRCA**, Meek & Hayden, " " " " p. 83.

T. **PROUTI**, Meek & Hayden, " " " " " p. 83.

T. **SUBTORTUOSA**, Meek & Hayden, (accompanying paper).

Gen. **CYTHEREA**.


C. **TENESIS**, Hall & Meek, " " " " 383.


C. **NEBRASCENSIS**, Meek & Hayden, " " " " " p. 83.

C. **PELLUCIDA**, Meek & Hayden, (accompanying paper).

C. **OWENANA**, Meek & Hayden, " " " " " p. 83.

Gen. **VENUS**.

V.? **CIRCULARIS**, Meek & Hayden, (accompanying paper)

Gen. **LEDA**.

L. **VENTRICOSA**.


L. **MOREAUCENSIS**.


Gen. **CORBULA**.


Gen. **THRACIA**.

T.? **GRACILIS**.


Gen. **ASTARTE**.


Gen. **CRASSATELLA**.


Gen. **LUCINA**.


L. **OCCIDENTALIS**, Meek & Hayden, (accompanying paper).

?Tellina occidentalis, Morton, Jour. Acad. Nat. Sc. Phila., v. 8, pl. xi. fig. 3.

Mould of Lucina? Owen, report, Iowa, Wis. and Min. tab. vii. fig. 8.

Gen. **HETTANGIA**.

H. **AMERICANA**, Meek & Hayden, (accompanying paper).

Gen. **CARDIUM**.

C. **SPECIOSUM**, Meek & Hayden, (accompanying paper).

* Although now satisfied this species is not a Tellina, we are still in doubt about its affinities, and place it provisionally in the above genus, until specimens showing the hinge and interior can be seen.
Gen. NUCULA.

N. VENTRICOSA, Hall & Meek, " " " " " 382
N. SCRUTULA, Meek & Hayden, Proceed. Acad. Nat. Sci. Phila., vol. 8, p. 84
N. EVANSI, Meek & Hayden, " " " " 85
N. EQUILATERALIS, Meek & Hayden, " " " " " 85
N. SUBPLANA, Meek & Hayden, " " " " " 85
N. CANCELLATA, Meek & Hayden, " " " " " 85
N. PLANOMARGINATA, Meek & Hayden, " " " " " 85
N. OBSELETASTRIATA, (accompanying paper).......

Gen. PECTUNCULUS.

P. SIOUXENSIS, Hall & Meek, Memoirs Am. Ac. Art. & Sci. v. 5, N. S. p. 384*

Gen. SIMOPSIS.


Gen. CUCULLEA.

C. NEBRASCENSIS, Owen, Rept. Iowa, Wis. and Min. tab. vii. fig. 1 and 1a
C. SHUMARDI, Meek & Hayden, " " " 85
C. EXIGUA, Meek & Hayden, (see accompanying paper)...

Gen. MYTELUS.

M. GALPINIANUS, Evans & Shumard, " " " vol. 7, p. 164
M. SUBARCATUS, Meek & Hayden, (see accompanying paper)...*?

Gen. AVICULA.

A. LINGUIFORMIS, Evans & Shumard, " " " " 85

Avicula, undt. Owen's Report, Iowa, Wis. and Min. tab. vii. fig. 10

Gen. GERVILIA.

G. SUBTORTUOSA, Meek & Hayden, (see accompanying paper)...

Gen. INOCERAMUS.

?I. PROBLEMATICUS, Schlotheim, sp. 1820. Petrif. p. 312
I. MYTLOIDES, Mantell, Geol. Suss. p. 215, pl. 28, fig. 2.

[?I. BARABINI, Merton, Synopsis Org. Remains, page 62
I. SAGENSIS, Owen, Report Iowa, Wisn. and Min. tab. vii. fig. 3
I. NEBRASCENSIS* Owen, " " " " tab. viii. fig. 1
I. CONVEXUS, Hall & Meek, " " " " " 387
I. TENULINEATUS, Hall & Meek, " " " " " 387
I. CONRADI, Hall & Meek, " " " " " " -
I. FRAGILIS, Hall & Meek, " " " " " " 388
I. PERTENIUS, Meek & Hayden, (accompanying paper)...
I. INCURVUS, Meek & Hayden, " " " " " 388

Gen. PECTEN.


* Is Prof. Tuomy's I. bifomis, Proc. Ac. N. S. Philada., vol. 7, p. 170, identical with this?
Gen. OSTREA.
O. congesta, Conrad, Nicollet's Report.......................................................... *
\(\|\) O. larva, Lamk., Hist. vol. 216................................................................. *
O. patina, Meek & Hayden, (accompanying paper)........................................... *

Gen. CAPRINELLA.

Gen. LINGULA.
L. SUBSPATULATA, Hall & Meek, Mem. Ac. Arts & Sc. Bost., v. 5, N. S. p. 380........ *

In addition to the foregoing list of determined species, we have seen amongst the Nebraska fossils the following miscellaneous fragments:
One elytron of an undt. insect? ................................................................. *
Fragments of undt. Baculite................................................................. *
" " " species Reticulipora, (very rare)...................................................... *
One fragment of undt. Echinoid............................................................ *
Fragments of small slender coral—gen. undt............................................ *
" " " discoid " " " " " ................................................................. *

Birds of South-eastern Indiana.
By Rufus Haymond, M. D.

Genus HALETUS, Sav.

HALETUS LEUCOCEPHALUS, Linn.—The Bald Eagle.
A few of these noble birds still linger in this section of the country. I have observed one or two of them each winter for the last twenty-five years. They are rarely seen at any other season of the year.

Genus PANDION, Sav.
PANDION HALETUS, Linn.—Osprey, or Fish Hawk.
Common during spring and autumn, but more abundant during the latter season.

PANDION WASHINGTONII.—Bird of Washington.

Falco Washingtonii, Aud.
This bird has been observed on white Water River by some of our older citizens, every fall and winter for more than forty years. I have myself observed one or more of them almost every winter for more than twenty years. Their habits being almost identical with those of the Osprey, I have placed them, without any other authority, in the same genus.

Genus FALCO, Linn.

Falco PALUMBARIUS.—Goshawk.

These hawks are quite numerous in all the wooded districts of the western country.
FALCO COLUMBARIUS, Wil.—The Pigeon Hawk.
I have occasionally seen a few of these hawks following the flight of pigeons in their migrations. I have no recollection of ever having seen them, except when these birds were very abundant.

FALCO SPARVERIUS.—The Sparrow Hawk.
This beautiful little falcon is quite numerous.

FALCO FUSCUS.—Long-tailed Hawk.
Probably the most numerous of all the hawks in this section of the country.

FALCO FURCATUS.—The Swallow-tailed Kite.
I have never seen but a single specimen of this Kite, which was shot eleven miles below Brookville. It had been feeding upon beetles and the eggs of the cat bird, (Mimus lividus,) which it had swallowed without breaking.

Genus BUBO, Sibbald.

BUBO VIRGINIANUS.—The Great Horned Owl.
This powerful species is rather numerous, probably as much so as any other owl.

Genus EPHIALTES.

EPHIALTES ASIOL, Linn.—Screech Owl.
This little owl is quite common.

Genus SYRNium, Savigny.

SYRNium NEBULOSUM.—The Barred Owl.
Quite numerous in all the timbered country, though by no means so numerous as they formerly were.

Genus CATHARTEs, Linn.

CATHARTEs AURA.—The Turkey Buzzard.
Numerous throughout the country at all seasons of the year. This is the only vulture I have ever observed in this section of country.

Genus CAPRIMULGUS, Linn.

CAPRIMULGUS VOCIFERUS, Wilson.—Whip-poor-will.
These noisy birds are very numerous all over the country.

CAPRIMULGUS VIRGINIANUS.—Night Hawk.
Quite a number of these birds appear here in May, and after remaining two or three weeks, disappear, and return in largely increased quantities during the month of September.

Genus HIRUNDO, Linn.

HIRUNDO PELAGIA.—The Chimney Bird.
The most numerous of all the swallows. They are the last to arrive in the spring, but remain from four to six weeks longer than any other species.

HIRUNDO LUNIFRONS.—Republican or Social Swallow.

Hirundo lunifrons, Say.

Hirundo opifex, Clinton.

This species has been quite numerous since the summer of 1849, when, for the first time, they built their nests in this (Franklin) County. Prior to that time I had occasionally seen them passing through the country; they are now the most numerous of all the swallows, except the chimney bird.
HIRUNDO RUFÆ.—The Barn Swallow.

These swallows are quite numerous, and rank in this respect next to the gourd swallow.

HIRUNDO RIPAIA.—Bank Swallow.

Numerous along all the streams with abrupt sandy shores; next in numerical strength to the barn swallow.

HIRUNDO PURPUREA.—The Martin.

Quite common, but not so numerous as the sand martin.

HIRUNDO BICOLOR.—White-bellied Swallow.

Last May (1856) I shot one of these birds, which is the only one of the kind I have ever seen, or the only one I have recognized as certainly belonging to that species.

Genus ALCEDO, Linn.

ALCEDO ALCYON, Aud.—The Belted King Fisher.

This king fisher is quite numerous along all our streams at all seasons of the year. It is the only king fisher we have.

Genus MELLISUGA, Briss.

MELLISUGA COLUBRIS, Linn.—Ruby-throated Humming Bird.

Very abundant throughout the whole State. We have no other humming bird.

Genus CERTHIA, Linn.

CERTHIA FAMILIARIS, Linn.—Brown Tree-creeper.

Occasionally seen, though not numerous.

CERTHIA VARIA.—Black and White Creeper.

Very numerous.

Genus SITTA, Linn.

SITTA CAROLINENSIS, Lath.—The Nut Hatch.

This familiar bird is very numerous, and known to all our citizens by the name of "Tom-tit."

Genus TROGLODYTES, Vieillot.

TROGLODYTES EǫON, Vieill.—The House Wren.

This wren is quite numerous in this country; it, however, rarely builds its nest about houses, but usually in the hollows of trees and logs.

Genus SYLVIA.

SYLVIA TROGLODYTES, Aud.—Winter Wren.

Frequently seen in fall and winter, but seldom or never at any other season.

Genus TURDUS, Linn.

TURDUS RUFUS.—Ferruginous Mocking Thrush.

This is a very common bird, and the best imitator of the whole family, except the mocking bird.

TURDUS MIGRATORIUS, Linn.—The Robin.

This is much the most numerous of all the Thrushes, at all seasons of the year; more numerous, however, in fall and winter than at any other period. About six years ago they collected in vast multitudes about twenty miles southeast of this place, (Brookville,) roosting on the trees together as the pigeons
are in the habit of doing. Many thousands of them were killed by ruthless "pot-hunters."

**Turdus mustelinus**, Gmel.—The Wood Thrush.

Numerous all over the wooded districts of the Western Thrush country. The male and female sit by turns upon the eggs during the period of incubation. Of all the thrushes, its notes, though not so varied as some of the others, are the most beautiful, clear and full—varying from those of the flute, through many tones impossible to describe, ending with a kind of metallic vibratory sound, which, to be understood, must be heard.

**Turdus polyglottus**, Wil.—The Mocking Bird.

This celebrated songster, occasionally, though seldom, stays this far north. I have seen a few and heard the notes of a few others here within the last thirty years.

**Turdus lividus**, Linn.—The Cat Bird.

This is a very common species all over the West. I have seen them in numbers as far north as St. Paul, in Minnesota, in the month of October.

**Turdus aquaticus**, Wil.—Water Thrush.

This little thrush is very numerous in the vicinity of all our streams.

**Turdus solitarius**, Wil.?—Hermit Thrush.

The bird to which I apply this name is so similar in appearance to the wood thrush, that for a long time I confounded the two; and I am by no means certain that I am correct in applying to it the name of Hermit Thrush.

**Genus Tyrannus**, Cuv.

**Tyrannus intrepidus**, Vieill.—The King Bird.

Numerous, and the last of the summer birds reaching this section. They are said to eat bees, and probably do, but I have never been able to find any in the stomachs of those I have killed and examined.

**Genus Tyrannula**, Swains.

**Tyrannula crinita**, Linn.—Great Crested Fly-catcher.

Very common here, and all over the West.

**Tyrannula nunciola**.—Pewee.

Numerous, and the first of the migratory birds to make its appearance in the spring, usually arriving about the first of March.

**Tyrannula virens**, Linn.—Wood Pewee.

Probably more numerous than the common Pewee.

**Tyrannula Trailli**, Aud.—Traill's Fly-catcher.

I have never seen but a few of these birds.

**Genus Setophaga**, Swains.

**Setophaga ruticilla**, Gmel.—American Redstart.

This beautiful bird may be seen almost any day in deep woods during the months of May and June.

**Genus Cuclicivora**, Swains.

**Cuclicivora cerulea**.—Blue Gray Gnat-catcher.

The most numerous of all the fly catching tribe.
Genus **MUSCICAPA**, Linn.

*Muscicapa olivacea*, Wils.—Red-eyed Greentit.

These birds are so numerous, that a traveller through our woods is scarcely ever out of the sound of their voices.

*Muscicapa cantatrix*, Wils.—White-eyed Fly-catcher.

Very numerous.

Genus **SYLVIA**.

*Sylvia solitaria*, Wils.—Yellow Warbler.

Very common.

*Sylvia aestiva*—Blue-eyed Yellow Warbler.

Quite numerous.

*Sylvia pensiles*, Aud.—Yellow-throated Warbler.

Quite common.

*Sylvia maculosa*, Aud.—Black and Yellow Warbler.

Not very numerous.

Genus **SIALIA**, Swais.

*Sialia Wilsonii*, Swais.—The Common Blue Bird.

This interesting and familiar bird is very numerous and remains with us the whole year round.

Genus **PARUS**, Linn.

*Parus atricapillus*, Linn.—Black-capped Chickadee.

This sprightly little bird is very common.

*Parus bicolor*, Wils.—Great-crowned Chickadee.

Also numerous, but probably not so much so as the preceding species.

Genus **LANIUS**, Linn.

*Lanius excubitoroides*, Swais.—Gray Shrike.

Occasionally seen in autumn and winter. In Nov. 1854, whilst hunting for quails, I saw a Butcher Bird, flying with a Goldfinch (Chrysomelis tristis) in its talons. A short time afterwards, going in the direction which it flew, I discovered it upon a small elm tree, having suspended the bird by sticking its neck into the cleft of a split limb, and from which it was pulling off pieces and eating at its leisure. The idea instantly occurred to me that the habit this bird has of sticking pieces of flesh and insects upon thorns and other sharp substances, may be accounted for upon the ground that they do it as a matter of convenience in eating (saving the labor of holding them with their feet, which are rather feeble,) and not for the purpose of decoying other birds, as many have supposed.

Genus **CYANOCORAX**, Boie.

*Cyanocorax cristatus*, Linn.—Blue Jay.

Very numerous, and so tame that they very frequently build their nests in the fruit trees and lilac bushes, in the town, close to our doors.

Genus **CORVUS**, Linn.

*Corvus corax*.—The Raven.

Formerly very numerous, but now exceedingly rare, so much so, that I have seen but one for eight or nine years.

*Corvus americanus*, Aud.—American Crow.

Quite numerous in warm weather, both winter and summer, but never seen in times of extreme cold.
Genus EMBERIZA (?)
Emberiza nivalis, Aud.—White Snow Bunting.
I have seen these birds on three or four occasions during severe winters.

Genus CONURUS, Kuhl.

Conurus carolinensis, Linn.—The Paroquet.
This bird was formerly very numerous along White Water river. Several years have elapsed since any of them have been seen.

Genus PICUS, Linn.

Picus querulus, Wils.—The Checkered Woodpecker.
This Woodpecker is quite numerous and a constant resident. Like the Red-headed Woodpecker, they lay up in the fall a supply of acorns and beech nuts for winter use. They hull the acorns, split them in two, and firmly drive them edgewise into the cracks of old dry trees.

Picus erythrocephalus.—Red-headed Woodpecker.
This is a numerous and wide spread species. In seasons when oak and beech mast is plenty, they lay up a sufficient quantity to keep them during the winter. But when this supply fails, they uniformly migrate to the south and remain until the weather becomes warm the following spring.

Picus piletus, Linn.—Called by the people Woodpecker.
Once very numerous, but are now rarely seen.

Picus pubescens, Linn.—Downy Woodpecker.
Very abundant and a constant resident.

Picus villosus, Linn.—Hairy Woodpecker.
About equal in numbers to the preceding, and very similar in all its habits.

Picus auratus.—Yellow Hammer.
This is probably the most numerous with us of all the woodpeckers.

Picus ———.—The "Sap Sucker."
This is a shy bird, and but rarely seen. I am inclined to believe it less numerous than any other species. Were we to judge of its numbers by the number of holes it bores in the apple-tree, sugar maple, hickory, &c., for the purpose of collecting the sap, we might conclude that it was very numerous.

Genus COCOYZUS, Vieill.

Coccyzus americanus, Linn.—Yellow-billed Cuckoo.
We rarely see this bird, yet they are rather numerous. Their uncouth notes may be heard in the recesses of the forest at almost any time during the summer, day or night—probably oftener in the night than by day.

Genus ECTOPISTES, Swain.

Ectopistes migratorius, Linn.—Wild Pigeon.
Still occasionally seen in large numbers, though they have evidently been constantly diminishing in numbers for the last thirty years, and are probably not more than half so numerous as they were thirty years ago. In the month of January and February, 1854, these birds roosted about two miles from this town, (Brookville,) notwithstanding the country is thickly inhabited. No one who did not see them, or who has not seen a "pigeon roost," can form any proper conception of their numbers.

Ectopistes carolinensis, Linn.—Turtle Dove.
The Turtle Dove is very numerous here, and a permanent resident. The winter of 1855, '56 was so severe that a great many of them perished.
Genus MELEAGRIS, Linn.

MELEAGRIS GALLAPAVO, Linn.—The Wild Turkey.

 Formerly very numerous. They have now become almost extinct in this section. A very few, however, still linger amongst us.

Genus ORTYX, Steph.

ORTYX VIRGINIANUS, Linn.—The American Quail.

Still quite numerous, though gradually diminishing in numbers. Here they are clearly not migratory, but upon the Illinois, Mississippi and Missouri rivers they are said to be so. Late in September and in October they seem to have a kind of undefined idea of migrating, and wander around apparently without any fixed object; but in a short time they become quiet and settle themselves into winter quarters, which they never desert until spring, unless the supply of food fails. They may always be found within a few rods of the same place during the winter if the supply of food is sufficient for their wants. During their "crazy fit" in the fall, they come into the town, and when frightened by the boys will frequently fly against the white houses, often, as I have witnessed, with such force as to kill themselves. I have known the same thing to happen on one occasion in the country, when there was but a single white house against which they could fly. They very rarely fly against houses of any other color.

Genus TETRAO, Linn.

TETRAO UMBELLUS, Linn.—Called here the Pheasant.

These beautiful birds were formerly extremely plenty, but have now become rare.

Genus CHARADRIUS, Linn.

CHARADRIUS VOCIFERUS, Wils.—Killdeer Plover.

These curious noisy birds are very numerous about all our streams and wet lands.

CHARADRIUS HELVETICUS.—Plover.

Not numerous, though occasionally seen in spring and fall.

CHARADRIUS MARMORATUS.

Similar in numbers to the former.

Genus GRUS, Linn.

GRUS CANADENSIS, Temm.—The Sand-hill Crane.

I have seen but two or three individuals of this species in this region. In the north western part of the State they are very numerous. In the Kankakee and Calumet swamps, which occupy so large a space in north western Indiana and north eastern Illinois, they build their nests and rear their young. If they were the young of the Grus Americanus, as some here supposed, they would not likely be found breeding here and producing others like themselves, none of which much resemble the latter. They are distinct birds, and vary greatly both in color and size.

A gentleman who lives upon the Iroquois, in Jasper co., Ind., informed me that he shot a white crane there in 1848, (G. American,) which measured nearly seven feet from the point of the bill to the end of the toes, and weighed, he judged, about thirty pounds.

Genus NUMENIUS.

NUMENIUS LONGIROSTRIS, Wils.—Long-billed Curlew.

A few of these birds have been seen here.
Genus STURNELLA, Aud.

STURNELLA LUDOVICIANA.—The Meadow Lark.

This bird is quite abundant here, but vastly more numerous in the northwestern part of the State, and in all other prairie countries where I have been, they seem to be the most numerous bird, except, perhaps, the Red-winged Blackbird. I can see no difference between this bird and the lark called S. neglecta. They are probably the same.

Genus QUISCALUS, Vieill.

QUISCALUS VERSICOLOR, Aud.—Crow Black Bird.

These birds are very numerous except in winter. They are among the first to arrive in the spring. They build their nests always in the hollow tree tops. About the middle of June to the first of July they collect in flocks, and move off to the North, and we see no more of them until October, when they again make their appearance in large flocks, and move off southward.

QUISCALUS FERRUGINEUS, Aud.—Rusty Gracker.

Frequently seen in spring and fall.

Genus ICTERUS.

ICTERUS PECORIS, Aud.—Cow Bunting.

I have never known this bird to breed here. They are frequently seen in spring and autumn during their migrations.

Genus XANTHORNUS, Cuv.

XANTHORNUS VARIUS, Gmel.—Orchard Hangnest or Oriolo.

This lively and noisy bird is very abundant. During the breeding season the male sings almost without intermission.

Genus YPHANTES, Vieill.

YPHANTES BALTIMORE, Linn.—Baltimore Oriole.

This beautiful bird is very numerous in all the country west of the Alleghany Mountains. I am of opinion that the song of the bird here, varies a little from the song of those found in Virginia, though in all other respects they seem to be identical.

Genus AGELAIUS, Vieillot.

AGELAIUS PHOENICEUS, Linn.—Marsh Blackbird.

Very numerous in the neighborhood of all swamps and streams. In the northwestern part of the State they are found in almost countless numbers.

Genus DOLICHONYX, Swains.

DOLICHONYX ORZIVORUS, Linn.—Wandering Rice Bird, Bob-o-link.

I have, in three or four different years, seen a few of these birds in the months of May and June. They never breed here.

Genus CARDINALIS, Bonap.

CARDINALIS VIRGINIANUS.—Grosbeak, Red Bird.

Numerous all through the country.

Genus PIPILIO, Vieill.

PIPILIO ERYTHROPTALMUS, Linn.—Towke Ground Finch.

Quite abundant.
Genus PYRANGA, Vieill.

PYRANGA rubra, Linn.—Black-winged Tanager.
This beautiful species is very numerous through all our woods. It is the only one of this genus found here, so far as my knowledge extends. The Summer Red Bird I have never seen.

Genus BOMBYCILLA.

BOMBYCILLA CAROLINENSIS, Aud.—Cedar Bird.
These birds are quite common all seasons of the year. They breed from June to September.
I have seen but three of their nests, two in June and one with young about the middle of September. All three of these were upon shade trees which line the main business street of the town, under which hundreds of people were constantly passing.

Genus FRINGILLA, Linn.

FRINGILLA ludoviciiana, Wil.—Rose-breasted Grosbeak.
This beautiful bird is not very numerous, but may occasionally be found in thick woods adjoining open ground, rarely seen in other places.
FRINGILLA RUPA, Wils.—Fox colored Finch.
Very numerous during winter, keeping company with the common Snow-bird.
FRINGILLA TRISTIS, Wils.—Thistle Bird, Flax Bird.
Breeds in July August and September, and is very numerous.
FRINGILLA SOCIALIS, Wils.—House Sparrow.
Exceedingly numerous. They remain with us until the latter part of October.
FRINGILLA NIVALIS, Wils.—Common Snow Bird.
This finch makes its appearance here at the first of October, and leaves about the first of May.
FRINGILLA MELODIA.—The Song Sparrow.
Very numerous and a constant resident throughout the year.
FRINGILLA GRAMINEA, Wils.—Bay-winged Finch.
Very numerous all over our cultivated grounds. These birds have a curious habit, during the breeding season, of following persons passing through the fields, all the while uttering a kind of tantalizing, scolding cry, apparently with a view of driving off the intruder.
FRINGILLA LEUCOPHYLLS, Wils.—White-crowned Finch.
This species is frequently met with, though not nearly so numerous as many others.
FRINGILLA PENNSYLVANICA, Lath.—White-throated Finch.
I have seen but a few of this species.
FRINGILLA CYANEA, Wils.—Indigo Blue Bird.
This pleasant songster may be heard on the borders of our fields during the whole summer. They are very numerous.
FRINGILLA PURPUREA, Wils.—Purple Finch.
This finch is seldom seen here in numbers except in extremely severe weather.
ANAS VALISNERIA, Wils.—The Canvas-back Duck.

This far-famed duck made its appearance here for the first and only time, so far as my knowledge extends, in March, 1855. One of my friends shot one which I had a chance to examine, and afterwards to taste. It was very tender and juicy, but had such a fishy flavor that it could scarcely be eaten. I supposed they had come from the sea coast of the Southern States, where they had fed upon shell fish instead of eel grass, which seems to be necessary to perfect their flavor.

ANAS FERINA, Wils.—The Pochard or Red-head.

This duck made its first appearance, so far as known, about the time or in company with the Canvas-back. One or two of them were killed.

ANAS MARILA, Wils.—Scaup Duck.

Occasionally seen but not numerous.

ANAS RUFITORQUES, Aud.—Tufted Duck.

About as numerous as the Scaup.

ANAS OBSCURA, Wils.—The Black Duck.

Frequently seen in Fall and Winter.

FULIGULA MARILA, Aud.—Lesser Scaup Duck.

Was noticed here in 1855.

FULIGULA RUBIDA, Bonap.—Ruddy Duck.

Occasionally seen in spring.

FULIGULA CLANGULA.—Golden-eye Duck.

I killed one of these birds in March, 1855, and saw several others.

FULIGULA ALBEOLA.—Butter Ball Duck.

These are probably more numerous in the spring than any other species.

Genus MERGUS.

MERGUS MERGANSER.—The Sheldrake.

These birds are very numerous in White Water during the whole winter, which they visit for the purpose of fishing. The stream is remarkably clear and being very rapid, seldom freezes over, but the water becomes cold enough to benumb the fish, which thus fall an easy prey to these expert divers. I have known one of them to hatch and rear its brood in this vicinity.

MERGUS CUCULLATUS.—Hooded Merganser.

I have seen but a single individual of this species, which was killed in March, 1855.

In addition to the ducks above enumerated, there are some others, but for the want of descriptions and figures I am unable to name them.

Genus COLYMBUS.

COLYMBUS GLACIALIS.—The Loon.

The loon is frequently seen in our waters in the fall and spring, being probably compelled by fatigue to stop and recruit their strength. Those which I have seen in the water were great divers, but could not be forced to take wing. The cry or wail of the Loon is, to my ear, the most melancholy sound I have ever heard, conveying the idea of utter hopelessness and despair.

COLYMBUS _______.—The Ludapper.

These birds are rather abundant during October and November.

Genus PELECANUS.

PELECANUS ONOCROTALUS.—American White Pelican.

I have seen a few pelicans flying over; they are, however, very rare in this section.
Genus STERNA.

Sterna dougallii.—The Roseate Tern.

I do not recollect to have seen but a single individual of this species.

Sterna arctica.—Black-capped Tern.

I have seen several flocks of these birds, generally in the month of June, during freshets and storms.

Genus LARUS.

Larus leucophrerus, And. (?)—White-winged Gull.

Very common along the river during the winter. Besides this, there are several other species of Gull occasionally seen passing through the country.

On a new and remarkable genus of Ranidae, from the river Parana.

By Edw. Hallowell, M. D.

Gen. TRIGONOPHrys.

Char. Head very large, depressed; upper eyelid triangular; tongue large, subcircular, notched in front and posteriorly, more deeply behind, attached in front, free laterally and in its posterior half; upper maxillary teeth large, conical, recurved, sharp-pointed; two groups of vomerine teeth on a line with the anterior margin of the posterior nares, nearer to them than to each other; posterior nares large, subcircular; eustachian foramina of moderate size, rather large; no vocal vesicles either internal or external; tympanum indistinct; four fingers completely free; toes palmate at their base only; first cuneiform bone presenting a prominence externally, with a well defined projecting edge; transverse processes of the sacral vertebrae not dilated.

Trigonophrys regiceps, nob.

Char. Body thick and stout, more or less covered with tubercles above; two movable bucklers beneath the skin, posterior to the occiput; two glands upon the upper surface of each thigh near the groin; two others larger upon the breast; ground color of body and sides olive, presenting numerous dark colored, ovoid spots, with a narrow margin of white, the interspaces in the immature specimens of a beautiful rose color; extremities olive, with large and broad bands of black margined with white, the interspaces more or less tinged with red; under parts white mingled with yellow; chin and throat black spotted.

Dimensions. Length of head 1 inch 4 lines; greatest breadth 2 inches 3½ lines; breadth of bucklers 1 inch 7½ lines; length of body 3 inches; breadth 3 inches 2 lines; length of anterior extremities 2½ inches; of posterior extremities 4 inches.

Gen. Remarks. A more detailed description with drawings, and an account of the anatomy, will be given in the next volume of the Journal. It differs from Ceratophrys, to which it is closely allied, in the shape of the eyelids, the form of the body, the structure of the skull, and the teeth, which are remarkable for their great development.

ELECTION.

Mr. Frederick G. Hesse, of Washington, and Drs. Geo. J. Ziegler and John H. Packard, of Philadelphia, were elected Members; and Philip Lutley Sclater, M. A., of London, and the Right Revd. Stephen Elliott, Bishop of Georgia, were elected Correspondents of the Academy.
Genus ARDEA, Linn.

ARDEA HERODIAS, Linn.—Great Blue Heron.
Quite abundant during the warmer seasons of the year.

ARDEA CANDIDISSIMA.—The Snowy Heron.
Quite numerous some years along White Water, in August, September and October.

ARDEA EXILIS(?).—Least Bittern.
Very numerous along all our streams. Builds its nest in apple-trees and other scrubby trees in the vicinity of rivers. I am not sure that this is not the Green Heron of naturalists (A. virescens).

ARDEA LENTIGINOSA.—The American Bittern.
I have seen but three birds of this species in this part of the State. They are quite numerous on the Iroquois and Kankakee in the N. West. The people there call them "thunder-pumpers;" hence I infer that their love-call is equivalent to the booming of the European Bittern.

Genus IBIS, Moehr.

IBIS LOCULATOR.—The Wood Ibis.
The first day of August, 1855, a large flock of these birds made their appearance in this neighborhood. They remained along the river and White Water canal for about a month or six weeks. A son of one of my neighbors broke the wing of one of them and caught it. After keeping it three or four weeks, feeding it upon fish, he gave it to me. I kept it until near the first of November, when it fell a victim, as many another biped has done, to its appetite. Some mackerel had been placed to soak upon a table in the back yard, one of which he stole and ate, and upon the evening of the next day died in convulsions.

It was wonderful to see with what rapidity it could swallow live fish from three to ten inches long, almost as rapidly as a chicken would grains of corn.

It became so tame whilst I kept it that it would come into the house when hungry. In that short time it learned to know its name (Tantalus), and would come when called, if it happened to be hungry. We learned it to eat raw meat, by putting it into water where it had been fed on fish.

When not hungry it would remain constantly on a certain spot in the yard, and seemed to have no disposition to leave it, except in search of food. It would stand for hours perfectly still, with its long bill hanging straight down along the neck. When tired of this position it would lay the tarsus flat upon the ground and stand upon the lower end of the tibia. It was perfectly harmless and gentle, and possessed much more good sense and sagacity than its appearance would seem to justify.

Genus TOTANUS, Bechst.

TOTANUS FLAVIPES, Gmel.—Little Yellow Shank Tattler.
Not very numerous. Occasionally seen along the river.

TOTANUS MELANOLEUCUS, Gmel.—Great Yellow Shank Tattler.
Occasionally seen in fall and spring.

TOTANUS SEMIPALMATUS, Gmel.—The Willet.
These birds are rare, though flocks occasionally appear late in the fall and early in the spring.

Genus TRINGOIDES, Bonap.

TRINGOIDES MACULARIA, Linn.—Spotted Sandpiper.
Rather numerous along all our streams.

TRINGOIDES BARTRAMIUS, Wils.—Upland Plover.
Very rare. I do not remember ever to have seen but two or three of these birds in this neighborhood.
Genus TRINGA, Say.

TRINGA SCHINZII.—Schinz's Sandpiper.
Quite a number may be found along our streams. Also, one or two others of the same genus, which I cannot name, for the want of figures and descriptions.

Genus SCOLOPAX, Linn.

SCOLOPAX MINOR, Wils.—The American Woodcock.
Formerly more numerous than at present. A few are still to be found here every year.

SCOLOPAX WILSONII.—English Snipe, Jack Snipe.
Sometimes quite numerous in March and April.

Genus RALLUS, Linn.

RALLUS CAROLINUS, Wils.—The Carolina Rail.
I have seen but four of these birds in this section. They are to be found in September on the Kankakee in large numbers.

Genus FULICA, Linn.

FULICA AMERICANUS, Gmel.—The Coot or Mud-hen.
I have occasionally seen considerable numbers of these birds about our streams, who had been compelled to stop by fatigue or storms to rest, before renewing their journey to the South. They are not natives of the soil.

Genus’ ANSER, Barrere.

ANSER CANADENSIS.—The Wild Goose.
Seen in large flocks every fall and spring in their semi-annual migrations. They rarely ever stop, except they become bewildered during dense fogs.

ANSER BERNICLA, Aud.—The Brent Goose.
Occasionally seen passing over during their migrations. This and the Wild Goose are the only two species I have ever observed here.

Genus ANAS, Linn.

ANAS SPONSA, Wils.—The Wood Duck.
Still seen in considerable numbers, though not so numerous as formerly. They breed here occasionally in the hollow trees.

ANAS AMERICANA, Aud.—The Widgeon.
Occasionally seen in our waters.

ANAS ACUTA, Wils.—The Pintail Duck.
Very common in White Water.

ANAS BOCHAS, Linn.—The Mallard.
The most numerous of all the wild ducks.

ANAS CRECCA, Wils.—The Green winged Teal.
Quite common in the spring.

ANAS DISCORS, Wils.—The Blue winged Teal.
Sometimes very numerous in September and October.

ANAS STREPERA, Linn.—The Gadwall Duck.
Have been seen here, but are rare.

ANAS CLYPEATA, Aud.—The Shoveller Duck.
Frequently seen in spring.
DONATIONS TO MUSEUM

IN JANUARY AND FEBRUARY, 1856.

January 1st.

Several specimens of black band iron ore, from Scotland. From Dr. Wilson.
Mounted specimen of Talpa warouza, from Japan. From Major Le Conte.
Fossil Encrinite, from near Capon Springs, Va. From Mr. A. H. Smith.
Portion of reed encrusted with carbonate of lime, from Lago di Tartara, Italy.

One hundred and fifty-eight species of plants from the Himalayas. Presented by Sir Wm. Hooker through Prof. Asa Gray.

January 8th.

Two specimens of Fiber zibethicus. Presented by Aubrey H. Smith, Esq.
Five specimens of Mygale ——? S. America. Presented by C. Gillou, Esq.
Astrangia astræiformis, from coast of Rhode Island. From Duncan E. Pell, Esq., through Mr. Powell.
Hesperonyx leucopus, (numerous specimens,) from Massachusetts. Presented by Smithsonian Institute through Maj. Leconte.
Very fine specimen of Cinnabar, from the new Almaden mines, California, (weight 16 lbs. 10 oz.) Presented by Capt. J. Henry Smith.

January 22d.

Two species of Murex ——. Presented by Mr. Hanson.
Ceratorrhina polyphemus, C. aurata, C. frontalis and Chrysochroa aurata.


February 5th.

Twelve specimens of iron ores, Berks Co., Pa. Presented by Mr. Gilliams.
Specimens of Bologna phosphorus, from Italy. Presented by Dr. J. R. Barton.
Fossil jaw of a fish, Edestus vorax, from the carboniferous formation of Arkansas. Presented by Wm. S. Vaux, Esq.

February 13th.

Pisa bicorna, Othonia quinquedentata ? Chlorodina floridanus, Erinphia gona-gra, Panopeus Herbstii, Lupa dicantha, Cardisoma Guanhum, Ocyepode arenaris, Grapsus cruentatus, Pagurus granulatus, Pagurus vittatus, Cenobita Diogenes, Porcellana sexspinosa, Squilla scabriicuda, Squilla vittata, (13 genera, 15 species, 26 specimens; two specimens of an Annelide and its tube; four specimens Asterias; eight specimens Ophiura; ten species Polyps, numerous specimens; three specimens fishes, two species; two species Anemone, six specimens; five species Mollusca; five species sponges; two species corals; two species Holothuria, four specimens; six species marine Algae. All from the coast of Florida. Presented by Mr. S. Ashmead.
DONATIONS TO LIBRARY
IN JANUARY AND FEBRUARY, 1856.

January 1st.

Reports of the Superintendent of Education for Lower Canada, 1853 and 1855. From M. Huguet Latour.

The following were presented by Dr. Wilson on the usual condition:


Indice generum Malacozoorura primordia conscriptis A. N. Herrmannsen; editio nova, 8vo.

Flora van Nederlandsch Indië. Door F. A. W. Miquel. Deel 1, af. 1, 2.


Mittheilungen aus Justus Perthes' Geographischer Austadt über wichtige neue Erforschungen auf dem Gesamtgebiete der Geographie. Von Dr. A. Peterman, 1855, Nos. 1—8.

Recherches sur les Crinoïdes du Terrain Carbonifère de la Belgique. Par L. de Koninck et H. le Hon. 4to.

Beiträge zur Nachen kenntniss der Urweltlichen Saugethiere. Von Dr. J. J. Kaup. Heft 2, 4to.

Illustrations of the Birds of California, Texas, &c. By John Cassin. No. 10;

completing Vol. 1.

London Athenæum for Nov., 1855.

Journal of the Franklin Institute for Dec., 1855.


Conchologica iconica. By Lovell Reeve. Parts 148, 149, 150.

Schreber "die Saugethiere," fortgesetzt von Wagner. Supplement band, lief. 14, 15, 16, 17, 4to.

Neues Jahrbuch für Mineralogie, Geognosie, Geologie, &c. Herausg. von Dr. Von Leonhard und Dr. H. G. Bronn, 1852, '53, '54, and Nos. 1—5, 1855.

De l'Homme et des Races Humaines. Par Henry Holland. 12mo.


Report of the British Association for 1854.


8vo., 1855.


Annals and Magazine of Natural History, Dec., 1855.


Annales des Sciences Naturelles. 4me serie, tome 3, No. 6.

Revue et Magasin de Zoologie, 1855, No. 10.

Comptes Rendus. Tome 41, Nos. 18—22.
American Journal of Science and Arts, Jan., 1856. From the Editors.
From the Society.
New York Medical Times, Jan., 1856. From the Editors.
of same. Vol. 2, pp. 333 to conclusion, with index and title page. List of the
Society for 1855; and Anniversary Address of the President, Thomas Bell, Esq.,
May 24, 1855. From the Linnean Society.
Transactions of the Zoological Society of London, Vol. 4, parts 2 and 3. Pro-
ceedings of the same, 1850, ’51, ’52, ’53, ’54 and part of ’55. From the Zoolo-
gical Society.
A Synopsis of the Classification of the British Palæozoic Rocks, by the Rev.
Adam Sedgwick; and British Palæozoic Fossils, by Frederick McCoy. 3d fasc-
ciculus, 4to. From Prof. Sedgwick.
History, condition and prospects of the Indian Tribes of the United States.
By Henry R. Schoolcraft. Part 5, 4to. From the U. S. Commissioner of Indian
Affairs.
Reports of the explorations and surveys for a Railroad from the Mississippi to
the Pacific Ocean. Vol. 1. 4to. From the U. S. War Department through Col.
Abert.
Proceedings of the American Philosophical Society, May to December, 1855.
From the Society.
Charleston Medical Journal and Review for Jan., 1856. From the Editors.
New York Medical Times for Feb., 1856. From the Editors.
Description of the Fossils and Shells collected in California by Wm. P. Blake.
From the Author.

February 12th.

Dr. Wilson presented the following on the usual condition:
Les Trois Règnes de la Nature. Introduction; Le Muséum d’histoire naturelle
par P. A. Cap, 1 vol.; Botanique par M. Le Maout, 1 vol.; Mammifères par M.
Paul Gervais, parts 1 and 2. Royal 8vo.
Abel’s „Aus der Natur,” No. 6.
Systematische Beschreibung der bekannten Europäischen zweifülligen In-
secten von J. W. Meigen. Nos. 1 and 2, 8vo.
Zeitung zur Verbreitung naturwissen. Kenntniss. Von Dr. Ule und Dr. Carl
Müller. Nos. 44—51.
Agrostographia Capensis; Scripsit C. G. Nees ab Esenbeck. 2d ed., 8vo.
Handbuch der Zootomie von Siebold und Stännius. Part 2, 8vo.
Naturwissenschaft und Bibel. Von Andreas Wagner.
Systematische Uebersicht der Thiere Brasiliens. Von Dr. H. Burmeister.
Part 2, 8vo.

February 19th.

Journal of the Academy of Natural Sciences of Philadelphia, New Series,
vol. 3, No. 2. 4to. From the Publication Committee.
From the Society.
DONATIONS TO MUSEUM

IN MARCH AND APRIL, 1856.

March 4th.


Skull and skin of Tamaro, (a species of Antelope from Mindoro, one of the Philippine Isles); skull of Crocodile, from Manilla; skull of Dugong, from Philippines; and skull of Trionyx, from Manilla. Presented by W. W. Wood, Esq., of Manila.

Collection of Lepidoptera from the vicinity of Philadelphia. Presented by Dr. Wm. Camac.

Specimen of Larva of Vesuvius, eruption of 1855. Presented by F. De B. Richards.

March 11th.


Seven specimens Coal Plants, from Schuykill Co., Pa. From the same.

Specimen of Malachite, from St. Paul di Loando, W. Africa. From Dr. J. L. Burtt, U. S. N.


Small collection in Natural History, consisting of shells, insects and fossils. Presented by T. A. Streng, of Saugatuck, Michigan.

Cardamom, from Princes Island. Presented by Dr. J. L. Burtt, U. S. N.


Four teeth and one vertebra of Characerodon; three vertebrae of Crocodile; from the Marl of N. J. Presented by Dr. Hallowell.

Thirteen specimens Coal Plants. Deposited by W. F. Rogers.

Five specimens Silurian Fossils. From the same.

Specular Iron Ore from Marquette, Lake Superior. From the same.

March 18th.


Forty-one specimens of Crustacea from Mexico, comprising 16 Species of 13 Genera, viz:—Albunca, Calappa, Grapsus, Geocarcinus, Galatinus, Guama, Hippa, Mithrax, Othonia, Ozius, Pagurus, Porellana, Squilla. Presented by Wm. S. Wilson, Esq.
Two specimens Helix Leidyi Hall and Meek, from the Mauvaises Terres of Nebraska. Presented by Dr. F. V. Hayden.

Jaws of Shark, from Coast of Florida. Presented by Dr. G. Watson.

April 1st.

Fourteen specimens, nine species Sponges; five specimens Echini; three specimens Ophiactrix; one specimen Sertularia; four specimens Spatangus; twenty-four specimens Corals; thirty specimens recent Shells; seven specimens Fossil Shells; ten fragments fossil Cetacean bones; two specimens eggs of Fulgor; two specimens two species Fungi; four specimens Rocks and one mass of Vermes. From Key West and Manatee River, Florida. Presented by S. Ashmead, Esq.

A collection consisting of about 500 species of dried plants, from the Mountains of Pennsylvania. Presented by C. E. Smith, Esq.

Calcareous Tufa, enclosing Lymnea umbrosa, from near Mohawk, N. J. Presented by Mr. I. Lea.

Two specimens Cyclas, from Alabama. Presented by T. M. Peters.

Pisa n. s.; Panopeus Herbsti; Lupa, young?; Gehalimus macrochelae; Sesarma ciurea; Alpheus heterocheles; Gonodactylus chiragra. From Key West and Manatee. Presented by S. Ashmead, Esq.

Libinia dubia; Platycercinus Sayi; Platynecichus ocellatus; Grapsus pictus; Callappa marmorata; Callappa, n. s.? seven species of six genera, from W. Indies. Presented by Mr. I. Lea.

Bignonia incarnata (fruit); Scolopendra ——? From Trinidad. Presented by Dr. Samuel Lewis.

April 8th.

Seven hundred specimens, eighty species, of Cuban Coleoptera. Presented by G. J. Barnet, Esq., of Cuba, through Mr. Guex.

Agelaius phoenicius and Fringilla canadensis. Presented by Mr. John Kriker.

Eighteen specimens plants; four minerals; (beryl, amethyst, quartz, and felspar.) Presented by Dr. C. P. Hart, of Pittsburg, Penn.

April 15th.

One half of lower jaw of Casteroides Ohioensis; first upper molar Megalonyx Jeffersonii; one canine and fragment of upper jaw with three molars of Castor fiber fossils; one milk molar of Mastodon; and two molars of Casteroides Ohioensis. From Prof. Silliman, in exchange.

Pinna, from Teresa Bay, Florida; three specimens Calcedony; a Diodon, from Key West; and three Calcedonized corals, from Tampa Bay, Florida. Presented by S. Ashmead.

Seventy specimens (85 species) of reptiles. In exchange from the Jardin des Plantes, Paris.

Angora Cat. Presented by Mrs. Wm. Wister, Germantown.

One Pleuronectes; one Murina; two Ophisaurus; and one Coluber. Presented by Mr. Wm. G. Burke, through Mr. Cassin.

Syngnathus fasciatus, from S. America. From Dr. Dook.

April 22d.

Sixty-six species Marine Algae, from the Coast of Florida. Presented by S. Ashmead.

Native Silver, from Lake Superior. Presented by Mr. Hoopes.

Fifteen specimens Triton niger and one of Phrynosoma. Presented by Dr. Uhler.

Marine Algae collected by Mr. S. Ashmead, at Key West, Florida, during the winter of 1855,'56, and presented by him:—Padina pavonia, Lam., Sand Key, Florida.

DONATIONS TO LIBRARY

IN MARCH AND APRIL, 1856.

March 4th.


Report of the Secretary of the Treasury on the State of the Finances for the year ending June 30, 1855. From the Hon. Wm. Bigler.

Report of the Secretary of the Treasury on the Commerce and Navigation of the United States for the year ending June 30, 1855. From the same.

Report of the Superintendent of the Coast Survey for the year 1854. 4to. From the same.


Japanese Botany: being a fac simile of a Japanese Book, with introductory notes and translations. From the Translator (Dr. Jos. Wilson, U. S. X.)

March 11th.

Dr. Wilson presented the following on the usual condition:

Ansichten der Natur von Alex. von Humboldt. 2 vols. 8vo.


Histoire naturelle des Mollusques terrestres et fluviatiles de France. Par A. Lioquin Taudon. 5 liv. 8vo.
Mineralienbuch oder Allgemeine und besondere Beschreibung der Mineralien. Von Dr. F. A. Schmidt. 4to.
Neues Jahrbuch für Mineralogie, Geognosie, &c.; herausg. von Dr. von Leonhard und Dr. H. G. Bronn. 1855. No. 6.
Annals and Magazine of Natural History for Jan. and Feb., 1856.
Report of the British Association for 1851.
London Athenæum for January, 1856.
Comptes Rendus. Tome 42, Nos. 1, 2, 3.
Philosophical Transactions of the Royal Society of London, 1851, part 2; 1852, parts 1 and 2; 1853, parts 1, 2, 3; 1854, parts 1 and 2; 1855, parts 1 and 2. 4to.
Maps of the Society for the diffusion of Useful Knowledge. (Bound in one vol. folio.)
The last of the Arctic Voyages in H. M. S. Assistance, Capt. Sir Edward Belcher, in search of Sir John Franklin. 2 vols. 8vo.
Museum Carolssianum, in quo novas et selectas Aves exhibit Andreas Sparmann. Folio.
April 1st.
Second Supplement to Dana's Mineralogy. By the Author. From Prof. Dana.
On the Birds received in Collections from Santa Fé de Bogota. By P. L. Sclater. From the Author.
First and second Annual Reports of the Geological Survey of Missouri. By G. C. Swallow. 8vo. From Mr. F. B. Meek.
Revision of the Cicindelas of the United States. By John L. Le Conte, M. D. From the Author.
Annals of the Lyceum of Natural History of New York, vol. 6, No. 5. From the Lyceum.
Charleston Medical Journal and Review, March, 1856. From the Editors.
April 8th.
Dr. Wilson presented the following on the usual condition—
Annales des Sciences Naturelles. 4me s. tome 4, No. 2.
Comptes Rendus. Tome 42, Nos. 4, 5, 6, 7, 8.

Neues Jahrbuch für Mineralogie, Geognosie, &c., herausg. von Dr. K. C. v. Leonhard und Dr. H. G. Bronn. 1855. No. 7.

Malakozoologische Blätter. Nov. and Dec., 1855.

Zittings der Verbreitung naturwissen. Kenntniss, &c. Von Dr. Otto Ule und Dr. K. Müller. 1855, No 52; 1856, Nos. 1—4.

London Athenæum for February, 1856.

Conchologia iconica. By Levell Reeve. No. 151.

Journal of the Franklin Institute, March, 1856.

Zoology of the Voyage of the Herald in 1845—'51, Capt. Henry Klett, Commander, part 1; Botany of the same, part 6. 4to.

Ichthyology of South Carolina. By John E. Holbrook. Nos. 1—10. 4to.


Royal 8vo.

Die Alpen. Von Bernhard Cotta.

Essai sur l'histoire de l'Espèce Humaine. Par C. A. Walckenaer. 8vo.

La Science Politique fondée sur la science de l'Homme, on étude des Races Humaines. Par V. Courtet de l'Isle. Royal 8vo.

Uber die Schädel der Auren insbesondere über die selither in Österreich aufgefundenen. Von L. J. Fitzinger.

De Salamandra terrestris vita, évolutione, formatione tractatus. Autore A. F. Funk.

April 15th.


Second copy of same. From General Lawson.


New Orleans Medical and Surgical Journal for March, 1856. From the Editors.

New York Medical Times for April, 1856. From the Editors.

General description of a remarkable fossil not known to be described, and by some supposed to be an Ichthyodorulite. By Prof. Wm. Hopkins, of Geneva College, N. Y. From the Author.

Notes on the Anatomy of Gymnopus spiniferus, Dum. From the Author.

April 22d.


Annual Report of the Trustees of the New York State Library. 1856. From the Trustees.

Comptes Rendus. Tome 41, No. 27; Table des Matières du Tome 40. From Dr. Wilson.

Annales des Sciences Naturelles. 4me serie. vol. 4. No. 1. From the same.

Journal of the Franklin institute for April, 1856. From the same.
ix.

DONATIONS TO MUSEUM
IN MAY AND JUNE, 1856.

May 6th.

Five Indian Crania, (Klikatak, Chinook, Skno quammy, Nisqually,) from Washington Territory. From Dr. J. H. B. McClellan.

Living Proteus anguinus, from the Cave of Adelsberg, Styria. From Capt. McClellan.

A collection of Plants. From Mr. Tuckerman.

A collection of Arctic Plants. From Dr. Kane.

Myristica moschata, from China. From S. Drinker, Esq.

Eighty-seven specimens of Plethodon niger, and eight specimens of Pseudotriton ruber. From Drs. Hallowell and Leidy.

Twenty-seven specimens of larvae of Pseudotriton ruber, in various stages of development. From Dr. Hallowell.

Six Plethodon erythronotus; two P. cinereus; two male and two female Cis tuda Carolina. From Mr. W. A. Hill.

Numerous specimens of Staurotypus odoratus, and one of Cinos ternon Pennsylvanicum. From Dr. Hallowell.

Plethodon niger, Spele rpes (Cylindrosoma, Tsch.) bilineata. From Dr. Uhler.

One specimen of Poly chrus marmoratus; three specimens of Amphib e na fuliginosa; one specimen of Hyla; one of Dry nas; and twelve other serpents, fishes and insects, from Suriname. From Dr. Wm. Keller.

Astacus affinis, from the neighborhood of Philadelphia; eight living specimens of Plethodon niger. From Dr. Hallowell.

May 13th.

Spermophilus franklini. From Mr. R. Kennicott.

Cuttle Fish, from the Atlantic Coast. From Mr. Ashmead.

Three specimens of lithoid Carbonate of Iron, from Maryland. From Mr. Chas. E. Smith.

May 20th.

Emys insculpta, from the neighborhood of Norristown. From A. C. Hill, Esq.

Brachy rros an ameus, Hall., from the neighborhood of Philadelphia. From Dr. Hallowell.

Skeleton of an Albatross, (Diomeda exulans.) From Dr. Ruschen berger.

Twelve species of Shells, from Cuba. From F. A. Sauvalle, of Cuba.

June 3d.


Beans of Gymnoca rpus Canadensis. From Dr. J. C. Fisher.

Specimens of four species of fishes, (Lenciscus nig ronasutus.) From Dr. Corse.

June 10th.

Chelonura serpentina. (A very large specimen.) From Mr. S. Tiffany, East Creek, N. J., through Mr. W. Ashmead.

The Herbarium of Jas. Read, Esq., consisting of plants of North and South America, West Indies, &c. From Mrs. Maria Eckert.

Skull of the Walrus, from the beach at Long Branch, N. J. From Prof. J. F. Frazer, with the provision that it may be loaned at any time, to a responsible Naturalist for comparison or description, with the consent of two Curators.

One specimen of Astr e meria, (the plant which yields the South American arrow root.) From Dr. Ruschenberger, through Dr. Carson.

Ablabes eximus, Emys geographica, Tropidonotus niger, Rana pipens, (two specimens,) an Elaphis, (allied to guttattus,) 5 feet long, from Buffalo, New York; and a large collection of fishes, from the same locality. From Dr. G. Watson.

Two Araucanian Skulls. From Dr. Ruschenberger.
A small collection of Neuroptera, from Lake Superior; Phalangopsis, (two specimens;) Astacus, from Mammoth Cave. From Dr. Le Conte.

Emys insculpta, E. Muhlenbergii, E. picta, E. guttata; Staurotypus odoratus. from Norristown. From Mr. A. C. Hill.

Two Iguanians (Proctotretus;) two innocuous serpents, (Colubridae,) from Chili. From Dr. Ruschenberger.

Proteus anguinus, from Adelsberg. From Dr. Foltz, U. S. N.

June 17th.

One adult specimen of the Musk Ox, (Ovibos moschatus,) in excellent condition. From Dr. E. K. Kane, U. S. N.

One hundred and fifty specimens of forty-three species of Marine Shells, from the coast of Peru. Embryo Whale; two specimens (one species) of Bird Skins; two specimens of Mammal Skins, from Behring's Straits; Octopus, from Conception Bay; Skull of an Otter, from Quiniquina Island. From Dr. T. J. Turner, U. S. N.

Indian Pot, from Washington Co., Alabama. From Wm. Coleman, through Dr. C. D. Meigs.

Alluvial Wood, found at Philadelphia, twenty-four feet below the surface. From Mr. J. S. Phillips.

Twenty-four hundred specimens of about nine hundred species of Coleoptera from different parts of the globe. From Dr. T. B. Wilson.

DONATIONS TO LIBRARY

IN MAY AND JUNE, 1856.

May 6th.

The following were presented by Dr. Wilson, on the usual condition:—


Annals and Magazine of Natural History. March and April, 1856.

London, Edinburgh and Dublin Philosophical Magazine. March and April, 1856.


Zeitung zur Verbreitung naturwissenschaftlichen kenntniss, &c. Herausg. von Dr. O. Ule und Dr. K. Müller. 1856. Nos. 5—12.

Mittheilungen aus J. Perths' Geographischer Anstalt über Wichtige neue Erforschungen auf dem Gesamtgebiete der Geographie von Dr. A. Petermann. 1855. Nos. 5, 6, 9, 10, 11, 12.


Algarum Unicellularium genera nova et minus cognita. Auctore A. Braun. 4to p. Lipsiae, 1855.
Der Geschlechtsapparat der Stylammatophoren in taxonomischer Hinsicht gewürdigt. Von A. Schmidt. 4to p. Berlin, 1855.

May 20th.
American Journal of Science and Arts, May, 1856. From the Editors.
Charleston Medical Journal and Review, May, 1856. From the Editors.
The Canadian Naturalist and Geologist. By E. Billings. Vol. 1; Nos. 1 and 2. From the Editor.
Untersuchungen über den inneren Bau einiger Rheinischen Brachiopod. Von Dr. Fr. Sandberger. 8vo p. From the Author.

June 3d.
The following were presented by Dr. Wilson, on the usual condition:—
The Zoology of the voyage of the Herald. Reptiles and Fishes; by Sir J. Richardson. Botany; by B. Seemann, Ph. D. Parts 1—5, 4to.
Catalogues of the British Museum in 8vo, viz.: Mammalia, part 2; Fish, marine Polyzoa, parts 1 and 2; Mollusca, part 4; Shells of South America collected by M. D’Orbigny; Shells of Cuba, collected by M. La Sagra; Shells of the Canaries, collected by MM. Webb and Bertholet; Bivalve Shells, part 1; Terrestrial operculated Mollusca; Entozoa; Nomenclature of Diptera, No. 1; Lepidoptera, parts 1, 2, 12 and 16; Neuroptera, parts 1, 2, 3, 4; Nomenclature of Neuroptera; Hymenoptera, parts 1 and 2; Nomenclature of Hymenoptera; Coleoptera, part 7; Parasitic insects, ———.
Crania Britannica, by J. B. Davis and J. Thurnam, M. D. Decade 1, 4to. London, 1856.
Annales des Sciences Naturelles. 4me serie, Vol. 4, No. 4.
Xenia Orchidaceae. Von H. G. Reichenbach. Heft 5, 6, 4to.
Bryologia Javanica. Auctoribus F. Dozy et J. H. Molkenboer. Fascie, 6, 7, 4to.
Journal of the Franklin Institute, May, 1856.
Abels aus der Natur, No. 7.
Zeitung zur Verbreitung Naturwissen. Kenntniss, &c., Herausg. Von Dr. Ule und Dr. Müller. 1856, Nos. 13—16, 4to.
Bouplandia, Zeitschrift für die gesammte Botanik. 4 Jahrgang, Nos. 1, 2, 5, 6.

June 10th.

Report of the Secretary of the Navy for 1855. Washington, 1855. From the Navy Department.
New Orleans Medical and Surgical Journal, Vol. XII., No. 6. From the Editor.
New York Medical Times, Vol. V., No. 9; From the Editor.
Verhandlungen des Zoologisch-botanischen Verein in Wien, 1853, 1854, and Nos. 1, 2, 3 of 1856. 8vo. From the Association.
Denkschriften der Kaiserlichen Akademie der Wissenschaften. Mathematisc-naturwissenschaftliche classe. Band 9, 4to. From the Academy.
Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. Mathematische-Naturwissenschaftliche classe, XV. Band, No. 3, XVI. Band, Nos. 1, 2, XVII. Band, Nos. 1, 2, 3, 8vo. From the same.
Jahrbuch der Kaiserlich-Königlichen Geologischen Reichsanstalt, Nos. 1, 2. Wien, 1855. From the Institute.
Abhandlungen der Kaiserlich-Königlichen Geologischen-Reichsanstalt. II. Band. Wien, 1855. From the same.

Bulletin de la Société Impériale des Naturalistes de Moscow, 1854, Nos. 2, 3, 4, and 1855, No. 1. From the Society.

Questionum Ionicarium Liber. Author Dr. J. F. Lobeck, 8vo p. From the Author.

June 17th.

Fourth Annual Report of the Trustees of the Free Public Library of New Bedford. 8vo p. From the Trustees.


Report on the Geology of Northern and Southern California. By Dr. John B. Trask. 8vo p. From the Author.

Mittheilungen der Naturforschenden Gesellschaft in Emden, für 1854. From the Society.

Die Temperatur von Emden, als Ergebniss der daselbst von 1844 bis 1853 auf den Stand des Thermometers gerichteten Beobachtungen. Von Dr. M. A. F. Prestel. 4to p. From the same.


Ueber die Vertilger pflanzenschädlicher Insecten. Von G. Frauenfeld. 8vo p. From the Author.

Aufzählung der Algen der dalmaturischen Küste, &c. Von G. Frauenfeld. 8vo p. From the Author.

Beitrag zur Insectengeschichte. Von G. Frauenfeld. 8vo p. From the Author.

Beobachtungen über Insectenmetamorphosen. Von G. Frauenfeld. 8vo p. From the Author.

Ueber die ersten Stände von Plinthus Megerleli Pz. Von G. Frauenfeld. 8vo p. From the Author.


Köhlerglande und Wissenschaft. Von Carl Voght. Giessen, 1853. 8vo p. From Dr. F. A. Genth.


The following were presented to the Academy by Dr. Wilson, on the usual conditions:—


Sea Anemones, or Tanks and their inhabitants. Bath, 1856.


Edited by John Lindley, Ph. D. &c. Parts XIII. and XIV.


Mittheilungen aus Justus Perthes' Geographischer anstalt über Wichtige neue Erforschungen auf dem Gesamtgebiete der Geographie von Dr. A. Petermann. 1856, 1, 4to.


Bonplandia, Zeitschrift für die gesammte Botanik. IV. Jahrgang, No. 7, 8.
DONATIONS TO MUSEUM
IN JULY AND AUGUST, 1856.

July 1st.
The Herbarium of Dr. W. P. C. Barton. Presented by Dr. T. B. Wilson.
Deweylile, Bone Hills, Chester Co. From Dr. Wm. M. Uhler.
Fowl with four legs. From Dr. Martin, U. S. N.

July 8th.
Three specimens Pugettia gracilis; two Epialtus productus; Cancer magister;
Pseudo carcinus Oregenensis; Telmessus serratus; three marine Annelida; one
Actinia; five Echinoödermata; 10 Mollusca. Collected by Geo. Davidson, Esq.,
U. S. Coast Survey, and presented by Dr. Le Conte.
Numerous specimens of Lavas and Sulphurs from the volcanoes of Sandwich
Islands. Presented by Dr. Charles Guillou, through Constant Guillou, Esq.
Numerous specimens of fossil bones of the Peccary, Dicotyles compressus, Ga-
lena, III. Presented by Dr. Edward D. Kittoe.

July 15th.
Asbestos; Cellular Quartz, Bone Hills, Chester Co., Pa. Presented by Mr
Uhler.
One Centipede, Venezuela. Presented by Dr. A. Lacombe.
One Hornodon, Venezuela. From Capt. James Wilson, through Mr. Draper.
One Pseudotriton flavissimus and one P. marginatus, Georgia. Presented by
Maj. Le Conte.
Thirty-three specimens Plethodon nigerr; 240 specimens Astacus Bartonii, from
neighborhood of Philadelphia. Presented by Dr. Hallowell.

August 12th.
Two Eskimo Crania. From Drs. J. K. Kane and S. W. Mitchell.
One specimen Hyla graciosa, five H. squirla, six Cystignathus nigritus, one
Bufo guercicus, two Engystoma Carolinense; from Georgia. Presented by
Major Le Conte.
One Emys Muhlenbergii, from the neighborhood of Philadelphia. Presented
by Major Le Conte.
Nine larvae of Spelerpes bilineata, of different ages. From near the Falls of
Schuylkill. Presented by Dr. Uhler.
Two living specimens of Tropidonotus leberis, from the same locality. Pre-
sented by Drs. Leidy and Uhler.
Various young and more matured specimens of Astacus Bartonii, found abun-
dantly near the Falls of Schuylkill. Presented by Dr. Bridges.
A living specimen of Diemtcythus minibius (Raf.,) (Salamandra symmetrica,
Harlan,) from Schuylkill Haven. Presented by Mr. C. M. Cruson.
Two specimens Menobranchus, from Portage Lake, Lake Superior. Presented
by Mr. Wm. E. Dickinson, of the Isle Royale Mine, L. S., through Mr. B. A.
Hoopes.
Two species Surnia hudsonia, one species Tetras canadensis. From Lake
Superior.
DONATIONS TO LIBRARY
IN JULY AND AUGUST.

July 1st.

Apercu Historique au Sujet de la Société pour Secourir les Noyés, instituée a
Amsterdam par J. A. Kool. 8vo. Amsterdam, 1855. From the Society.

Eulogy on the life and character of Theodoric Romeyn Beck, M. D., &c. By F. H. Hamilton, M. D. From the Author.
The following were presented by Dr. Wilson on the usual conditions:
The London Athenæum, May, 1856.
Die Mysterien der europäischen Insectenwelt. Durch Prof. Dr. J. Gistel, Kempten, 1856.

July 8th.

New York Medical Times, July, 1856. From the Editor.
Charleston Medical Journal and Review, June, 1856. From the Editor.
Entomologische Zeitung. Herausg. von dem Entomologischen verein zu
Stettin. 16 Jahrgang. Stettin, 1855. From the Union.
Neues Jahrbuch für Mineralogie, Geognosie, Geologie und Petrefakten-Kunde,
Stuttgart, 1856. From Prof. Bronn.
Gelehrte Anzeige. Herausg. von Mitglie dern der k. bayer Akademie der
Wissenschaften. Band 40, 41. From the Royal Academy of Sciences of Munich.
Über die Gliederung der Bevölkerung des Königreichs Bayern. 4to. München, 1855. From the same.
Rote in der öffentlichen Sitzung der Königl. Akad. der Wissenschaften, &c.
4to. München, 1855. From the same.
Verzeichniss der Verlagsschriften, Reden und Abhandlungen der k. akad. der
Wissenschaften. München, 1855, 12mo. From the same.
Jahresbericht des physikalischen Vereins zu Frankfurt am Main. From 1847
to 1854, inclusive. From the Senckenberg Natural History Society.
Verzeichniss der in dem Museum der Senckenbergischen Naturforschenden
Gesellschaft aufgestellten Sammlungen. Abtheilung 1, 4, und Ethnographische
Gegenstände. Frankfurt am Main. 1842, 1852, 1853. From the same.
Jahresberichte über das Frankfurter Dr. Senckenbergische Burgerhospital,
&c. Von Dr. J. B. Lorey, 1, 1846 bis 1852. Göttingen, 1854. From the same.
Statuen des physikalischen Vereins. Frankfurt am Main, 1855. From the same.
Observationes anatomicae de Parte Cephalica nervi Sympathici, &c. By J. G.
Varretrapp. Franc. ad Mænum, 1831. From the same.
De Melanosi. Autor E. Schilling. Franc. ad Mænum, 1831. From the same.


Disquisitones anatomico-comparatieae de membro Piscium Pectorali, &c. A. C. Mettenheimer, M. D. Berolini, 1847. From the Author.

Mémoires et Publications de la Société des Sciences, des Arts et des Lettres du Hainau. 2e serie, T. 3me, 1856. From the Society.

De Symmetria et Asymmetria organorum animalitatis, imprimis Cranii. Dr. J. C. G. Luæe. Marburgi, 1839. 4to. From the Senckenberg Natural History Society.

Schädel abnormer Form. Von Dr. J. C. G. Luæe. Frankfurt am Main, 1855. From the same.

July 15th.

History of the Ordinance of 1787. By Edward Coles. 8vo p., 1856. From the Author.


Verzeichniss einer Sammlung Südasfricanischer Naturalien welche am 18ten Aug., 1834, &c. Berlin, 1834. From the same.

Verzeichniss einer Sammlung von Saugethieren und Vögeln aus dem Kaffernlande, nebst einer Käfer-Sammlung, welche am 14ten Maarz, 1852, &c. Berlin, 1842. From the same.

Verzeichniss verkäuflicher Doubletten der entomologischen Sammlung der Königlichen Universität zu Berlin.


The Canadian Naturalist and Geologist, Vol. 1, No. 3. From the Editor.

Science and the Bible, No. 3. By J. D. Dana, LL. D., &c. 8vo. p., From the Author.

The following were presented by Dr. Wilson, on the usual conditions:


Annales des Sciences Naturelles, T. iv., No. 5.

Comptes Rendus, T. xlii., No. 20, 21.

Bonplandia, Zeitschrift für die gesammte Botanik. iv. Jahrgang, No. 9, 10.

Die Natur. Zeitung zur verbreitung naturwissenschaftlicher Kenntniss, &c. 5 Jahrgang, No. 21, 22, 23.

July 22d.


Annual Report of the Trustees of the New York State Library, 1856. From the Trustees.

Recensio Avium in Academici Liberi Baronis de Mueller Ornithologico Museo
Stuttgardiano collectarum. Colligit Dr. C. G. Calwer. Stuttgardiae, 1854.
Dr. Wilson presented the following, on the usual conditions:
Revue et Magazin de Zoologie Pure et Appliquée, 1856. No. 5.
Bonplandia. IV. Jahr., No. 11.
Zeitschrift für Malakozoologie. Pages 17 to 48, inclusive.

August 5th.
The following were presented by Dr. Wilson, on the usual conditions:
Flora van Nederlandsch Indië. Door F. A. W. Miquel, 1ste Deel Aflevg. 4.
Leipzig, 1855. 8vo.
Lehrbuch der Anatomie und Physiologie der Gewächse. Von Dr. H. Schacht,
1er Thiel. Berlin, 1855. 8vo.
A. Kolliker, 7er Band, Supplement heft. Leipzig, 1856.
Die Conchylien des norddeutschen Tertiärgebirges von Dr. E. Beyrich, 4te
und 5te Lieferung. Berlin, 1856.
Mittheilungen aus Justus Perthes Geographischer Anstalt über Wichtige neue
Erforschungen auf dem Gesamtgebiete der Geographie von Dr. A. Petermann.
1856, ii., iii., iv.
Novitates Conchologicae. Von Dr. L. Pfeifer. 5. lieft. Cassel, 1855.
Flora Tertiair Helvetiae. Von Dr. O. Heer. Lief 2, 3.
Georg Forster der Naturforscher des Volks, von J. Moleschott. Frankfort,
1855.
Systema Lichenum Germaniae, von Dr. G. W. Koerber. Breslau, 1856. 8vo.
Sylloge Florae Europaeae seu Plantarum vascularium Europae Indigenarum,
Classification der Brachiopoden von Thos. Davidson, Esq., &c., mit einigen
neuen Zusätzen verschen von E. Suess. Vienna, 1856. 4to.
Zoonomische Briefe, Allgemeine Darstellung der thierischen organization.
Von Dr. H. Burmeister, 1er Theil. Leipzig, 1856. 8vo.
Untersuchungen über die Entwicklung der Blutgefäße, &c. Von Dr. T. Bill-
roth. Berlin, 1856. 4to.
Geognostische Darstellung der Steinkohlenformation in Sachsen von H. B.
Geinitz, 1te Abtheilung. Leipzig, 1856. 4to.

August 12th.
Ethnographic view of Western Africa. From Dr. S. Weir Mitchell.
The Canadian Journal of Industry, Science and Art, Nos. 1, 2, 3 and 4, 1856.
From the Canadian Institute.
The Peninsular Journal of Medicine, July, 1856. From the Editors.
Speech of Hon. J. R. Tyson, delivered in the House of Representatives, July
12th, 1856. From the Author.
From the Society.
the Society.
New York Medical Times, July, 1856. From the Editor.
From the Academy.

August 19th.
The following were presented by Dr. Wilson on the usual conditions:
The London Athenaeum, June, 1856.
Comptes Rendus. T. xlii., Nos. 22—26, inclusive.

DONATIONS TO MUSEUM
IN SEPTEMBER AND OCTOBER, 1856.

September 2d.

A collection of Fossil bones consisting of the humerus of a species of Cervus, the humerus of Canis primevus, and 5 cervical and 6 caudal vertebrae, fragments of 18 dorsal and lumbar vertebrae, fragments of 7 ribs, portions of 2 tibiae, small fragments of 1 scapula, 3 fragments of an ulna and a radius, 2 condyles of a femur, 3 fragments of an innominatum, 1 calcaneum, 1 astragalus, 2 cuboids, 1 cuneiforme, 5 metatarsals, 2 metacarpals and 5 phalanges of Megalonyx Jeffersoni. From a cave in the north of Alabama.


Two fruits from Rio Grande. Presented by Dr. F. A. Genth.

Two species Prionotus and 2 do. Platessa, Abscom. Presented by Dr. Boker.

Astacus, n. s., Dayton, Ohio. Presented by Dr. J. C. Fisher.

Fossil coral, Ireland. Presented by John Vaughan.

Two Shark teeth, New Jersey. Presented by Dr. Coates.

Two Salamandra rubra. Presented by Dr. Uhler.

Twelve young of the Rattlesnake. Presented by Dr. Rand.

One Coryphodon constrictor, N. Jersey. Presented by Mr. Ashmead.

Five Ambystoma punctatum, N. Hampshire. Presented by Dr. Le Conte.

Four large species Menopoma alleghaniensis, Ohio River near Pittsburg. Presented by Dr. Alfred King.

One Heterodon platyrhynos, Penna. Presented by Dr. Wilson, U. S. N.

Serpentine precious, Newburyport, Mass. Presented by Dr. Uhler.

Allanite, Chester Co. Presented by Dr. W. D. Hartman.

Skeleton of Tropidonotus sipedon. Presented by Mr. F. Schafhirt.

September 9th.

Fifty specimens—25 species—Fishes from Beasley’s Point, N. J. Presented by Mr. Ashmead and Dr. Leidy.

Specimens Stalactites from crevices of the cliff limestone, Galena, Ill. Presented by Hon. John G. Potts.

Agate, Calcite, Monsterideo. Presented by F. Bond, Esq.


Two fossil Shark teeth, Simoda; two fossil shells, Porto Praya; Crystals sulphate of lime, Cape de Verde; one specimen clay, Napa, Leo Choo; one Helix. Presented by Dr. Joseph Wilson, Jr., U. S. N.

One Gorgonia, coast of Delaware. Presented by Chas. Gilpin, Esq., through Dr. Elwyn.

September 16th.

A collection of reptiles as follows: Five Emys pseudo-geographica, three Crotaphythus collaris, five Plesiophodon obsoletus, two Holbrookia maculata, five Phrynosoma cornutum, seven Cnemidophorus gularis, two Ophisaurus striatulus, two Elaphis alleghaniensis, one Coryphodon flaviventris, one Coronella gentilis, one Tantilla gracilis, three Ablabes calligaster, two species Tropidonotus nudet, one T. ordinatus, three Heterodon nasicus, four Trigonocephalus contortrix, one Crotalus confluentus, two Herpetodryas vernalis, one Rana halecina, one R. pippini, one Engystoma, 22 specimens Bufo americanus? one B. punctatus, four Rana conspersa; one Ambystoma—79 specimens, 24 species, of 21 genera. Also Helix monodon, H. fraterna, H. alternata, H. albolarbus, H. arborea, and Pupa armigera. From Kansas. Presented by Dr. Hammond, U. S. A.

Two specimens mountain and arenaceous Guano, from Monk’s Island and Esmerelda. Presented by Robert B. Baker.

Dactylophorous, Trinidad, W. I. Presented by Dr. S. Lewis.

September 23rd.

Mergulus albus. Presented by Dr. S. Lewis.


Selenite. Presented by Dr. LeConte.

Native alum, California. Presented by A. H. Smith.

October 7th.

Several fragments of bones of Megatherium, and a molar tooth and several fragments of bones of the Mammoth, (Elephas.) From the excavation of the Brunswick Canal, Georgia. Presented by J. S. Phillips.

Two Anas boschas; one Oidemia perspicilata. Coast of Oregon. Presented by G. B. Davidson, Esq.

Original of Coluber caligaster, Say. Presented by Prof. J. Holbrook.

Fox squirrel. Presented by Thos. Kite.

Skin of Cervus macrotus. Presented by G. B. Davidson.

Ptilonopes Penonsii, Peale; Somoan Islands. Presented by Dr. Ruschenberger.

Eleven species, nine genera, Fishes from Lake George. Presented by W. S. Vaux, Esq.

Three species, two genera, Fishes from Schuykill River. Presented by Dr. Uhler.

One species Fish. Presented by Mr. Guillou.

October 14th.

A collection of Fossils: Two vertebrae of Basilosaurus, four other vertebrae, twelve fishes vertebrae, sixteen shark teeth, two corals, and four casts of two species Nautilus; from the Eocene of Alabama. Presented by Dr. S. W. Clanton.
One hundred species of U. S. coast shells, including some recently discovered. Presented by Wm. Stimpson, Esq.

Four species of Fishes; 17 specimens, 10 species, Crustacea, California. Presented by G. B. Davidson, Esq., U. S. Coast Survey, through Dr. Le Conte.

Fossil Echinus, cretaceous; Alabama. Presented by Dr. J. Nott, of Mobile.

Sixteen specimens, three species reptiles, New Jersey. Presented by Mr. C. Fisher.

Three Pseudotriton niger, Schuylkill River. Presented by Dr. Uhler.

One Heredia oregonensis, Gir.; California. Presented by Mr. Geo. B. Davidson, of the U. S. Coast Survey.

Two coal plants, and a nodule sulphuret iron. Presented by Dr. J. J. Hayes.

One Coral, Simoda Bay. Presented by W. Stimpson, Esq.

October 21st.

Twenty-nine specimens, 11 species of reptiles of the genera Rana, Bufo, Plesioto, Tropidonotus and Herpetodryas. From Dr. Miles of Flint, Genessee Co., Mich., through Mr. Bowers.

Two specimens Wavellite, Chester Co., Pa. From R. H. Lambert, through Jacob Pierce.

Albino Sylvia marilandica. From C. Kuhn.

DONATIONS TO LIBRARY

IN SEPTEMBER AND OCTOBER, 1856.

September 2d.

The American Journal of Science and Arts, September, 1856. From the Editors.


The New Orleans Medical and Surgical Journal, July, 1856. From the Editor.

Mémoires de la Société Royale des Sciences de Liège, T. 10me. From the Society.


Württembergische naturwissenschaftliche Jahreshefte. 12ter Jahrgang 2tes Heft. From Verein für Vaterländische Naturkunde.

Abhandlungen der Mathemat-Physikalischen classe der Königlich Bayerischen Akademie der Wissenschaften 7ten Bs. 3te Ab’g. München, 1855. From the Royal Academy of Sciences of Munich.

Rede über die Grenzscheide der Wissenschaften. Gehalten von F. von Thiersch. From the same.

Rede über den Begriff und die Stellung des Gelehrten. Gehalt. von F. von Thiersch. From the same.

Denkrede auf Johann Repomuk von Fuchs. Von F. von Kobell. From the same.

Verhandlungen des natur historischen Vereines der Preussischen Rheinlande und Westphalens. Herausg. von Prof. Dr. Budge, 12ter Jahrgang, 3tes und 4tes Heft, und 13ter Jahrgang, 1es Heft. From the Union.

September 9th.

Charleston Medical Journal, September, 1856. From the Editor.

New York Medical Times, September, 1856. From the Editor.

The following were presented by Dr. Wilson on the usual conditions:

The Athenæum, July, 1856.
Comptes Rendus, T. xliii., Nos. 1 and 2.

September 16th.

Mémoires de la Société Impériale des Sciences, de l’Agriculture et des Arts, de Lille, Supplement a l’année, 1853. From the Society.
Memorias de la Real Academia de Ciencias de Madrid. T. ii. 1 ser. ciencias exactas, t. 1, pte 1a. 1853. T. i. ciencias naturales, t. 1, pte 3a. 1854. From the Academy.
Resumen de las actas de la Academia Real de Ciencias de Madrid, 1851 to 1853. From the Academy.
Third Supplement to Dana’s Mineralogy. From the Author.
The following were presented by Dr. Wilson on the usual conditions: Physiotypia Plantarum Austriacarum. Von Constantin von Ettingshausen und Alois Pokorney. Wien, 1856, 1 vol. text, 5 vols. plates.
Revue et Magazin de Zoologie, 1856 No. 7.
Zeitschrift für Wissenschaftliche Zoologie, 8ter band. 2tes Heft, 1856.
Die Tineen und Pterophoren der Schweiz. Von Prof. Heinrich Frey, Zurich, 1856.
Mittheilungen aus Justus Perthes’ Geographischer Anstalt, &c. Von Dr. A. Petermann, 1856, v. vi.
Xenia Orchidacea. 8tes heft, 1856.
Über den Bau der Nerven-Primitivfaser und der Nervenzelle. Von Dr. B. Stillig. Frankfurt a. m., 1856.
Beitrag zur Nacheren Kenntniss der Urweltlichen Säugethiere, von Dr. J. J. Kaup, 1tes heft. Darmstadt, 1854.
Flora Tertiaria Helvetiae. Von Dr. O. Heer, iv. v. Lieferung.
Comptes Rendus, T. xliii., Nos. 3, 4, 5, et Table des Matières du Tome xli.
Naturgeschichte der Insecten Deutschlands. Begonnen von Dr. W. F. Erichson Fortgesetzt von Dr. H. Schaum, G. Kraatz and H. V. Kiesenwelter, 1ste Abth. 1ste Band, 1ste Lief.—2ter Bd. 1ste, 2te Lief. Berlin, 1856.

September 23d

The following were presented by Mr. Edward Wilson on the usual conditions:
Curtii Sprengel, Commentarius de Partibus quibus insecta spiritus ducunt. Lipsiae, 1815.
Beschreibung einiger minderbekannten Seethiere, und ihren Eigenschaften.
Von J. B. Bohadsch, Dresden, 1776.
Epistola de Balanopteris quibusdam ventre sulcato distinctis. Quam viro
Hornschuch. Gryphiæ, 1825.
Die Fährten-Abdrücke im bunten Sandsteine bei Jena. Von Dr. K. Koch
und Dr. E. Schmid, Jena, 1841.
Bericht über die Naturhistorischen Reisen der Herren Ehrenberg und Hemp-
rich, Gelesen von Alex. von Humboldt. Berlin, 1829.
Illustrations al Genere Cipridina e descrizione di una novella specie Di Oron-
zio Gabriele Costa.
Ein Nachtrag über den Didus Ineptus von Lehmman, 1843.
Etwas über die Natur Wunder in Nord America zusammengetragen. Von
Chas. Cramer. St. Petersburg, 1837.
Facts concerning the natural history of the Gigantic Irish Deer. By H. H.
Richardson. Dublin, 1846.
Öber die glatten Hai des Aristoteles, und über die Verschiedenheiten unter
Berolinæ, 1847.
Lipsie, 1820.
Die Insekten im Bernstein. Von Dr. G. C. Berendt, 1tes heft. Danzig, 1830.
Observationes in Porcelli sine Cavia Cobaya Historiam Naturalem. A. G. F.
Schultz Berolini, 1829.
Disquisitiones Anatomico-Comparativen de Membran Piscium Pectorali. Auc.
C. Mettenheimer Berolini, 1847.
Systema Amphibiorum Lymphaticum disquisitionibus novis examinatum.
Auc. J. Meyer Berolini, 1845.
De Spatulatario Anatoæ. Auc. A. Wagner Berolini, 1848.
De Phenomeno Generali et Fundamentali motus Vibratori Continiu, etc.
Scrip. Prof. J. E. Purkinje et Dr. G. Valentim. Wratislaviæ, 1835.
Observationes de Sagitta mare Germanicum circa Insulam Helgoland inco-
Afferunter Nonnula ad Amiam Calvam Accuratius Cognoscendam. Auc. H.
Franque. Berolini, 1847.
De Corporum Heterogenerorum in Plantis Animalibusque Genesi. Auc. J. H.
Schmidt. Berolini, 1825.
Ueber Thierfahrten im Bunten Sandstein. Von B. Cotta. Dresden und Leip-
zig, 1839.
Ueber verschiedene neue oder seltene Reptilien aus Neu Granada und Crus-
1, 1816, Sept. 1, 1817.
Prodromus descriptionis formarum partium Elementarum in animalibus.
Dr. C. A. S. Schultze. Berolini, 1828.
xxiii.


Catalogo delle Conchiglie osservate dall' abate L. Brumati.

Physiologiam animalium commendat et ad audiendam, &c. N. G. Leske.

Lipsiae, 1775.


Note on the calculation of the distance of a Comet from the Earth. By J. W. Lubbock.

On the determination of the distance of a Comet from the Earth, and the elements of its orbit. By J. W. Lubbock.


October 7th.


The Canadian Journal, Sept., 1856. From the Editors.

The Canadian Naturalist and Geologist, Sept., 1856. From the Editor.

Statistics of the Flora of the Northern United States. By Asa Gray. From the Author.

Experiments upon Digestion. By F. G. Smith, M. D., &c. From the Author.

The New Orleans Medical and Surgical Journal, Sept., 1856. From the Editor.


Recueil des Actes de l'Academie Imperiale de Bordeaux. 1855, 3e et 4e trimestre. From the Academy.


Dr. Wyman on Podisoma Macropus, with remarks by M. J. Berkeley. From the same.

On the Amber Beds of East Prussia. By Dr. K. Thomas. From the same.

Observations on the Spharicaceae. By Prof. Guiseppe de Notaris. From the same.

On the probable conversion of Asci into Spores. By M. J. Berkeley and C. E. Broome. From the same.
On the White Rust of Cabbages. By M. J. Berkeley. From the same.

Notice of a Mould attacking the Coffee Plantations in Ceylon. By M. J. Berkeley. From the same.

A Micrographic Study of the Disease of Saffron, known under the name of Tacca. By C. Montague, M. D. From the same.

Enumeration of some Fungi from St. Domingo. By M. J. Berkeley. From the same.

On a form of Scab in Potatoes. By M. J. Berkeley. From the same.

Dr. Schleiden's Theory of Agriculture. By M. J. Berkeley. From the same.

On a Peculiar form of Mildew in Onions. By M. J. Berkeley. From the same.

Observations on a form of White Rust in Pear Trees. By M. J. Berkeley. From the same.

Botanical Notes on the Mildew of the Vine and Hop. By M. J. Berkeley. From the same.

On the Vine Mildew. By Hugo Mohl. From the same.


On the Internal Structure of Helicolinax. By M. J. Berkeley. From the same.

Some Notes upon Cryptogamia and Fungi. By Dr. F. Welwitsch and J. M. Berkeley. From the same.

On the Bleached Wood of the Arctic Voyagers as a possible indication of the route of Capt. Sir J. Franklin. By M. J. Berkeley. From the same.


Smithsonian Contributions to Knowledge, vol. viii. From the Smithsonian Institution.

The following were presented by Dr. T. B. Wilson, on the usual condition:—
The London Athenæum, August, 1856.


Comptes Rendus, T. xliii. Nos. 6, 7, 8.


L'Organisation du Règne Animal. Par Émile Blanchard. 18e liv. Arachnides, liv. 9e.


Part. xvii.

Malakozoologische Blätter. Band. iii. Bogen 4-6.


October 14th.

The following were presented by Mr. Edward Wilson:—


Diss. inaug. Experiment. in rana Escentul. plexu lumbali facta veram nerv.
Berolini, 1841.
Observat. Anatom. de Mammal. quorundam præser. quadruman. vocis instru.
ini, 1835.
De Hepate ac bile Crustaceorum et Molluscorum quorundam. Auc. F. F. G.
Schlemm. Berolini, 1844.
De Part. quibus insects spiritus ducunt, C. L. G. Læwe. Hale, 1814.
Diss. de vi Musc. in part. a reliq. corpore sejunctus. Auc. W. Kramer. Hale,
1818.
dler, 1817.
1837.
Lettera dell Dott. Fillippi Sopra l’Anatomia e lo Sviluppo delle Clepsine. Pavia,
1839.
Odontologia ou Observations sur les dents humaines. Par C. F. Delabarre.
Paris, 1815.
Des Organes de la Digestion dans les Ruminans, &c. Par P. Chabert. Paris,
1797.
Specimen Anthropologisæ Experimentalis, J. C. Acoluthus. Vitembergæ, 1722.
Cuvier’s Report upon Audouin’s researches upon the Anatomy of the thorax,
in articulated animals.
De Organis Circulationis et Respirationis Reptilium. C. G. H. Westphal.
Hale, 1806.
Diss. de Nervis Spinal. Avium Nonnuliaram. Auc. W. Marbach, Tratislovæ,
1840.
Diss. de experiment. quædam circa corpus Collorum, cerebellum, duram men.
De Blennii vivipari formatione et evolutione observationes. Auc. T. Forch-
hammer. Kilim, 1819.
Nicolai Stenonis elementorum Myologiae Specimen, Florentiae, 1647.
Responsio ad Questionem Zoologicam. M. C. Verloren.
Batav, 1831.
De Mutatione, qua habitus animantium externus feminæ indiut

Vol. VIII.
October 21st.

Naturgeschichte der Insecten Deutschlands Begonnen von Dr. W. F. Erichson; Fortgesetzt von Dr. F. Schaum, G. Kraatz und H. T. Kiesenwetter. 1ste Ab. Coleoptera, 1ste Bd., 1ste Lief., Bogen 1—12. From Dr. Schaum.


Sélénà, ou la Famille Samanéanno. Par J. A. Gleizes, 1838.


Rendiconto della Società Reale Berbonica, n. s. Nos. 1—6, 1853. From the Society.

Note sur la Machine suédoise M. M. Schutz poua calculer les Tables mathématiques par la Méthode des Differences, &c. Par C. Babbage.


Note sur L'Équateur Zoologique. Par Dr. Pucheran.

Esquisse sur la Mammalogie du Continent Afrique. Par Dr. Pucheran. The three preceding pamphlets from Mr. Sclater.

DONATIONS TO MUSEUM

IN NOVEMBER AND DECEMBER, 1856.

November 4th.

Three specimens Graphite, Ceylon. Presented by G. W. Earle through E. Draper.

Twelve human Skulls, 6 casts of do., 2 casts of Orang heads, various casts of remains of Palæotherium, Anoplotherium, Deinotherium, Tapirus, Megalosaurus, Ichthyosaurus, Iguanodon, &c., from specimens in the museums of Europe; numerous moulds in plaster of fossils, 2 teeth of Elephant, horns of Bos arni; the whole forming part of the natural history collection of the late Dr. Richard Harlan. Deposited and presented by Richard Harlan, Jr.

Skin of Eunectes murinus, Brazil. Presented by S. B. Howell.

Large specimen Exogyra costata, N. Jersey. S. S. Garrigues.

Specimens of Granite, Mica and Schorl, from near Boston. Presented by Benj. R. Smith.

November 11th.


Coral, from the miocene marl of Nash Co., N. C. Presented by O. D. Coppedge. Two Hippurites, from near Warsaw, Alabama. Presented by Dr. S. W. Clinton.

Orange and black variety of the Cat-fish, Delaware River. Presented by Dr. Uhler.

November 18th.

Nine specimens Trigonophrys rugiceps, Poranã, S. A.; specimens of the Cocoon of a Spider of a gold yellow color. Presented by Dr. H. W. Kennedy, of Buenos Ayres.
One fossil crustacean, 3 echinid spines, 4 casts of shells, from Palestine; 5 specimens fossil wood, from near Cairo, Egypt; one cone of the Cedar of Lebanon. Presented by Rev. Mr. Bailey.

Skeleton of Rana pipiens. In exchange.

Twenty-one species of fossil shells from the limestone of Cincinnati; 32 species of other fossil shells; 16 species American land shells; 16 species American Cyclas, 7 species Pisidium; Cast of Ornithicintes giganteus; impressions of rain drops from the valley of the Connecticut. Presented by W. G. Binney, Esq.

One hundred of the rarer species of U. S. marine shells. Presented by Wm. Stimpson, Esq.

One hundred and eleven species Achatinellæ, Sandwich Islands; four species land shells from Guayn. Presented by Dr. W. Newcomb, of Albany.

Four specimens, two species, fossil shark teeth, from miocene deposit of Westmoreland Co., Va. Presented by Dr. Uuler.

One specimen Graphite, large and fine, Ceylon. Presented by Geo. W. Earle, Esq., through E. Draper, Esq.

December 2d.

Six specimens fossils from Nebraska; 8 specimens cretaceous fossils from Nebraska. Presented by W. A. Hammond, M. D., U. S. A.

Eight specimens cretaceous fossils from Nebraska; 1 large Saurian vertebra, from Grand River, Nebraska. Presented by Capt. Alfred Sully, U. S. A.

Two specimens Scelentilla, St. Augustine, Florida.


One species Pupa, 1 Lymnaea, Paris Basin.

Two species fossil plants from an Olive Slate below the coal conglomerate, McKeen Co., Pa. Presented by P. W. Sheafer, Esq.

Skin of the red fox, Vulpes fulvus. Presented by Joseph Lea, Esq.

December 9th.

Specimen skin, in summer pelage, of Vulpes lagopus, from Upernavik, Greenland. Presented by Dr. J. J. Hayes.

Skins of Geomyss oregonensis and Perognathus fasciatus, Kansas. Presented by Dr. Wm. A. Hammond, U. S. A.

Nine specimens of the genera Holbrookia, Ambystoma and Bufo, from the Rocky Mountains; 29 specimens of the genera Orotaphysus, Phrynosoma, Cucumidophorus, Ophisaurus, Ablabes, Coryphodon, Coronella, Elaphis, Heterodon, Bufo, Ambystoma, and Siredon, from Kansas. Presented by Dr. W. A. Hammond, U. S. A.

Sixty-nine specimens of the genera Sceloporus, Cucumidophorus, Lygosa, Ophisaurus, Elaphis, Tropidonotus, Ablabes, Heterodryas, Ischognathus, Elaps, Toxicophilus, Crotalus, Bufo and Hyla, from Texas. Presented by Dr. A. Heermann.

One Ischognathus from Michigan. Presented by Dr. Miles.

A small collection of Coleoptera from Texas. Presented by Dr. A. Heermann.

A collection of Naiades from Quincy, Ill. Presented by Dr. A. B. McChesney.

December 16th.

Numerous specimens teeth of Carcharodon, Lamma and Otodus; 1 large tooth of Pristis; 1 do. Enchodus, attached to a fragment of the jaw; 1 vertebra Carcharodon; fragment of the lower jaw Cerux virgulianus, Monmouth Co., N. J. Presented by P. D. Knieskern, M. D.

Two teeth Carcharodon, Prairies of Mississippi. Presented by Dr. J. C. Nott.

Two species Salamandra, 1 Salamandrina, 2 Euproctus and 7 Triton, 10 specimens. Presented by the administration of the Jardin des Plantes, Paris.

Eleven Silurian fossils from Broad Top, Penna. Presented by John McCanles, through Mr. Jeane.

Six Devonian fossils, Ohio. Presented by Dr. Logan.
Bombycilla garrula, Cleavelend, Ohio. Presented by Prof. J. P. Kirtland.

December 23d.

One Astacus, Dennisville, N. J. Presented by S. Ashmead.
Four specimens Coleoptera, Brazil. Presented by W. G. E. Agnew.
Eighteen Triquetra obliqua, 7 T. corrugata, 1 Castalia quadriolatera, 3 C. trunciata, 9 Anadonta, 58 Ampullaria papyracea and other species, 1 Melania, 40 Bulimus, Achatina, &c., 1 Platemys martiniella; Rio Negro and Rio Branca, New
Grenada. Presented by H. B. Dewey, Esq., through Dr. H. Bond.

DONATIONS TO LIBRARY
IN NOVEMBER AND DECEMBER, 1856.

November 4th.

The following were presented by Mr. Edward Wilson, of South Wales, on the usual conditions:—

Jucundis ex Phys. Prob. de Basilisc Existentia et Essentia sub præsid. G.
C. Kirchmajeri. 1670.
Deo Triiuno Munzi Cretoore Volente, et Schediasma de Gryphibus. Respond
P. C. Shötero. Lipsia, 1670.
Bonn, 1838.
Zu der Öffentlichen Prüfung der Sämtlichen Classen des Magdalenischen
Gymnasiums. Dr. F. W. Kluge. Breslau, 1832.
Sopra i Vulcni Estinti del Valdi Noto., Memoria Seconda del Professore C.
Gemmellaro. Catania, 1835.
De Novis quibusdam Fossilibus quæ in Montibus Urallis inveniuntur. Scrip.
G. Rose, Dr. Berolini, 1839.
De la Classification des Mineraux, Thèse Soutenue. Par H. G. De Clanbry.
Paris, 1824.
Des Effets Géologiques du tremblement de Terre de la Calabre en 1783. Par
F. de Bellevue.
Diss. inaeg. de Sphenis atqua Tiffinitæ Systemate Crystallino. G. Rose.
Berolini, 1820.
Lipsia, 1846.
Thoma Bartholini dissertat. de Cygni Anato, ejusg. Cantu, 1668.
De oculis Leucæthiopum et Iridis Motu Commentat. D. J. F. Blumenbachii.
Göttingae, 1786.
Propositions Extraites d’un Essai sur la Respiration, Suivies de quelques Ex-
périences sur l’Influence de la huitié Paire de Nerfs dans la Respiration. Par
Disquisitiones de Piscium Glandula Choroiidei. Auc. Dr. M. Erdl. Mona-
cchii, 1839
Diss. inaeg. de Talpæ Europsæ Oculo. Auc. A. G. Koch. Regimontii,
1836.
Considérations Anatomico-physiologiques et Historiques sur le Coëpo du
De Sernaspide Thalassemole et Siphostomate Dicrochoite Vermibus doubus
Diss inaeg. de Organismo de que Plantarum Animalicumque Organism dif-
xxix.


Diss. inaeg. de Musculis Crocodili. Def.-nd. H. Buttman. Hale, 1826.


A. F. A. Wiegmann. Lipsie, 1826.


Beytraege zur Anatomie der Insekten. Von Dr. C. F. Posselt. Tübingen, 1804.

Diss. inaeg. de Genitalium Evolutione. J. C. Müller. Hale, 1815.


G. Valentin de Functionibus Nervorum Cerebralium et Nervi Sympathici. 1839.


Die Grundformen der Infusorien in den Heilquellen. Von Dr. S. F. Stiebel. Frankford am Main, 1841.


Notice sur les travaux de Zoologie pure et appliquée à l'agriculture, de F. E. Guérin-Méneville.


Réfutation de Systèmes de Strabon, et de ses commentateurs, et de celui de Buffon, sur la formation de la Mer Méditerranée.

Relation d'un Voyage fait dans le Département de l'Orne, pour constater la réalité d'un météore observe a l'Aigle le 6 floréal a. 11. Par J. B. Biot, Paris.


November 11th.

United States Nautical Magazine. Oct., 1856. From the Editor

Expedition shells; described for the work of the United States Exploring Expedition. By A. A. Gould, M. D. Boston, 1846. From the Author.

Charleston Medical Journal and Review. Nov., 1856. From the Editor.
Synopsis of the Cactaceæ of the U. S. Territory and adjacent regions. By G. Engelmann, M. D. Cambridge, 1856. From the Author.


On the action of nod-conducting bodies in electric induction. By Prof. Faraday and Dr. Riess.


Annals of Mines. 5me Sér. T. VIII. liv. 6, de 1855. From the School of Mines.

Annales des Sciences Physiques et Naturelles, d'Agriculture et d'Industrie. 2me sér. T. VII. 1e partie, 1855. From the Imperial Society of Agriculture of Lyons.

The following were presented by Dr. T. B. Wilson on the usual conditions: Bulletin of the Franklin Institute, Oct., 1856.

Revue et Magasin de Zoologie pure et Appliquée. 1856, Nos. 8, 9.
Comptes Rendus. T. XLIII. Nos. 9—12, 1856.
Mittheilungen aus Justus Perthes' Geographischer Anstalt, &c. Von Dr. A. Petermann. 1856, VII. and VIII.
Novitates Conchologicae. Von Dr. L. Pfeiffer. 6 Lief.


Bonplandia, IV. Jahr. No. 17.


The following were received from Dr. John McClelland, through the Hon. Wm. L. Marcy:


Journals of Travels in Assam, Burma, Afghanistan and the neighboring countries. By the late Wm. Griffith, arranged by John McClelland, Calcutta, 1847.

Itinerary notes of Plants collected in the Khasyah and Bootan Mts., 1837—38. in Afghanistan and neighboring countries, 1836—41. By the late Wm. Griffith. Arranged by John McClelland, 1848.

Palms of British East India. By Wm. Griffith; arranged by John McClelland, Calcutta, 1850.


November 18th.

The following were presented by Dr. T. B. Wilson, on the usual conditions:


Manual of the Botany of the Northern United States; arranged according to the Natural System. By Asa Gray. 2d edit., New York, 1856.


Annals and Magazine of Natural History, Oct., 1856.


Comptes Rendus. T. XLIII., Nos. 13 and 14.


The Ferns of Great Britain and Ireland. Parts X. and XV.

A monograph of the Trochilidæ or Humming Birds. By John Gould. Parts XI. and XII.


The Natural History of Iceland: Translated from the Danish original of Mr. N. Horrebow. London, 1758.

The Natural History of Norway; Translated from the Danish original of the Right Rev. Erich Pontoppidan. London, 1755.


December 2d.

The following were presented by Mr. Edward Wilson, of South Wales, on the usual conditions:


A Catalogue of the Paintings, Drawings and Casts in the Permanent Gallery of Art, Royal Institution, Colquitt St. Liverpool, 1851.


Der Elephant Indiens.


Diss. inaun. med. de Systemate Telaæ Elasticae Corporis Animalis. Auc. II. Hauß. Tubingæ, 1822.

Novæ insectorum species ab J. Udman. Erlange, 1793.


A. Glossary of Terms used in the Coal Trade of Northumberland and Durham. London, 1851.


Memorandum of objects of general interest in the vicinity of Dublin. Dublin, 1835.


Descript. de quelques Nouv. espèces de Coquilles-Fossiles trouvées a Grignon. Par M. Caillat.


Mémoire sur les Courtilières. Par M. Lacène.


Essai sur l’organisation des Insects. Par C. Perotti. 1808.

Essai sur les causes de la Couleur verte que prennent les Huitres des parcs à certaines époques de l’année. Par Benj. Gaillon.


The Canadian Journal for November, 1856. From the Editor.
Archiv für Naturgeschichte. Heraus. von Dr. F. H. Troschel. 19 Jahr., 6 Heft; 20 Jahr., 5 Heft; 21 Jahr., 1, 2, 3, 5 Heft. From the Editor.
Zeitschrift für die Gesammten Naturwissenschaften, 1854, July to December, and 1855, January to December, inclusive. From the Natural History Society of Halle.
Neues Jahrbuch für Mineralogie Geologie und Petrefakten-Kunde. 1856, 3, 4 Heft. From Prof. H. G. Braun.
Bericht über die österreichische Literatur der Zoologie, Botanik und Paläontologie aus den Jahren 1850, '51, '52, '53. From the same.
Almanach der Kaiser. Akad. der Wissen. 6ter Jahr., 1846. From the Vienna Academy.
Sitzungsberichte der k. Akad. der Wissenschaften. Mathemat. Naturwis. classe. Bd. XVII., Heft 1, 2; Bd. XIX., Heft 1, 2. From the Academy.
On the claims of the Gigantic Irish Deer to be considered as contemporary with man. By Wm. H. Denny. From the Author.
Om benet Luz, af Prof. A. Retzius. From the Author.
The following were presented by Dr. T. B. Wilson, on the usual condition: Flore de France, &c. Par Grenier et Godron. 3 vols. Paris, 1848—'56. Iconographie der Land-und Süsswasser-Mollusken Europa's, &c. Von R. A. Rossmüssler. 3 Bd. 3 und 4 Heft.
Die Natur. No. 44.
Bonplandia. Nos. 18, 19.
Malakozoologische Blätter. 3 Bd. 7—9 Bogen.
Cyclopedia of Anatomy and Physiology. Part XLVIII.
Die Giftpflanzen der Schweiz. Von J. Hegetschweiler, M. D., Zurich. From Mr. H. Hots.
Flora Helvetica. Von J. Hegetschweiler, M. D. Zurich. From Mr. H. Hots.
Decembwr 16th.

The following were presented, on the usual conditions, by Mr. Edward Wilson: Marbrères de France. Paris, 1824.


Der Elephant. Quedlinburgh, 1787.


Esquisse Géognostique du Système du Rhin. Par MM. D'wynhausen, De Dechen et de la Roche, 1825.

Exercitatio Physica de Zoophytis, à J. G. Hilligero. Wittebergæ, 1667.


Rapport sur la Pêche Fluviale dans le département de l'Aube. Troyes, 1851.


Notes on the distribution and range in depth of Mollusca and other marine animals observed on the coasts of Spain, Portugal, Barbary, Malta and Southern Italy in 1849. By R. Macandrew. London, 1850.


Der Hyâne von J. E. Goldhagen. Magdeburg.


Mémoire sur le Scorpion. Par A. Maccary, M. D., 1810.


Christianæ Francisci Paulini Talpa, etc. Francofurti et Lipsiæ. Naturgeschichte des Elephanten.


De Organis Piscium Externis de J. E. Iebenætreit. Lipsiæ, 1733.
Vilnae.

Washington, December

From Wien.


Diss. inaun. hist.-med. de Nechuschtane et Esculapii serpentae, etc. Auc. A. F. Funk. Berolini, 1826.


Saggio di Una Monografia delle Forficule indigene del Prof. G. Gené. Padova, 1832.

December 23d.


Annual Report of the Normal, Model, Grammar and Common Schools in Upper Canada, for the year 1853, with an Appendix by the Chief Superintendent of Education. Quebec, 1856. The same for 1855. Toronto, 1856. From L. A. Huguet-Latour, N. P.


The following were presented by Dr. T. B. Wilson, on the usual conditions: Neue Untersuchungen über den Bau des Rückenmarks von Dr. B. Stilling. 1ste Lief. Frankfurt, A. M., 1856.

Atlas Mikroskopisch-Anatomischer Abbildungen zu den Neun Untersuchungen, &c. Von Dr. B. Stilling. 1ste Lief.
Testacea Novissima quae Cl. de Sauley in Itinere per Orientem Annis 1860 et 1851 collegit. Auc. J. R. Bourguignat. Lutetiae, 1852.
Symbolæ ad Listoriam Heliceorum. Auc. Dr. L. Pfeiffer, sec. 1—3. Cassellis, 1846.
The Aquavivarium, fresh and marine. By E. Lankester, M. D. London.
Traité des Petrifications avec figures, Paris, 1742.
Canada at the Universal Exhibition of 1855. Toronto, 1856. From the same.
Rapport Annuel des Inspecteurs du Pénitencier Provincial pour l'Année 1853. Toronto, 1856. From the same.
Public Accounts for the Province of Canada for the year 1855. Toronto, 1856. From the same.
Report of the Commissioners of Public Works for the year ending 31st Dec., 1855. Toronto, 1856. From the same.
CATALOGUE

OF

HUMAN CRANIA,

IN THE COLLECTION OF THE

ACADEMY OF NATURAL SCIENCES

OF PHILADELPHIA:


BY

J. AITKEN MEIGS, M. D.

Librarian of the Academy of Natural Sciences of Philadelphia, &c.

"Of all the peculiarities in the form of the bony fabric, those of the skull are the most striking and distinguishing. It is in the head that we find the varieties most strongly characteristic of different races."—Prichard.

"Hence our zoological study of man will be greatly assisted by carefully examining genuine specimens of the skulls of different nations, which are easily prepared and preserved, may be conveniently handled and surveyed, considered in various points of view, and compared to each other."—Lawrence.

PHILADELPHIA.

J. B. LIPPINCOTT & CO.

1857.
EXPLANATORY NOTE.

Since the death of the late lamented President of the Academy of Natural Sciences,—Dr. Samuel George Morton,—his magnificent Collection of Human Crania, recently increased by the receipt of 67 skulls from various sources, has been permanently deposited in the Museum of the Academy. Prior to his demise, Dr. M. had received 100 crania in addition to those mentioned in the third edition of his Catalogue. Since 1849, therefore, the Collection has been augmented by the addition of 167 skulls. To complete the Catalogue in a uniform manner, these have been carefully numbered and measured in accordance with the methods recorded in the Crania Americana, &c. In a portion of these measurements I was kindly assisted by our fellow-member, Dr. Thos. J. Turner of the United States Navy.

The entire Collection,—numbering 1035 crania,—was purchased by forty-two gentlemen* from the executors of Dr. Morton, for the sum of $4,000, and by them generously presented to the Academy.

The Collection occupies 16 cases on the first gallery, on the south side of the lower room of the Museum. For convenience of study and examination I have grouped the crania according to Race, Family, Tribe, &c., strictly adhering, however, to the classification of Dr. Morton. It will be seen, also, that the same arrangement has been adopted in this edition of the Catalogue, so that it is an exact representation of the Collection as it stands upon the shelves. While the old numbering has been carefully preserved for the sake of reference to the various published descriptions of Dr. Morton, new numbers have been added to designate the position of any skull in the natural division or subdivision to which it belongs.

The Suevic, Cimbric and Scandinavian divisions of the great Teutonic Race, are represented by 32 crania and 3 casts, distributed as follows:

INTRODUCTORY NOTE.

1 Norwegian, 7 Swedish peasants, 2 Swedes from Finland, 3 Swedes from Sudermanland, 1 Ostrogoth, 1 Turannic Swede, 2 Cimbric Swedes, 1 Cimbric from Moën Island, 11 Germans, 1 Dutchman, 4 Prussians, and 1 Ancient Burgundian. Among these I have also placed 3 Swedish-Finns, which, though mixed, are more Swedish than Finnish. Next to these from their affinity, have been arranged the heads of 9 true Finns and a cast of a Finlander's skull.

Of 4 Swedish peasants, the highest internal capacity is 99, the lowest 65, while the average of the group is 83 cubic inches. Of 2 Swedes from Finland, the larger is 107.5, the smaller 93.75, and the mean 100.62. Of 3 Swedes from Sudermanland, the highest measurement gives 108.25, the lowest 102, and the mean 101.41 inches. Of two Cimbric Swedes, the higher is 94, the lower 80, the mean 87. Of 10 German heads, the highest is 104, the lowest 70, and the mean of the series 88.6. The skull of a Dutch gentleman (No. 434) is the largest in the entire collection, for it measures 114 cubic inches of internal capacity. Four Prussian skulls give 92 for the highest, 80 for the lowest, and 83.5 for the mean. The average for this branch of the Teutonic Family, as deduced from the foregoing measurements is about 94 cubic inches.

Of 3 Swedish Finns, the highest internal capacity is 89, the lowest 85, and the mean 87 inches. Of 9 true Finns, the highest is 112.5, the lowest 81.5, the mean 94.3. A large portion of this valuable series—from Nos. 1545 to 1550, and from 1542 to 1541,—were received from Prof. Retzius, after the death of Dr. Morton.

Many of the above Crania "have been obtained from hospitals and institutions for paupers, whence we may infer that they pertain to the least cultivated portion of their race."* The brief histories attached to Nos. 1539, 1540, 1542 and 1546, were written in the Danish language, on slips of paper, which had been placed in the cavity of each cranium. Of these I obtained translations through the kindness of Dr. L. Elsberg.

The Anglo-Saxon race differs from the Teutonic in having a less spheroidal and more decidedly oval cranium.

"I have not hitherto exerted myself to obtain crania of the Anglo-Saxon race, except in the instance of individuals who have been signalized by their crimes; and this number is too small to be of any importance in a generalization like the present. Yet, since these skulls have been procured without any reference to their size, it is remarkable that five give an average of 96 cubic inches for the bulk of the brain; the smallest head measuring 91, and the largest 105 cubic inches. It is necessary to observe, however, that these are all male crania; but on the other hand, they pertain to the lowest class of society, and three of them died on the gallows for the crime of murder."

*This and the following quotations are taken from the unfinished memoir left by Dr. Morton. The MS was kindly loaned to me by his son, Mr. Robert P. Morton.
"The Anglo-Americans, the lineal descendants of the Anglo-Saxons, conform in all their characteristics to the parent-stock. They possess, in common with their English ancestors, and in consequence of their amalgamation, a more elongated head* than the unmixed Germans. The few crania in my possession have, without exception, been derived from the lowest and least cultivated portion of the community—malefactors, paupers and lunatics. The largest brain has been 97 cubic inches; the smallest, 82; and the mean of 90 (nearly) accords with that of the collective Teutonic race. The sexes of these 7 skulls are 4 male and 3 female."

"The Celts who, with the cognate Gauls, at one period, extended their tribes from Asia Minor to the British Islands, are now chiefly confined as an unmixed people to the west and south-west of Ireland, whence have been derived the 6 crania embraced in the Catalogue. These range between 97 as a maximum and 77 as a minimum of the size of the brain; and the mean, which is 87 cubic inches, will probably prove to be above that of the entire race and not exceed 85."

In the following table, the reader will find some of the European races compared together in relation to their cranial capacities.

**TABLE I.**

**European Crania.**

<table>
<thead>
<tr>
<th>FINNS.</th>
<th>SWEDES.</th>
<th>GERMANS.</th>
<th>ANGLO-AMERICANS.</th>
<th>KELTS.</th>
<th>CIMBRI.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. in Catalogue.</strong></td>
<td><strong>I. C.</strong></td>
<td><strong>No. in Catalogue.</strong></td>
<td><strong>I. C.</strong></td>
<td><strong>No. in Catalogue.</strong></td>
<td><strong>I. C.</strong></td>
</tr>
<tr>
<td>1534</td>
<td>94.5</td>
<td>1486</td>
<td>99.</td>
<td>706</td>
<td>94.</td>
</tr>
<tr>
<td>1535</td>
<td>97.5</td>
<td>1545</td>
<td>107.5</td>
<td>1063</td>
<td>86.</td>
</tr>
<tr>
<td>1536</td>
<td>112.5</td>
<td>1546</td>
<td>93.75</td>
<td>1188</td>
<td>83.</td>
</tr>
<tr>
<td>1537</td>
<td>84.25</td>
<td>1547</td>
<td>102.</td>
<td>1189</td>
<td>78.</td>
</tr>
<tr>
<td>1538</td>
<td>108.</td>
<td>1548</td>
<td>94.</td>
<td>1191</td>
<td>95.</td>
</tr>
<tr>
<td>1539</td>
<td>81.5</td>
<td>1549</td>
<td>108.25</td>
<td>1187</td>
<td>104.</td>
</tr>
<tr>
<td>1540</td>
<td>88.5</td>
<td></td>
<td></td>
<td>114.</td>
<td></td>
</tr>
<tr>
<td>1541</td>
<td>99.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mean.</strong></td>
<td>96.34</td>
<td>106.75</td>
<td>92.</td>
<td>96.75</td>
<td>94.33</td>
</tr>
</tbody>
</table>

| MALE SEXES. | | | | | | | | | | | | |
|-------------| | | | | | | | | | | | |
| **No. in Catalogue.** | **I. C.** | **No. in Catalogue.** | **I. C.** | **No. in Catalogue.** | **I. C.** | **No. in Catalogue.** | **I. C.** |
| 1247 | 85. | 1064 | 91. | 7 | 83. | 18 | 78. | 1249 | 83 |
| 1487 | 65. | 1062 | 93. | 1192 | 82. | 24 | 82. | | | |
| 1198 | | 1198 | 80. | | | | | | | | |
| **Mean of Two Sexes.** | 94.31 | 90.3 | | 89.6 | 86.78 | | 84.25 |

In the above table, the reader will observe the high cranial capacities of the Swedes, Finns, and Germans; he will also perceive that the Anglo-

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*"This peculiarity must continue to develop itself still more obviously in the United States, in consequence of the immense influx of a pure Celtic population from the south and west of Ireland; for this population by intermarriage with families of English and German descent, while it rapidly loses its own national physiognomy, will leave its traces in a part at least of the Anglo-Saxon race by whom it is ever where surrounded."
Saxons and Anglo-Americans possess the same large average; while the mean for the Kelts and Cimri is several inches less. It is a curious fact, that in the column marked "Kelts," Nos. 21, 42, 52, and 985 exhibit the Gothic type, and have generally the high internal capacity of the Northern races; while Nos. 18, 1186, and 1564, which are of the Cimbric type, possess a lower internal capacity. The Table is not extensive enough to base upon this interesting fact any positive conclusion; but as far as this fact goes, it appears to indicate that the Cimbric and Keltic types of skull are closely allied, if not indeed identical.

"I much regret that my cranial series possesses but a single example derived from the Sclavonic race, the skull of a woman of Olmutz, sent me by Prof. Retzius, and which measures only — inches.* I record this deficiency in my collection, in the hope that some person interested in pursuits of this nature may be induced to provide me with materials for making the requisite comparisons. My impression is that the Sclavonic brain will prove much less voluminous than that of the Teutonic race."

"I do not use the term Pelasgic with ethnological precision, but in this designation place the Greeks and Romans, and their descendants in various parts of Europe, Greece and Italy, and in more isolated examples, in Spain, France and Britain. In the same category I place the Persians, Armenians, Circassians, Georgians and many other kindred tribes, together with the Graeco-Egyptians.

"Of 4 adult Circassian crania, brought me by Mr. Gliddon, two are male and two female. The former, which we may suppose, from appearances, to have been associated with a full share of manly beauty, measure 90 and 94 cubic inches of internal capacity; the female heads measure 79 and 80; whence we obtain 86 cubic inches as the mean of all. One of these skulls, that of a woman who had passed the prime of life, is remarkable for the harmony of its proportions, and especially for the admirable conformation of the nasal bones.

"Of 4 adult Armenian skulls, 3 pertain to men; and the average size of the brain is but 83 cubic inches. I have felt some hesitancy in admitting these skulls in this place, for two reasons: 1st, because their characteristics incline almost as much to the Arab type as to the Pelasgic; and, 2dly, because the term Armenian is not always used in a strictly national sense in the East, but is applied to a class of merchants whose ethnological affinities must be often very mixed and uncertain.

"I possess, through the kindness of Mr. Gliddon, two female Parsee skulls, which, though small, present a beautiful form. One measures 89 cubic inches, the other only 75."

Of 23 Graeco-Egyptian heads, the highest internal measurement is 97 cubic inches, the lowest 73, and the mean 86.11, which is about 4″7 cubic inches above that of the pure Egyptian race, and but three inches less than the average I have assumed for the Teutonic nations. * * * *

*I find upon examination, that this head, in its present condition, is incapable of measurement, in consequence of the presence of the falk cerebri and tentorium.
Some of these present the most beautiful Caucasian proportions, while others merge by degrees into the Egyptian type; and I am free to admit that in various instances I have been at a loss in my attempts to classify these two great divisions of the Nilotic series."

The Semitic race "includes the Chaldeans, Assyrians, Syrians, and Lydians of antiquity, together with the Arabians and Hebrews."

"Five of my embalmed Semitic heads are susceptible of measurement; and give the low average of 82 cubic inches—the largest measuring 88; the smallest 69.* In these crania, and also in others of existing Semitic tribes, I have looked in vain for the pit described by Mulder as situated on the outer wall of the orbit at the attachment of the temporal muscles: and consequently there is no trace of the corresponding elevation, also described by him, within the orbitar cavity.

"I have had but little success in procuring the crania of the modern Semitic tribes; and for the 3 that I possess, I am indebted to Mr. Gliddon. Of these, two are Baramka, or Barmecide Arabs; the third a Bedouin. The largest measures 98 cubic inches; the smallest 84; and the mean is 89; but if we take the average of these 3 Semitic heads, ancient and modern, it will be 83 inches."

The Nilotic race comprises the ancient Egyptians of the pure stock, and the modern Fellahs. Most of the Egyptian skulls were presented by Messrs. G. R. and W. A. Gliddon, A. C. Harris, of Alexandria, in Egypt, and Dr. Chas. Pickering. Of the 88 crania which present the Egyptian conformation, 55 are capable of measurement. At least eleven of these heads "are of the unmixed type, and present the long, oval form, with a slightly receding forehead, straight or gently aquiline nose, and a somewhat retracted chin. The whole cranial structure is thin, delicate, and symmetrical, and remarkable for its small size. The face is narrow, and projects more than in the European, whence the facial angle is two degrees less, or 78°. Neither in these skulls, nor in any others of the Egyptian series, can I detect those peculiarities of structure pointed out by the venerable Blumenbach in his Decades Craniorum; and the external meatus of the ear, whatever may have been the form or size of the cartilaginous portion, is precisely where we find it in all the other races of men. The hair, whenever any of it remains, is long, curling, and of the finest texture."

"On comparing these crania with many fac similes of monumental effigies, most kindly sent me by Prof. Lepsius and M. Prisse d’Avenes, I am compelled, by a mass of irresistible evidence, to modify the opinion expressed in the Crania Aegyptiaca—viz: that the Egyptians were an Asiatic people. Seven years of additional investigation, together with greatly increased materials, have convinced me that they were neither Asiatics nor Europeans, but aboriginal and indigenous inhabitants of the Valley of the Nile, or some contiguous regions;† peculiar in their phy-

* Crania Aegyptiaca, pp. 41 and 46, and the accompanying plates.
† This opinion, with some modifications, has been entertained by several learned Egyptologists—Champollion, Heeren, Lenormant, &c.
Introductory Note.

Siognomy, isolated in their institutions, and forming one of the primordial centres of the human family."

Of the 53 measured Egyptian heads, the largest measures but 96 cubic inches; the smallest 68; while the mean of all is about 80. The crania from the ancient tombs of Gizeh give an average of about 84 inches. Concerning these Dr. Morton says: "The persons whose bodies had reposed in these splendid mausolea were, no doubt, of the highest and most cultivated class of Egyptian citizens; and this fact deserves to be considered in connection with the present inquiry. To this we may add that the most deficient part of the Egyptian skull is the coronal region, which is extremely low, while the posterior chamber is remarkably full and prominent."

Of 19 Fellah skulls, the highest measurement is 96 cubic inches; the lowest 66; and the mean of all about 79. Nos. 771, 772, and 773 were sent by Mr. Gliddon as Jewish crania, but Dr. Morton, guided by their form, has classified them, perhaps erroneously, with the Fellahs. Mr. Gliddon, in a note in "Types of Mankind" (p. 723, No. 390) says: "They came from the old Jewish burial-ground, behind Muss' r-el-Atteeka, on the desert, toward Bussateen; and no Muslim is interred near a Jew."

From the form of the skull, the mental and moral character of the people, and their existing institutions, such as phallic worship, Dr. Morton considers these Fellahs or Arab-Egyptians of the present day to be the lineal descendants of the ancient rural or agricultural Egyptians blended with the intrusive Arabian stock.

"The skull of the Fellah is strikingly like that of the ancient Egyptian. It is long, narrow, somewhat flattened on the sides, and very prominent in the occiput. The coronal region is low, the forehead moderately receding, the nasal bones long and nearly straight, the cheek-bones small, the maxillary region slightly prognathous, and the whole cranial structure thin and delicate. But notwithstanding these resemblances between the Fellah and Egyptian skulls, the latter possess what may be called an osteological expression, peculiar to themselves, and not seen in the Fellah."

"Of 35 adult Indostanic skulls in the collection, 8 only can be identified with tribes of the Ayra* or conquering race; nor even in this small number is there unequivocal proof of the affinity in question. The largest head in the series, that of a Brahmin, who was executed in Calcutta for murder, measures 91 cubic inches for the size of the brain—the smallest head 79. Two others pertain to Thuggs, remarkable for an elongated form and lateral flatness. The mean of these Ayra heads is 86 cubic inches."

* A fair race, with Sanscrit speech, whose primal seats were in Eastern Persia. They now occupy the country between the Himalaya Mountains on the North, the Vindya on the South, and between the Indian Ocean and the Bay of Bengal—a region known as Ayra, varia, or India Proper.
"Contrasted with this people, and occupying the country adjacent to the Bay of Bengal, are the Bengalees—small of stature, feeble in constitution, and timid in disposition. They are obviously an aboriginal race, upon whom a foreign language has been imposed; and are far inferior, both mentally and physically, to the true Ayras. Weak and servile themselves, they are surrounded by warrior castes; and perhaps the most remarkable feature of their character is the absence of will, and implicit obedience to those who govern them."

Of these child-like people, the Collection embraces 26 adult crania, of which the largest measures 90 cubic inches; the smallest 67; and the mean of all is 78.

The Mongolian group has received several additions since the death of Dr. Morton. It is at present represented by 17 crania and 4 casts, distributed as follows:—11 Chinese, 1 Japanese, 1 Burat-Mongol, 1 Kamschakan, 1 Kalmuck, 5 Laplanders, and 6 Eskimos.

Of ten Chinese crania, the largest measures 98 cubic inches; the smallest 70; while the mean is about 83. Through the kindness of Mr. Cramer, of St. Petersburg, a well marked Kalmuck skull has been added to the Collection. It measures 93.75 cubic inches of internal capacity. Two true Laplander's skulls measure respectively 94 and 102 inches; while a hybrid Lapland skull gives 78.75. Of the 4 Eskimo crania, presented by the late Dr. E. K. Kane, the largest internal capacity is 98; the smallest 80.5; giving a mean for all of 85.94. During his stay in this city, Mr. Combe, the Phrenologist, loaned to Dr. Morton three Eskimo skulls, which were brought from the Polar regions by Capt. Parry. The average measurement of these was 86.83 inches. The mean size of the brain of this remarkable and interesting Hyperborean people, (as deduced from this series of 7 skulls,) is therefore about 86.32 inches.

The Malay group comprises 26 crania of Malays proper, and 12 Polynesians. The largest Malay skull measures "97 cubic inches; the smallest 68; and they give a mean of 86; a large brain for a roving and uncultivated people, who possess, however, the elements of civilization and refinement." The largest portion of this series has been collected with ethnological precision, "and so much resemble each other as to remind us of the remark of Mr. Crawfurd—that the true Malays are alike among themselves, but unlike all other nations. * * * * They have a rounded cranium, with a remarkable vertical diameter and ponderous structure. The face is flat, the cheek-bones square and prominent, the osa nasi long and more or less flattened, and the whole maxillary structure strong and salient."

The Polynesian family is represented by 7 Kanaka, 1 New Zealand and 1 Marquesan skulls. The Kanaka crania give a mean of 83 cubic inches of internal capacity.

The great American group is, in several respects, well represented in the Collection. It includes 490 crania, and 13 casts, making a total of 503

* Crania Americana, p. 217.
INTRODUCTORY NOTE.

from nearly 70 different nations and tribes. Of this large number 256 belong to the Toltecan Race,* and 247 to the Barbarous Tribes scattered over the continent. It will thus be seen that they are nearly equally divided between the two primary divisions of this group.

Of 164 measurements of crania of the Barbarous Tribes, the largest is 104 cubic inches; the smallest 69; and the mean of all 84. One hundred and fifty-two Peruvian skulls give 101 cubic inches for the largest internal capacity, 58 for the smallest, and 75.3 as the average of all. Of 25 skulls of the Mexican Family, the largest measures 92; the smallest 67; while the mean is 81.7 inches. The number of cranial measurements and the means of these measurements for the different tribes, &c., of the two American Families, are given below in a tabular form.

TABLE II.

AMERICAN CRANIA.

<table>
<thead>
<tr>
<th>Barbarous Tribes</th>
<th>No. of skulls measured</th>
<th>Mean L. C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Americans.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arickarees</td>
<td>3</td>
<td>76</td>
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<td>Assinaboins</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>Chenooks</td>
<td>4</td>
<td>79</td>
</tr>
<tr>
<td>Oregon Tribes</td>
<td>5</td>
<td>82</td>
</tr>
<tr>
<td>Cherokees</td>
<td>4</td>
<td>88.7</td>
</tr>
<tr>
<td>Chitimaches</td>
<td>2</td>
<td>79.5</td>
</tr>
<tr>
<td>Chippeways</td>
<td>2</td>
<td>91</td>
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<tr>
<td>Cotonay</td>
<td>3</td>
<td>86</td>
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<td>Creeks</td>
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<td>88.7</td>
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<td>Hurons</td>
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<td>Iroquois</td>
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<td>96</td>
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<tr>
<td>Lenape</td>
<td>4</td>
<td>79.5</td>
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<tr>
<td>Lipans</td>
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<td>84</td>
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<tr>
<td>Miamius</td>
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<td>86</td>
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<td>Menetaris</td>
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<td>Narragansettis</td>
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<tr>
<td>Shoshones</td>
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<td>Ussurookas</td>
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<tr>
<td>Winnebagois</td>
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<td>Yamassce</td>
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<td>70</td>
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<td>Californian</td>
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<table>
<thead>
<tr>
<th>Barbarous Tribes</th>
<th>No. of skulls measured</th>
<th>Mean L. C.</th>
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</thead>
<tbody>
<tr>
<td>Miscellaneous,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mound, Caves,</td>
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<td></td>
</tr>
<tr>
<td>Uncertain, &amp;c.</td>
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<td></td>
</tr>
<tr>
<td>Central American</td>
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<tr>
<td>South Americans.</td>
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<td>Araucanians</td>
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<td>Brazilians</td>
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<td>Peruvian Family.</td>
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</tr>
<tr>
<td>Modern Mexicans.</td>
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<td>82.6</td>
</tr>
</tbody>
</table>

* If we take the collective races of America, civilized and savage, we find that the average size of the brain, as measured in the whole series of 341 skulls, is but 89.3 cubic inches.

* The Toltecan Race embraces the semi-civilized communities of Mexico, Bogota and Peru.
The Negro Group embraces 117 skulls and 2 casts, divided as follows: 16 American-born negroes, 88 native Africans, 2 Hovahs of Madagascar, 11 Australians, and 2 Oceanic Negroes. Of the American-born Negroes, the largest measurement is 86; the smallest 73; while the mean is 80.8. The largest of the native African series is 99; the smallest 65; and the mean of 64 measurements is 83.7. For the Hottentot family, 3 skulls give a mean of 75.3 cubic inches; two Hovah skulls of Madagascar average 82.5; and lastly the Alforian family gives for 8 Australian crania 75, and for two skulls of Oceanic Negroes 76.5 cubic inches.

Under the head of Mixed Races have been placed 5 Coptic (3 ancient and 2 modern), 12 Negroid Egyptian, 4 Nubian, 2 Hispano-Peruvian, 3 Negroid Indian, 1 Hispano-Indian, 1 Malayo-Chinese, and 2 Mulatto crania.

"Almost every investigation into the lineage of the Copts results in considering them a mixed progeny of ancient Egyptians, Berabera, Negroes, Arabs, and Europeans; and these characteristics are so variously blended as to make the Copts one of the most motley and paradoxical communities in the world. The Negro traits are visible, in greater or less degree, in a large proportion of this people, and are distinctly seen in the three skulls in my possession."

Eighteen crania of lunatics and idiots, seven illustrative of growth, two phrenologically marked, and eleven of uncertain origin, complete the Collection.

Extensive and unique as is this Collection, it is, nevertheless, still too limited to justify any positive and comprehensive conclusions concerning the great fundamental problems of Ethnology. That it will be capable, when sufficiently extended, of throwing much light upon these obscure and unsettled questions is amply attested by the scientific publications of Dr. Morton. It is earnestly hoped, therefore, that this magnificent nucleus, the result of much pecuniary sacrifice and many years of enthusiastic labor on the part of its late illustrious owner and founder, will not be neglected, but that its efficiency will be increased, and the objects for which it was gathered together attained by contributions from all who may be interested in the advancement of this youngest, most intricate, and most important of the sciences.

The Norwegians and Danes of the Scandinavian race, the Bas-Bretons, the Celtic Scotch, Welsh, Spanish, and Portuguese, the ancient and modern Greeks, the Magyar people, the great Tartar and Scythic hordes, the entire Basque family, and many other races, are without a single representative in the Collection. Of the Polar and Tchudic Families it contains but 4 and 9 skulls respectively; while the ancient Romans and their descendants, the modern Trasteverini beyond the Tiber, the great Slavic race, and the Berber tribes, are each represented by but one skull.

These deficiencies—and many others could easily be particularized—
are recorded in the hope that the attention of the scientific community being directed to them, they will sooner or later be supplied.

_Hall of the Academy, December, 1855._

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**NOTE.**

From my paper on the _Cranial Characteristics of the Races of Men_ contributed to the forthcoming work of Messrs. Nott and Glidden, entitled "Indigenous Races of the Earth," I have selected and embodied in the Catalogue several brief paragraphs descriptive of some of the heads in the Collection. These paragraphs are enclosed in brackets, thus, [ ].

For the use of the wood-cuts which embellish the succeeding pages, and which were originally executed for _Crania Americana, Crania Ægyptiaca, Types of Mankind, and Indigenous Races of the Earth_, I am indebted to the kindness of Messrs. G. R. Glidden and R. P. Morton.

_February, 1857._
INTRODUCTION.*

I commenced the study of Ethnology in 1830; in which year, having occasion to deliver an introductory lecture on Anatomy, it occurred to me to illustrate the difference in the form of the skull as seen in the five great races of men. After the lapse of but twenty years, the fact seems strange even to myself, that when I sought the materials for my proposed lecture, I found to my surprise that they could be neither bought nor borrowed. Caucasian and Negro crania were readily procured, and two or three Indian skulls were placed at my disposal; but for the Mongolian and Malay I inquired in vain. I resolved, therefore, to supply this remarkable deficiency in an important branch of science; and much time, toil, and expense have been rewarded by the acquisition of 867† human skulls and 601 of the inferior animals. Yet I need hardly add, that had it not been for the exertions of my friends in every quarter of the globe, my object would have remained unaccomplished. The following pages afford emphatic evidence on this point; and it gives me great pleasure thus to record the kindness of those persons who have aided me in an enterprise that, for obvious reasons, has been attended by many difficulties.

The primary motive in making the following Collection, has been to compare the characters of the cranium in the different races of men, and these again with the skulls of the inferior animals; not only in reference to exterior form, but also to internal capacity as indicative of the size of the brain.

Beside these strictly Ethnographic objects, some others of a different and subordinate kind have been had in view; such as pathological conditions of the skull from diseases and from wounds; remarkable developments illustrative of the principles of Phrenology, and preternatural growths of every description.

The Indian crania contained in this series have received my especial attention, both in respect to their number and authenticity, for they have been collected with great care by the gentlemen whose names are associated with them. In every instance where a doubt is entertained as to the tribe or nation to which the skull belonged, it is expressed by a mark of interrogation; and where no clue exists for such information, the deficiency is noted accordingly. I have sometimes had the skulls of both

† Since increased to 1035.
Europeans and Africans sent me by mistake for those of Indians; that these should occasionally be mingled in the same cemeteries is readily understood; but a practised eye can separate them without difficulty.

Large as this Collection already is, a glance at the Ethnological Table will show that it is very deficient in some divisions of the human family. For example it contains no skulls of the Eskimaux, Fuegians, Californians or Brazilians. The distorted heads of the Oregon tribes are also but partially represented, while the long-headed people of the Lake of Titicaca, in Bolivia, are altogether wanting. Skulls of the great divisions of the Caucasian and Mongolian races are also too few for satisfactory comparison, and the Slavonic and Tchudic (Finnish) nations, together with the Mongol tribes of Northern Asia and China, are among the especial desiderata of this Collection.

The following analysis exhibits an Ethnographic view of the materials embraced in the entire series.

<table>
<thead>
<tr>
<th>I. Caucasian Group.</th>
<th>5. Anglo-American.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scandinavian Race.</td>
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</tr>
<tr>
<td>Norwegian</td>
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</tr>
<tr>
<td>Swedish Peasants</td>
<td>7</td>
</tr>
<tr>
<td>Finland Swedes</td>
<td>2</td>
</tr>
<tr>
<td>Sudermanland Swedes</td>
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</tr>
<tr>
<td>Ostrogoth</td>
<td>1</td>
</tr>
<tr>
<td>Turannic Swede</td>
<td>1</td>
</tr>
<tr>
<td>Cimbric Swedes</td>
<td>3</td>
</tr>
<tr>
<td>Swedish Finns</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>21</td>
</tr>
<tr>
<td>2. Finnish or Tchudic Race.</td>
<td></td>
</tr>
<tr>
<td>True Finns</td>
<td>10</td>
</tr>
<tr>
<td>Germans</td>
<td>11</td>
</tr>
<tr>
<td>Dutchman</td>
<td>1</td>
</tr>
<tr>
<td>Prussians</td>
<td>4</td>
</tr>
<tr>
<td>Burgundian</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>17</td>
</tr>
<tr>
<td>4. Anglo-Saxon.</td>
<td></td>
</tr>
<tr>
<td>English</td>
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</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Irish</td>
<td>8</td>
</tr>
<tr>
<td>Celtic (?) heads from Catacombs of Paris</td>
<td>4</td>
</tr>
<tr>
<td>Celt (?) from the field of Waterloo</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>13</td>
</tr>
<tr>
<td>7. Slavonic Race.</td>
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<td>Scianovians</td>
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<td>Ancient Phoenician</td>
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<tr>
<td>Ancient Roman</td>
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<tr>
<td>Greek</td>
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<td>Parsees</td>
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<td>Afghan</td>
<td>1</td>
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<td>Greco-Egyptians</td>
<td>23</td>
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<tr>
<td></td>
<td>39</td>
</tr>
</tbody>
</table>

* Since this paragraph was written, 6 Eskimo, 2 Californian, 7 Brazilian, 1 Slavonic, 13 Finnish, 1 Kalmuck, 2 Laplander, 1 Japanese, and 4 Chinese skulls have been added to the Collection.

† In consequence of the numerous additions to the Collection since 1849, the above analytical table has been necessarily modified from that presented in the third edition of this Catalogue. It is proper to observe that this table is not an attempt at scientific classification, but simply an arrangement adopted for convenience of study and examination.

† Dr. Morton used the term Pelagian too comprehensively. The Circassians, Armenians, and Persians should not be placed in this group.
### INTRODUCTION.

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Arabs</td>
<td>5</td>
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<td>&quot; Alexandrian &quot;</td>
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<td>Ottawas</td>
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<td>Ottigamies</td>
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<td>Penobscots</td>
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<td>Pottawatomies</td>
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<td>Saucks</td>
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<td>Shoshones</td>
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<td>Yamassee</td>
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<td>Californians</td>
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<td>Miscellaneous</td>
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<th>b. Central Americans.</th>
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<td>Maya</td>
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<td>Fragments from Yucatan</td>
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<th>c. South Americans.</th>
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<td>Araucanians</td>
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<td>From Mounds</td>
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<tr>
<td>Charibs</td>
<td>3</td>
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<td>Patagonians</td>
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<td>Brazilians</td>
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|  |
|---|---|
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INTRODUCTION.

2. Toltecan Race.

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Aricans ........................................ 20
Pachacamac ..................................... 104
Pisco ............................................ 62
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Callao .......................................... 3
Miscellaneous .................................. 9
Elongated skulls from Titicaca, &c. .......... 8

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Nubians .......................................... 4
Hispano-Peruvians ............................... 2
Negroid-Indians ................................ 3
Hispano-Indian ................................ 1
Malayo-Chinese ................................ 1
Mulattoes ....................................... 2

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Phrenological Skulls ............................ 2
Nation uncertain ................................ 11

Total, ........................................... 1035

The letters F. A. express the facial angle, and I. C. refer to the internal capacity of the cranium as obtained by the process invented by my friend, Mr. J. S. Phillips, and described in my Crania Americana, p. 263, merely substituting leaden shot, one-eighth of an inch in diameter, in place of the white mustard-seed originally used. I thus obtain the absolute capacity of the cranium, or bulk of the brain, in cubic inches; and the results are annexed in all other instances in which I have had leisure to put this revised mode of measurement in practice. I have restricted it, at least for the purpose of my inferential conclusions, to the crania of persons of sixteen years of age and upwards, at which period the brain is believed to possess the adult size. Under this age, the capacity-measurement has only been resorted to for the purpose of collateral comparison.

All the measurements in this Catalogue, both of the facial angle and internal capacity, have been made with my own hands. I at one time employed a person to aid me in these elaborate and fatiguing details; but having detected some errors in his measurements, I have been at the pains to revise all that part of the series that had not been previously measured by myself. I can now, therefore, vouch for the accuracy of these multitudinous data, which I cannot but regard as a novel and important contribution to Ethnological science.

It is necessary to add, that the measurements originally published in

* There is a discrepancy between this total and the highest number in the Catalogue itself, owing to certain numbers having been cancelled, and not refilled.
INTRODUCTION.

the Crania Americana were made with seeds, which will explain the discrepancy between the numbers observable in that work and this Catalogue. The measurements of the Crania Egyptiaca having been originally made with shot, require no revision; nor can I avoid expressing my satisfaction at the singular accuracy of this method, since a skull of an hundred cubic inches, if measured any number of times with reasonable care, will not vary a single cubic inch.

I am now engaged in a memoir* which will embrace the detailed conclusions that result from these data; and meanwhile I submit the following tabular view of the prominent facts:—

TABLE III.—Showing the Size of the Brain in cubic inches, as obtained from the internal measurement of 663 Crania of various Races and Families of Man.†

<table>
<thead>
<tr>
<th>RACES AND FAMILIES</th>
<th>NO. OF SKULLS</th>
<th>LARGEST C.</th>
<th>SMALLEST C.</th>
<th>MEAN.</th>
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<td>Teutonic Family</td>
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<td>Swedes</td>
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<tr>
<td>Anglo-Americans</td>
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<td>97</td>
<td>82</td>
<td>90</td>
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<td>Tchaditic Family</td>
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<tr>
<td>True Finns</td>
<td>9</td>
<td>112.5</td>
<td>81.5</td>
<td>94.3</td>
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<td>78</td>
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<td>Persians</td>
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<td>96</td>
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<td>Pelagic Family</td>
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<td>Egyptians</td>
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<td>Shoshone, &amp;c.</td>
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<td>NEGRO GROUP</td>
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<tr>
<td>American-born Negroes</td>
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<td>77</td>
<td>76</td>
<td>76.5</td>
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</table>

* Dr. Morton died before this memoir was completed. Extracts from it will be found in the foregoing Explanatory Note.
† I have enlarged this Table by the addition of 40 measurements, with the effect of increasing the mean cranial capacity of the Teutonic Family, the Mongolian and American Groups, by 1.5, 3, and 1.3 cubic inches respectively; and slightly diminishing that of the Negro Group. In the preceding Explanatory Note the reader will find a more detailed account of these measurements, together with others which have been made since Dr. Morton's death.
INTRODUCTION.

In this table the measurements of children, idiots and mixed races are omitted, excepting only in the instance of the Fellahs of Egypt, who, however, are a blended stock of two Caucasian nations,—the true Egyptian and the intrusive Arab, in which the characteristics of the former greatly predominate.

No mean has been taken of the Caucasian race* collectively, because of the very great preponderance of Hindu, Egyptian, and Fellah skulls over those of the Germanic, Pelasgic and Celtic families. Nor could any just collective comparison be instituted between the Caucasian and Negro groups in such a table, unless the small-brained people of the latter division (Hottentots, Bushmen and Australians) were proportionate in number to the Hindoos, Egyptians and Fellahs of the other group. Such a computation, were it practicable, would probably reduce the Caucasian average to about 87 cubic inches, and the Negro to 78 at most, perhaps even to 75, and thus confirmatively establish the difference of at least nine cubic inches between the mean of the two races.†

Philadelphia, Nov. 1, 1849.

* It is necessary to explain what is here meant by the word race. Further researches into Ethnographic affinities will probably demonstrate that what are now termed the fixed races of men, would be more appropriately called groups—that each of these groups is again divisible into a greater or smaller number of primary races, each of which has expanded from an aboriginal nucleus or centre. Thus I conceive that there were several centres for the American group of races, of which the highest in the scale are the Toltec-Caucasian nations, the lowest the Fuegians. Nor does this view conflict with the general principle, that all these nations and tribes have had, as I have elsewhere expressed it, a common origin; inasmuch as by this term is only meant an indigenous relation to the country they inhabit, and that collective identity of physical traits, mental and moral endowments, language, &c., which characterize all the American races. The same remarks are applicable to all the other human races; but in the present infant state of Ethnographic science, the designation of these primitive centres is a task of equal delicacy and difficulty. I may here observe, that whenever I have ventured an opinion on this question, it has been in favor of the doctrine of primeval diversities among men—an original adaptation of the several races to those varied circumstances of climate and locality, which, while congenital to the one, are destructive to the other; and subsequent investigations have confirmed me in these views. See Crania Americana, p. 3; Crania Ägyptiaca, p. 37; Distinctive Characteristics of the Aboriginal Race of America, p. 36; Silliman's American Journal of Science and the Arts, 1847; and my letter to J. R. Bartlett, Esq., in Vol. 2 of the Transactions of the Ethnological Society of New York.

† From the Proceedings of the Academy of Natural Sciences of Philadelphia for September and October, 1849.
CATALOGUE.

I. CAUCASIAN GROUP.

I. SCANDINAVIAN RACE.

(Case 1.)

1. 1260. Cast of a Norwegian skull. From Prof. Retzius, of Stockholm, A. D. 1845.

(This cast is remarkable for its great size. It belongs to the dolichocephalic variety of Retzius. The fronto-parietal convexity is regular from side to side. The occipital region as a whole is quite prominent; but the basal portion of the occiput is flat and parallel with the horizon when the head rests squarely upon the lower jaw. The glabella, superciliary ridges, and external angular processes of the os frontis are very rough and prominent, overhanging the orbits and inter-orbital space in such a manner as to give a very harsh and forbidding expression to the face. The semi-circular ridges passing back from the external angular process, are quite elevated and sharp. The nasal bones are high and rather sharp at the line of junction; orbits spacious; malar bones of moderate size, and flattened antero-laterally; superior maxilla rather small in comparison with the inferior, which is quite large, and much flared out at the angles. The facial angle is good, and the whole head strongly marked.)

1. 117. Swede.
4. 1258. Cast of the skull of a Swedish child.
7. 1488. Swedish child of four years.

The six preceding skulls are from Prof. Retzius, of Stockholm, A. D. 1845 and 1850.
The Swedish form of skull, judging from the above specimens, bears a family resemblance to the Norwegian, and in several respects is not unlike the Anglo-Saxon head figured in the first decade of the *Crania Britannica* of Messrs. Davis and Thurnam. In the Anglo-Saxon, however, the chin is more acuminated, and the maxillary rami longer. The chief points of resemblance about the calvaria, are the slightly elevated forehead, the rather flattened vertex, and the inclination of the parietalia downwards and backwards towards the occiput. This latter feature is also possessed by the Norwegian cast referred to above.

8. 1545. Swede from Finland. I. C. 107.5. F. A. 86°.
9. 1546. Swede from Finland. I. C. 93.75. F. A. 83°. Man named Carl Bli, from Borga Parish, in the Province of Nyland. For vagrancy he was imprisoned May 17th, 1831, and in default of bail, sentenced to a half-year's hard labor. He died æt. 64 years.

Nos. 1545 and 1546, descendants of colonists who settled in Finland in the most remote times.


Nos. 1545 to 1549, inclusive, were presented by Professor Retzius, of Stockholm, just after the death of Dr. Morton.


14. 121. Turannic Swede.

From Professor Retzius, after Dr. Morton’s decease.


Probably descended from the oldest Scytho-Turannic inhabitants, (Brachy-cephali ?) who always have black hair, and are of small stature. From Professor Retzius with No. 1532.

17. 1362. Cast of the skull of an ancient Cimbrian, from the Danish Island of Moen. Prof. Retzius.

1. 1542. Swedish Finn, (mixed.) F. A. 81°.5. I. C. 89. Man, named Elias Alhonen, from Lampis Parish, in the Province of Fosdelhuvus. For committing murder he was imprisoned (May 8th, 1840,) in the Fort to hard labor for life. Died in the Lazaretto, æt. 62 years.

[In No. 1249 the singularly protuberant occiput projects far behind the foramen magnum. Nos. 1255, 1550 and 1532 evidently belong to the same peculiar type. These four heads resemble each other as strongly as they differ from the remaining Swedes, Finns, Germans, and Celts in the collection. They call to mind the kumbe-kephale, or boat-shaped skulls described by Prof. Wilson in his *Pre-historic Annals of Scotland*. No. 1362, presents the same elongated form. It differs from the four preceding skulls in being larger, more massive, and broader in the forehead. Nos. 117, 1258, and 1488 possess the true Swedish form as described above. Nos. 1545 and 1546 are broader, more angular, and less oval than the true Swedish form. The horizontal portion of the occiput is quite flat, and the occipital protuberance prominent. The three Sudermanland Swedes have the same general form, while the three Swedish Finns have a more squarely globular, and less oval cranium than the true Swedes. In No. 121 the posterior region of the calvaria is broader, and does not slope away so much. In general configuration this cranium approaches the brachy-cephalic class of Retzius.]

**II. FINNISH RACE.**

(Case 1.)

1. **1534. True Finn.** I. C. 94.5. F. A. 87°.
2. **1535. True Finn.** I. C. 97.5. F. A. 84.5°.

4. **1537. True Finn.** I. C. 84.25. F. A. 82.5°.
[The Finnish skull has a square or somewhat angularly round appearance. The antero-posterior diameter being comparatively short, it falls within the brachy-cephalic class of Retzius. The forehead is broad, though less expansive than in the true Germanic race. This frontal breadth, the lateral expansion of the parietalia, and the flatness of the os occipitis, give to the coronal region, when viewed perpendicularly, a square, or rather slightly oblong appearance. The face is longer and less broad than in the Mongolian head, while the lower jaw is larger, and the chin more prominent. Hence, the lower part of the face is advanced, somewhat in the manner of the Sclavonian face. The whole head is rather massive and rude in structure, the bony prominences being strongly characterized, and the sutures well defined. The general configuration of the head is European, bearing certain resemblances, however, to the Mongolian on the one hand, and the Sclavonian on the other.]

5. **1538. True Finn. I. C. 105. F. A. 83°.**

6. **1539. True Finn. I. C. 81.5. F. A. 85°.** A laborer, named Matts Johansson Lans, from the city of Abo. Convicted of desertion and theft while in the Emperor's service, he was sentenced to 8 years imprisonment, and died, aet. 22 years, in the Prisoners' Lazaretto.

7. **1540. True Finn. I. C. 88.5. F. A. 84°.** A man named Jacob Nurkkala, alias Karry, from Storkyro Parish, in the Province of Wasa, who, for committing burglary for the third time, was imprisoned July 6th, 1835, to hard labor in the Fort for life. He died in the Lazaretto, aet. 59 years.


The preceding 11 skulls were sent to the Academy by Professor Retzius, of Stockholm, just after the demise of Dr. Morton.

9. **1252. Skull of a Finland woman, from the Parish of Kemi, aetat. 40. I. C. 86.**

10. **1259. Cast of the skull of a Finlander. Prof. Retzius, 1845.**

**III. SUEVIC RACE.**

*(Case 1.)*

1. **37. German: woman, aetat. 30. I. C. 90.** [Round form.]


3. **1060. German of Tubingen: woman, aetat. 30. I. C. 70.**
4. 1063. German of Tubingen: man, ætat. 40. I. C. 86. [Square form; occiput flattened; face large and long.]

5. 1064. German of Tubingen: woman, ætat. 40. I. C. 91. [Has the Swedish or Northern angular oval, a type distinct from the oval of Southern Europe, with which hasty observers are apt to confound it. It is a well-formed head, and in some respects resembles the Anglo-Saxon skull figured in Crania Britannica.]

6. 1188. German of Tubingen: man, ætat. 40. I. C. 85. [Resembles the preceding skull in form.]

7. 1189. German of Tubingen: man, ætat. 40. I. C. 78. [Bears the Swedo-Finnic type.]

8. 1190. German dwarf: female of Tubingen, 20 years of age and three feet in height. I. C. 46.5.

9. 1191. German of Frankfort: man, ætat. 70. I. C. 95. [Approximates the square form.]


For the preceding 8 skulls of the Germanic or Teutonic Race, I am indebted to Dr. George Engelmann, now of St. Louis, Missouri.

1. 434. A Dutchman of noble family, born in Utrecht, and for several years a captain in the army at Batavia, in the Island of Java, where he died under thirty years of age. He was handsome, not deficient in talent, and of an amiable disposition, but devoted to conviviality and dissipation, which finally destroyed him. Dr. Doornik, late of Batavia, from whom I obtained this cranium, gave me the above facts from personal knowledge. F. A. 81°. I. C. 114.

[The calvaria is very large; the face rather small, delicate, well-formed, and tapering towards the chin. The frontal diameter or breadth between the temples, is 4½ inches; the greatest breadth between the parietal protuberances is 6½ inches; the antero-posterior or longitudinal diameter is 7½ inches; the height, measured from the anterior edge of the foramen magnum, in a direct line to the sagittal suture, 5½ inches. A certain angularity or squareness of the frontal and posterior bi-parietal regions, gives to this head the Teutonic form. The posterior or occipital region is flat and broad, and presents to the eye a somewhat pentagonal outline. The temporal regions are full, the mastoid processes large, and the basis cranii nearly round. The outline of the coronal region...]
CATALOGUE OF

resembles a triangle, truncated at the apex. This latter feature is also seen in one of the Finnic skulls (No. 1538.)

3. 1192. PRUSSIAN of Berlin: woman, ætat. 25. I. C. 82.
The preceding 4 crania from Dr. Geo. Engelmann.

1. 1533. Fragments of an ANCIENT BURGUNDIAN skull, from a tomb near Lausanne in Switzerland. Procured by Mr. Troyon, a celebrated Archeologist, who considers this skull to have been 2000 years in the tomb. Presented by Prof. Retzius subsequent to Dr. Morton's death.

IV. ANGLO-SAXON RACE.

(Case 1.)

1. 80. Skull of an ENGLISHMAN named Samuel Gwillym, a convict in Australia, whose history is thus briefly given by my friend Dr. C. Hufnagle, now of Calcutta:

"Transported to Van Diemen's land in 1820 for house-breaking; was orderly on ship-board, but subsequently robbed his master, for which he was sent for two years to Maria Island: while there was flogged for combination, and also received 100 lashes for stealing articles from the wreck of the Apollo. Returning to Van Diemen's land he was fined twice for drunkenness; and was executed there on the 16th of March, 1837, for the murder of Mary Mills, a young woman whom he had previously violated." I. C. 91.

[This skull belongs to the dolicho-cephalic class, but is not strictly oval, being flattened posteriorly. In general configuration it resembles the Northern or Gothic style of head. The face bears the Finnic stamp.]


[This skull is long, flat on the top, and broad between the parietal bones. The posterior portion of the occiput is prominent, the basal surface is flat. In its general outline, the calvaria approaches the kumbe-kephalic form.]

3. 991. ENGLISH soldier? from Bloody Pond, near Lake George, New York; the scene of Montcalm's massacre of the English

4. 59. Anglo-Saxon head: skull of Pierce,* a convict and cannibal, who was executed in New South Wales, A. D. 18—. F. A. 85°. I. C. 99. [A long and strictly oval head.]

V. Anglo-American Race.

(Case 1.)


4. 98. Anglo-American? Remarkable for the fulness of the occipital region, and obliquity of the foramen magnum. [Germanic form.]

5. 552. Anglo-American: man, ætat. 30. I. C. 97. This skull belonged to the collection of the late Dr. Doornik, and was presented to me with other crania, by Dr. Jones, of New Orleans,

* A letter addressed to me by Wm. Cobb Hurry, Esq., of Calcutta, contains the following particulars of this man's singular career:—

"With regard to the cannibal Pierce, all that is known of him is, that he was a native of Scotland, or the north of Ireland, and a seaman. He was a convict in Van Diemen's land, and escaped with others into the woods. Hunger compelled them to prey upon each other, till only Pierce and another were left. A romantic tale might be made from Pierce's own narrative of the feelings with which these two men watched each other, till, overcome with fatigue, the last of the band fell a victim. Pierce was relieved by a party who fell in with him, and the cannibalism of which he was guilty being attributed to necessity, was not punished. From that time his propensities acquired their full development, and he succeeded repeatedly in persuading his fellow prisoners to escape with him, for the sole purpose of killing them and devouring their flesh. He used to return secretly to the depot, and persuade a fresh victim that he had been sent by others who were waiting in the woods. He was at last caught; and being asked if he knew where one of his companions was, deliberately pulled an arm out of his jacket and showed it to the soldiers. Mr. Crockett, from whom I had this account, and who gave me the skull, is the Colonial Surgeon, and attended Pierce in the hospital both before and subsequently to his crimes. He stated to me his conviction that Pierce was insane, which, however, did not prevent him from being hanged."
through B. F. French, Esq.  [In form it resembles the Norwegian skull.]


8. **724.** Conical skull of a white woman, æetat. 40, of whose history nothing is known. 1839. I. C. 81.

**VI. CELTIC RACE.**

*(Case 1.)*


2. **21. Celt**: supposed to be a British soldier, killed at the battle of Chippeway. Æetat. 40. I. C. 93. This skull is remarkable for the great size of the superciliary ridges; that of the right side having a corresponding frontal sinus, that on the left being represented by solid bone upwards of half an inch in horizontal thickness. Dr. Mickle, 1831. [In this head the Gothic calvarial form is associated with a heavy, massive face.]

3. **42. Celtic Irishman**, aged 21, imprisoned for larceny, and in all respects a vicious and refractory character. Died A. D. 1831. I. C. 97. [Approaches the square Germanic form.]

4. **52. Celtic Irish** from the Abbey of Buttevant, County of Cork, Ireland. Woman, æetat. 50. F. A. 80°. I. C. 82. Dr. Smith (Hist. of the County of Cork) says that these are the bones of the Irish slain at the battle of Knockinoss, A. D. 15—. [The same form as the preceding.]

5. **985. Celtic Irish**: man, æetat. 60. F. A. 77°. I. C. 93. [This head being rather broad between the parietal tubers, approximates the Gothic type. The face resembles that of some of the Finns, but is smaller and less massive.]


7. **1186. Irish cranium** from Mayo county. [Belongs to the peculiar boat-shaped Cimbric type.]

8. **1356. Cast of the skull of one of the ancient Celtic race of Ireland.** Prof. Retzius.

[This head, the largest in the group, is very long, clumsy and massive in its general appearance. The forehead is low, broad, and ponderous; the occiput heavy and very protuberant; the basis cranii long,
broad, and flat; the orbits capacious; and the distance from the root of the nose to the upper alveolus quite short. In its general form, it very much resembles the Cimbric skull, No. 1362. The Cimbric type, however, is somewhat narrower in the frontal region, and widens more posteriorly towards the parietal protuberances.

9. 661. Celtic (?) skull, Obtained from the Catacombs at Paris by the late Dr. Harlan. Presented by Mr. Harlan.
10. 662. Celtic (?) skull, 11. 663. Celtic (?) skull, 12. 664. Celtic (?) skull, 13. 1564. Celtic (?) skull from the field of Waterloo. Presented by Mr. Harlan. [The very heavy skull from the field of Waterloo (No. 1564) is strictly and beautifully oval. Of the four heads from the Catacombs at Paris, three are decidedly brachy-cephalic, and one of the Germanic form.]

VII. SCLAVONIC RACE.

(Case 1.)

1. 1251. Sclavonian, from Olmutz, in Moravia: woman, ætat. 30.

[Sclavonian (1251).]

This skull presents the following characters:—General form of the head globular, though wanting in symmetry, in consequence of the posterior portion of the right parietal bone being more fully developed than the corresponding portion of the left; the calvaria quite large in proportion to the face, and broadest posteriorly between the parietal protuberances; the forehead is high, and moderately broad; the vertex presents a somewhat flattened appearance, in consequence of sloping downwards and backwards towards the occiput; the occipital region is also flat, and the breadth between
the mastoid processes very great. The face is small and delicate, the nasal bones prominent, the orbits of moderate size, the malar bones flat and delicately rounded, and the zygomatic processes small and slender. The lower jaw is rather small, rounded at the angles, and quite acuminated at the symphysis. If classified according to its form, this head would find its place near to, if not between, the Kalmuck and Turkish types.

2. **1253.** Cast of a Sclavonian head from Morlack, in Dalmatia. Nos. 1251 and 1253 from Prof. Retzius.

### VIII. PELASGIC RACE.

**(Case 2.)**

1. **1352.** Ancient Phenician?

I received this highly interesting relic from M. F. Fresnel, the distinguished French archaeologist and traveller, with the following memorandum, A. D. 1847:—

"Crâne provenant des caves sépulchrales de Ben-Djemma, dans l'île de Malte. Ce crâne paraît avoir appartenu à un individu de la race qui, dans les temps les plus anciens, occupait la côte septentrionale de l'Afrique, et les îles adjacentes."

[This cranium is the one alluded to in the interesting anecdote narrated by the late Dr. Patterson, in his graceful memoir, as illustrating the wonderful power of discrimination, the tactus visus, acquired by Dr. Morton in his long and critical study of craniology.* From this circumstance, and from the many singular and interesting associations inseparably connected with its antiquity, the introduction of the above figure cannot fail to be received with a]

* See Types of Mankind, p. xl.
lively sense of interest by those engaged in these studies. It is in many respects a peculiar skull. In a profile view, the eye quickly notices the remarkable length of the occipito-mental diameter. This feature gives to the whole head an elongated appearance, which is much heightened by the general narrowness of the calvaria, the backward slope of the occipital region, and the strong prognathous tendency of the maxilla. The contour of the coronal region is a long oval, which recalls to mind the kumbe-kephalic form of Wilson. The moderately well-developed forehead is notable for its regularity. In its form and general characters the face is *sui generis*. It may not inaptly be compared to a double wedge, for the facial bones are not only inclined downwards and remarkably forward, thus tapering towards the chin, but also in consequence of the flatness of the malar bones and the inferior maxillary rami they appear laterally compressed, sloping gently, on both sides, from behind forwards, towards the median line. The lower jaw is large, and much thrown forwards. The slope of the superior maxilla forms an angle with the horizon of about 45°. Notwithstanding this inclination of the maxilla, the incisor teeth are so curved as to be nearly vertical. Hence the prognathism of the jaws is quite peculiar, differing, as it does, from that of the Eskimo and true African skulls presently to be noticed.]

1. **1049.** Fragments of an ancient Roman? head, from a tomb on the road between Cumae and the ruins of Baiae, near the latter place, A. D. 1841. Dr. M. Burrough.

1. **1354.** Cast of the skull of a young Greek. Prof. Retzius. [The calvarial region is well developed; the frontal expansive and prominent; the facial line departs but slightly from the perpendicular, and the facial angle consequently approaches a right angle. A small and regularly-formed face, devoid of asperities, harmonizes well with the general intellectual character of the head proper. The malar bones are small, flat, and smooth, with just enough lateral prominence to give to the face an oval outline; the alveolar margins of the maxillæ are regularly arched, and the teeth perpendicular.]

* Circassians.

1. **762.** Saraska, or pure Circassian: man, ætat. 30. F. A. 75°. I. C. 94.


Circassian (764).

[The calvaria of No. 764 is well developed and regularly arched, and in size considerably exceeds the face. The proportions between the vertical, transverse, and longitudinal diameters are such as to convey to the eye an impression of harmony and regularity of structure. The high and broad forehead forms with the parietal region a continuous and symmetrical convexity. The occiput is full and prominent. The face is strongly marked; the orbits moderate in size; the nasal bones prominent; the malar bones small and rounded; the teeth vertical; the maxillæ of medium size, and the chin prominent. The fulness of the face, its oval contour, and general want of angularity, decidedly separate this head from the Mongolian type, as represented by the Kalmuck skull, No. 1553.]


Armenians.

4. 792. Armenian : girl of fourteen years?

Persians.


The 12 preceding skulls from G. R. Gliddon, Esq.
3. **AFFGHAN boy**, about 16 years of age, killed at Jugdalluk during the memorable massacre of the 44th English regiment, A. D. 1845.

[A general family resemblance pervades all these crania. They are all, with one exception, remarkable for the smallness of the face, and shortness of the head. In the Armenian skull, the forehead is narrow but well formed, the convexity expanding upwards and backwards towards the parietal protuberances, and laterally towards the temporal bones. The greatest transverse diameter is between the parietal bosses. This feature, combined with the flatness of the occiput, gives to the coronal region an outline somewhat resembling a triangle with all three angles truncated, and the base of the triangle looking posteriorly. In fact, the whole form of the calvaria is such as to impress the mind of the observer with a sense of squareness and angularity. The dimensions of the orbits are moderate; the malar bones small, flat, and retreating; the zygomatic processes slender, and the general expression of the face resembling that of the Circassians, from which latter it differs in being shorter. The Persian head is less angular, the frontal region broader, the occiput fuller, and the malar bones larger. The lower jaw is small and rather round. The Affghan skull resembles, in several respects, the Hindoo type.]

**Græco-Egyptians.**

Nos. 798 to 804 are ancient Egyptians from the necropolis of Memphis, north-west of the Pyramid of Five-Steps, viz:


Under this name I embrace all those crania that conform to the highest Caucasian type. The Egyptian or Nilotic form includes the pure Egyptian race. The Negroid form expresses that mixture of the Egyptian and Negro in which the latter predominates. See Crania Egyptiaca, passim.


3. **801. Pelasgic form**: woman, ætat. 25.


6. **Pelasgic (808).**


7. **Pelasgic (812).**

7. **814.** Pelasgic form: man, æt. 90. I. C. 97. Crania Ægyptiaca, plate 2, fig. 5.


9. **Pelasgic (815).**

9. **817.** Pelasgic form. F. A. 80°. I. C. 89. Crania Ægyptiaca, plate 5, fig. 3.


11. **824.** Infantile mummy.


The two following crania were found by Mr. Perring, Civil Engineer, in the gallery leading to the newly discovered chamber in the Pyramid of Five Steps, at Saccara. These are, perhaps, the most ancient human remains extant. Mr. Perring is of opinion that they date with the erection of the Pyramid, and are therefore in all probability upwards of 4000 years old. See Vyse, Pyramids of Gizeh, vol iii. p. 44.

16. 840. Pelasgic form: man. F. A. 79°. I. C. 89. Skull obtained from a tumulus recently opened at the ancient quarries of Toora, (on the left bank of the Nile, seven miles above Cairo,) whence was taken the stone used in building the Pyramids of Gizeh, and other and much later structures in Egypt. The bodies were covered with coarse matting, and enclosed in sarcophagi, and are doubtless the remains of quarrymen. Crania Ägyptiaca, plate 2, fig. 9.
17. 850. Pelasgic form: man, æetat. 70. I. C. 86. Crania Ägyptiaca, plate 6, fig. 4.
18. 859. Pelasgic form: woman, ætat. 80. Hair long and fine. I. C. 82. Crania Ägyptiaca, plate 6, fig. 5.
21. 875. Pelasgic form: woman, ætat. 70, with long, fine hair. I. C. 73. Crania Ägyptiaca, plate 10, fig. 9.
22. 884. Pelasgic form: woman, æetat. 30, with a profusion of long, silky hair. Crania Ägyptiaca, plate 10, fig. 8.

Pelasgic (884).

Nos. 798 to 893 from G. R. Gliddon, Esq.
IX. SEMITIC RACE.

(Case 2.)

Arabs.


4. 1296. Cranium of an embalmed body taken by Mr. Fresnel, A. D. 1839, from one of the hypogea called Maghair-Shudyb, or Grottoes of Jethro, in Midian, east of the Gulf of Akaba, in Arabia Petraea. M. Fresnel, through Mr. Gliddon.

Nos. 780 to 1296 from G. R. Gliddon, Esq.

[These four heads are characterised by a low, recedent forehead, a broad and flattened occipital region, and a comparatively short occipito-frontal diameter. They fall within the brachy-cephalic class, and have therefore been separated from the group of longer and more oval Fellah skulls. (See pages 43-4).]

5. 671. Os Frontis of a Midianite.

Hebrews (?)


5. 845. Semitic? form: man, with fine hair. I. C. 92. Thebes

Crania Ægyptiaca, plate 12, figs. 1, 2.
HUMAN CRANIA.

6. **865. Semitic form: man, ætat. 40.** Crania Ägyptiaca, plate 6, fig. 2.
7. **870. Semitic form: man, ætat. 30, with fine hair cut close. I. C. 79.** Crania Ägyptiaca, plate 6, fig. 8.
8. **879. Semitic form: man, ætat. 50.** Crania Ägyptiaca, plate 8, fig. 2, Nos. 807 to 879 from G. R. Gliddon, Esq.

1. **1361. Cast of the skull of an Abyssinian woman.** Prof. Retzius.

X. BERBER RACE.

(Case 2.)

1. **23. Guanche, from a cave in the island of Palma, one of the Canaries: man, ætat. 40. F. A. 77°. I. C. 85.** Dr. J. C. Warren.

XI. NILOTIC RACE.

(Case 2.)

*Ancient Theban Egyptians.*

1. **48. Embalmed head of an Egyptian girl eight years of age, from the Theban catacombs.** Egyptian form, with a single lock of long fine hair. Dissected by me before the Academy of Natural Sciences of Philadelphia, December 10, 1833.
2. **60. Embalmed head of an Egyptian lady about 16 years of age, brought from the Catacombs of El Gourna, near Thebes, by the late Antonio Lebolo, of whose heirs I purchased it, together with the entire body: the latter I dissected before the Academy of Natural Sciences, on the 10th and 17th of December, 1833, in presence of eighty members and others.** Egyptian form, with long, fine hair. Crania Ägyptiaca, plate 10, fig. 6.

3. **843. Egyptian form: woman, ætat. 30, with long, fine hair. I. C. 74. Thebes.** Crania Ägyptiaca, plate 10, fig. 4.

Egyptian (844.)


Egyptian (846.)

The following crania, Nos. 847 to 861, inclusive, (nine in number,) are from the Catacombs of El Gourna, near Thebes. This valuable series was obligingly presented to me by M. Clot Bey, Chief of the Medical Staff of the Viceroy of Egypt.


12. 855. Egyptian form: girl of 18, with very fine, long hair. Crania Ægyptiaca, plate 8, fig. 9.


(Cases 2-3.)

The following fifteen heads, 862 to 889, inclusive, were obtained by Mr. Gliddon from the Theban Catacombs.

15. **862. Egyptian form**: man, ætat. 60, with long, fine hair. I. C. 79. *Crania Ägyptiaca*, plate 10, fig. 3.

16. **865. Egyptian form**: woman, ætat. 20, with long, fine hair. *Crania Ägyptiaca*, plate 8, fig. 5.


19. **872. Egyptian form**: woman, ætat. 50, with long, fine hair. *Crania Ägyptiaca*, plate 10, fig. 2.


22. **878. Egyptian form**: man, ætat. 50, with long smooth hair. I. C. 77. *Crania Ägyptiaca*, plate 8, fig. 1.


25. **882. Egyptian form: juvenile female head, with long, fine hair.** Crania Ægyptiaca, plate 10, fig. 7.


27. **886. Egyptian form: man, ætat. 50.** I. C. 76.

28. **887. Egyptian form: child of 12 years, with long, fine hair.**

29. **889. Egyptian form: man, ætat. 50.** I. C. 83. Crania Ægyptiaca, plate 6, fig. 7.

30. **894. Egyptian form: child of 9 years.** Thebes.

31. **1044. Embalmed head of a Theban lady of 30 years.** Mr. Gliddon. This head, with its long oval cranium, receding forehead, gently aquiline nose, retracted chin, and long, fine hair, may serve as a type of the pure Egyptian stock; a people indigenous to the valley of the Nile; Caucasian in physical lineaments and philological relations, and constituting one of the several primordial centres of that widely-extended race. See Crania Ægyptiaca, pages 17, 37; and Transactions of the Ethnological Society of New York, vol. ii. p. 219.

32. **1290. Ancient Egyptian, from a tomb at Thebes. Egyptian form.** I. C. 82.

*Embalmend female head from the Catacombs of Thebes.*

No. 1044.
33. 1293. Embalmed head from Thebes. Egyptian form: woman, ætat. 40, with long, fine hair.

34. 1295. Embalmed head of an infant at birth. From Thebes. Nos. 1290 to 1295, inclusive, were presented by A. C. Harris, Esq., of Alexandria, in Egypt, A. D. 1846.

_Ancient Memphite Egyptians._

(Case 3.)


Nos. 796 and 797 were exhumed from the front of the First or Northern Brick Pyramid of Dashour, Memphite necropolis, by Mr. Perring, Civil Engineer. See Vyse's Pyramids of Gizeh, vol. iii. page 60.

(For No. 795 see Coptis.)

Nos. 805 to 816, ancient mummied Egyptians from various parts of the Necropolis of Memphis. From G. R. Gliddon, Esq.


10. **1223. Memphite head**: Egyptian form. F.A. 82°. Found with No. 1194, &c. (See next page.)


15. **1521. Egyptian**. Memphis.


17. **1524. Egyptian**. Memphite Necropolis. Woman, aëtat. 60. I.C. 87. F.A. 79°. This is the head of the mummy opened by Mr. Gliddon in Philadelphia, January, 1851, and by him presented to me.


Nos. 819 and 820 are from Arabat-el-Matfoon, the ancient Abydos. “Found with Nos. 817 and 818 in a pit containing scarabæi and ornaments bearing the name of Ramses III., (Sesostris,) and the prenomen of Thotmes IV., (Mœris,) whence it is conjectured that they may have belonged to a period between 1822 and 1474 years before Christ.—Vide Rosellini’s Chronology.” G. R. G.

*Alexandrian Egyptians.*

*Case 3.*

1. **1266. Embalmed head of the pure Egyptian form.** I.C. 77.

2. **1267. Embalmed head of the Egyptian form.**

3. **1268. Ancient Egyptian.** Egyptian form: man, aëtat. 60. I.C. 78. The preceding three heads were found in a rock-tomb, with Greek legends, about four miles west of the city of Alexandria. This tomb was accidentally discovered in blasting rocks for a fortification, A.D. 1845, and probably belonged to the Ptolemaic era. The skulls were procured by Mr. Wm. A. Gliddon, and by him presented to me, A.D. 1848.

*Egyptians from Gizeh.*

*Case 3.*

The following sixteen ancient Egyptian crania were obtained from the tombs opened by Prof. Lepsius at the base of the great Pyramid of
HUMAN CRANIA.

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Gizeh, and presented to me by Mr. Wm. A. Gliddon, A. D. 1846. See Proceedings of the Academy of Natural Sciences of Philadelphia, November, 1845.


6. **1199. Egyptian form:** child of ten years. F. A. 91°.


8. **1201. Egyptian form:** child of 6 years.


15. **1208. Egyptian form:** woman, ætat. 30. I. C. 86.


Kens or Ancient Nubians.

(Case 3.)

Nos. 826 to 829, "Kens, or ancient Nubians? from the pits at Debod, the ancient Parembole, 30 miles south of Philæ. Some writers maintain that there are no mummies in Nubia. Here is proof to the contrary." G. R. G.


2. **827. Egyptian form:** man, ætat. 40. I. C. 82. Crania Ægyptiaca, plate 12, fig. 9.

3. **828. Egyptian form:** juvenile head. F. A. 90°.


Ombite Egyptians.

Nos. 830 to 832, "Ancient Egyptians from the pits at Koum Ombos: probably inhabitants of the Ombite nome." G. R. G.

1. **830. Egyptian form:** woman, ætat. 30. I. C. 77. Crania Ægyptiaca, plate 12, fig. 3.

2. **831. Egyptian form:** woman, ætat. 30. I. C. 68. Crania Ægyptiaca, plate 12, fig. 4.

*Maabdeh Egyptians.*

Nos. 833 to 836: “Ancient Egyptians from the Crocodile mummy-pits called Margaret-es-Samoun, behind the village of Maabdeh, and opposite to Manfaloot. I brought these from a measured distance of 438 feet under ground horizontally, averaging twenty feet below the surface.” G. R. G.

1. **833. Egyptian form**: man, ætat. 35; long hair and a little beard. Crania Ægyptiaca, plate 4, fig. 1.
2. **834. Negroid form**: woman, ætat. 30; hair long and harsh. Crania Ægyptiaca, plate 4, fig. 2.
3. **836. Egyptian form**: woman of 30 years, with long, curling hair. Crania Ægyptiaca, plate 4, fig. 4.
4. **1292. Embalmed Egyptian from Maabdeh. Egyptian form**: woman, ætat. 40, with long, fine hair. From A. C. Harris, Esq. 1846.

*Miscellaneous.*

1. **822. Egyptian form**: child of 12 years. Exhumed by Mr. Gliddon from tumuli at the island of Beggeh, the ancient Senem, a sacred spot close to Philæ in Nubia. Found with Nos. 821, 823 and 824. “These may have been pilgrims to the Temple, and, as such, of any nation or of any speech.” G. R. G.
2. **802. Egyptian or Nilotic form**: woman, ætat. 50. I. C. 81. Crania Ægyptiaca, plate 3, fig. 7. G. R. G.
4. **1240. Mummied head from Egypt. Egyptian? form, with long, fine hair. Dr. C. Pickering. 1845.**

*Fellahs.*

*(Case 3.)*

1. **499. Fellah, or Arab-Egyptian of Old Cairo**: man, ætat. 60. F. A. 80°. I. C. 94.

The *Fellahs*, or Arab-Egyptian peasants, are the lineal descendants of the rural population of ancient Egypt.
2. **782. Fellah of Old Cairo:** woman, ætat. 40. F. A. 82°.
   I. C. 66.
3. **783. Fellah of Old Cairo:** woman, ætat. 70.
5. **788. Fellah of Old Cairo:** woman, ætat. 30. F. A. 74°.
   I. C. 74.
7. **766. Fellah or Arab-Egyptian of the Owlad-el-belled, or better class, from Bab-el-Nasr, in Lower Egypt:** woman, ætat. 70.
   I. C. 77.
8. **767. Fellah:** man, ætat. 70. F. A. 80°. I. C. 85.
9. **768. Fellah:** man, ætat. 70. I. C. 96.
11. **770. Fellah of the better class:** man, ætat. 50. I. C. 83.
12. **771. Fellah of Lower Egypt:** woman, ætat. 70. F. A. 75°.
   I. C. 78.
13. **772. Fellah of Lower Egypt:** man, ætat. 30. F. A. 73°.
   I. C. 74.
14. **773. Fellah of Lower Egypt:** woman, ætat. 20. F. A. 75°.
   I. C. 76.
15. **774. Fellah:** village-chief, or "Sheik-el-belled," from Shubra, ætat. 80. I. C. 88.
16. **775. Fellah of Shubra:** woman of 70. I. C. 75.
17. **776. Fellah of Shubra, in Lower Egypt:** woman, ætat. 20.
   F. A. 75°. I. C. 74.

Nos. 499 to 779, from G. R. Gliddon, Esq.

[Nos. 499, 774 and 766 to 770, inclusive, have been labelled by Dr. Morton "Arab." But the osteological differences between these "Arabs" and the "Fellahs" with which they are associated, appear to me entirely too slight to warrant their separation. In the accompanying engravings, taken from *Crania Egyptian*, it will be seen that the so-called Arab differ from the Fellah skulls mainly in having a somewhat more recedent forehead. The former are]
probably the hybrid offspring of Fellah and Arabian parents, the
Fellah element predominating. (See page 34.)

XII. INDOSTANIC RACE.

Ayras (?)
(Case 4.)


3. **1331.** Hindu fanatic from Juggernaut, A. D. 1839, a beautiful head: man, æetat. 40. I. C. 87.


5. **1334.** Sepoy, or Hindu soldier, with cicatrised fracture and depression of the right frontal, malar and superior maxillary bones. æEtat. 40. I. C. 86.

6. **1335.** Hindu from the hospital of Calcutta, with syphilitic perforating ulcers of the cranium. Man, æetat. 60. I. C. 81.

The preceding six skulls, Nos. 1329 to 1335, inclusive, were procured in Calcutta by my friend Dr. Charles Hufnagle, and by him presented to me, A. D. 1847.


8. **713.** Thugg, executed with the preceding, and presented by Dr. Martin, through W. A. Foster, Esq. Woman, æetat. 30. F. A. 76°. I. C. 79.

**Bengalees.**

*(Case 4.)*

1. **4.** Bengalee child of twelve years.

2. **5.** Bengalee child of six years.


4. **8.** Hindu of Bengal: woman, æetat. 30. I. C. 73.

Nos. 4 to 8 were presented by Dr. Burrough.

5. **19.** Bengalee child of 5 years. From Dr. Joseph Carson.
8. 28. Bengalee child of seven years.
9. 29. Bengalee child of five years.
11. 32. Hindu of Bengal: girl of twelve years.
Nos. 28 to 32 from Dr. Burrough.
12. 49. Hindu: man, æetat. 70. I. C. 90. Dr. Joseph Carson.
Nos. 410 to 413 from Henry Piddington, Esq., of Calcutta.
Nos. 443 and 444 from Dr. Joseph Carson.
Nos. 553 and 554 from H. Piddington, Esq.
Nos. 1309 to 1312 from Dr. James Mease.
30. 1344. Hindu of Bengal: man, ætat. 30. I. C. 75. Brought from India with other crania, by Dr. Mead, and presented to me, on his behalf, by Dr. John Watson, of New York, 1847.
33. 665. Hindu, deposited by Dr. Ruschenberger.
34. **101. Hindu**: young woman.
35. **111. Hindu (?)** The three preceding skulls are of uncertain locality.

**XIII. INDO-CHINESE RACE.**

1. **666.** Skull of a Burmese soldier.
2. **667.** Skull of a Burmese soldier. Both from the late Dr. Harlan’s collection. Presented by Mr. Harlan.

**II. MONGOLIAN GROUP.**

**I. CHINESE RACE.**

(Case 4.)

1. **3. Chinese**: man, ætat. 60. Born in the province of Canton, I. C. 89. Dr. J. K. Mitchell. This man and three accomplices were executed for murder.
3. **94. Chinese**: man, ætat. 50. I. C. 70. One of the seventeen pirates who attacked and took the French ship "Le Navigateur" in the China Sea. Dr. Ruschenberger.

![Chinese (94)](image_url)

7. **1336. Chinese**, hanged at Singapore for piracy, A. D. 1845. Man, ætat. 40. I. C. 98. The face in this instance conforms in every respect to the Mongolian type, but the cranium is one of the
most beautiful I have ever seen among any race or nation. Procured in Calcutta by my friend Dr. Charles Huffnagle, and by him presented to me, A. D. 1847.

8. **1526.** Chinese child, ætat. From Cumsingmoom. J. Hopkinson, M. D., U. S. N.

9. **1527.** Cochín-Chinese from Turon Bay. Man, ætat. I. C. 91.5. J. Hopkinson, M. D., U. S. N.

10. **669.** Chinese. From Dr. B. McCarta, M. D. Deposited by Mr. W. P. Johnson. I. C. 85.


II. JAPANESE RACE.


![Japanese (668.)](image)

1. **672.** Cranium of a Loo Choo Islander.

2. **673.** Cranium of a Loo Choo Islander.

Nos. 672 and 673 were presented by Dr. B. Vreeland, Passed Assistant Surgeon, U. S. N. (See page 52, note.)

III. HYPERBOREAN RACE.

(*Case 4.*)

1. **1355.** Cast of the skull of a young Burat-Mongol. Professor Retzius.

1. **725.** Cast of the skull of a Kamschatkan female. Dr. O. S. Fowler.

[It is long and flat, and presents quite a different proportion between the bi-temporal, longitudinal and vertical diameters from what we find in the heads of the true Hyperboreans. The low, flat, and
smooth forehead is devoid of the keel-like formation perceptible in the Eskimo. The carinated ridge makes its appearance along the middle and posterior part of the inter-parietal suture. The widest transverse diameter is near the superior edge of the temporal bone; from this point the diameter contracts both above and below. As in the Eskimo, the occiput is full and prominent, as is also the posterior surface of the parietal bones, which surface, in the Eskimo, however, is flat. The forehead inclines upwards and backwards to a prominence in the middle of the inter-parietal suture, from which point it is rounded off posteriorly. The face forms a broad oval; the orbits are large, deep, and have their transverse axes at right angles with the median line of the face. The malar bones, though large, are neither so prominent nor high as in the Eskimo. They are laterally compressed, more rounded, and less flared out at their inferior margin in the Polar man. The anterior nares are flat and smooth, and the alveolar arch somewhat more prominent than in the typical Eskimo, as is shown by comparing them by the norma verticalis. Upon examining the basis cranii, we observe, at once, the globular fulness of the occipital region, and an alteration in the general configuration of the base, as compared with that of the true Arctic skull. The greatest breadth is not confined to the zygomatic region, for lines drawn from the most prominent point of the zygoma to the most prominent point of the mastoid process, on either side, are parallel to each other.]


In the accompanying figure, the reader will observe that the cra-
nium is nearly globular, while the forehead is broad, flat, and less reeding than in the Eskimo and Kamtskatan. Without being ridged or keel-like, the median line of the cranium forms a regular arch, the most prominent point of which is at the junction of the coronal and sagittal sutures. Behind and above the meatus, the head swells out into a globe or sphere, instead of tapering away postero-laterally towards the median line, as in the Eskimo crania. This appearance is also well seen in the head figured by Blumenbach.* He says of it, "habitus totius crani quasi inflatus et tumidus." The eye at once detects the striking difference between the facial angle of this cranium and that of the Eskimo figured on the next page. In the latter, the facial bones resemble a huge wedge lying in front of the head proper. This appearance, it is true, is somewhat dependent upon the obtuseness of the angle of the lower jaw, but mainly, as will be seen, upon the prominent chin and prognathous jaw. In the Kalmuck, the facial bones form a sort of oblong figure, and are by no means so prominent. The face is broad, flat, and square; the superciliary ridges are massive and prominent; the orbits are large, and directed somewhat outwards; the ossa nasi are broad and rather flat, forming an obtuse angle with each other; the malar bones are large, strong, protuberant, and roughly marked.]

2. 1250. Cast of the skull of a Lapland child two years of age.
The preceding 5 skulls from Prof. Retzius.

[The following brief resumé of the characteristics of an Eskimo cranium will serve as a commentary upon the accompanying figures, which represent the front and lateral views of the head above mentioned (No. 1558). The male Eskimo skull is large, long, narrow, pyramidal; greatest breadth near the base; sagittal suture prominent and keel-like, in consequence of the angular junction of the

* Tab. XIV. of the Decades.
parietal and two halves of the frontal bones; proportion between length of head and height of face as 7 to 5; proportion between cranial and facial halves of the occipito-mental diameter as 4½ to 5; attachment for the temporal muscle large; zygomatic fossae deep and capacious; mastoid processes thick and prominent; glose-noid cavity capacious, and adapted to considerable lateral motion of the condyles; forehead flat and receding; occiput full and salient; face broad and lozenge-shaped, the greatest breadth being just below the orbits; malar bones broad, high, and prominent, the external surface looking antero-laterally; orbits large and straight; zygomatic arches massive and widely separated; length of the face one inch less than the breadth; nasal bones flat, narrow, and united at an obtuse angle, sometimes lying in the same plane as the naso-maxillary processes; superior maxilla massive and prognathous, its anterior surface flat and smooth, superior alveolar margin oval; inferior margin of anterior nares flat, smooth, inclining forwards and downwards; inferior maxilla large, long, and triangular; semilunar notch quite shallow; angles of the jaw flared out, and chin prominent; teeth large, and worn in such a manner as to present, in the upper jaw, an inclination from without inwards, upwards, and laterally, and in the lower jaw, just the reverse; antero-posterior diameter of cuspids greater than the transverse; configuration of the basis cranii triangular, with the base of the triangle forward between the zygomaæ, the truncated apex looking posteriorly; breadth of base about one-half the length; shape of foramen mag-
num an irregular oval; anterior margin of foramen magnum on a line with the posterior edge of the external meati.

The female cranium differs from the male in being smaller, lighter, and presenting a smoother surface and more delicate structure. The malar bones are less massive, the face not quite so broad, and the anterior surface of the superior maxilla concave rather than flat.

2. **1559. Eskimo.** Taken by Dr. Kane, from the Eider duck resorts, near the "Three Islands of Baffin." Lat. 73° 50' N. I. C. 84.25 F. A.

3. **1560. Eskimo.** Taken from a low island off Storoë. Lat. 72° 15' N. I. C. 80.5. F. A.


The above 4 crania were presented to the Academy by the late Dr. E. K. Kane, U. S. N., of the Grinnell Arctic Expedition.

5. **1562. Eskimo skull** obtained by Dr. E. K. Kane from an ancient grave or cairn, at the Eskimo village of Etah, north of Cape Alexander. Presented by Dr. J. K. Kane, Aug. 12, 1856.


7. **674. Eskimo skull.**

8. **675. Eskimo skull.**

9. **676. Eskimo skull.**

10. **677. Eskimo skull.**

11. **678. Eskimo skull.**

12. **679. Eskimo skull.**

13. **200. Eskimo skull.**

These crania were procured at Godhavn, Disco Island, coast of Greenland, by Dr. B. Vreeland, U. S. N., and by him kindly presented to the Academy.*

### III. MALAY GROUP.

#### I. MALAYAN RACE.

*(Case 5.)*


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* The above seven Eskimo crania, together with the two Loo Chooan skulls recorded on page 48 were opportunely received from Dr. Vreeland, while the sheets of this and the preceding "signatures" of the Catalogue were passing through the press, April 7th, 1857. It will be observed that the introduction of these nine heads in their appropriate places increases the total number of skulls in the Collection from 1035 to 1044, and causes the Catalogue to differ slightly from the tabular enumeration given on page 13.
2. **495. Malay of Ceylon; Singalese: man, ætat. 20. I. C. 85. Dr. Ruschenberger.**

3. **1338. Malay of Amboyna; Saparoua: man, ætat. 30. I. C. 73.**

4. **459. Malay of Amboyna; man, ætat. 30. I. C. 84. Dr. Ruschenberger.**

5. **430. Malay of Amboyna; man, æetat. 20. I.**

6. **460. Malay of Malacca: man, ætat. 40. I. C. 77. Dr. Ruschenberger.**

7. **546. Malay of Macassar: man, ætat. 50. I. C. 92.**


10. **1341. Javanese Malay: man, ætat. 35. I. C. 83.**


14. **47. Malay of the Island of Bally, coast of Java. F. A. 69°. I. C. 82. Dr. Mead.**

15. **1337. Malayan, hanged at Singapore for piracy, A. D. 1845. Man, ætat. 40. I. C. 96.**


17. **1136. Malay of Borneo: man, ætat. 40. I. C. 89. Hanged at Batavia for piracy, A. D. 1826. From Dr. Jones, of New Orleans.**


23. **201. Cast of the skull of a Madurese.** Presented by Mr. Harlan.


Nos. 1838, 1839, 1840 and 1341 were brought from India by Dr. Mead, and presented to me on his behalf, by Dr. John Watson, of New York, 1847.

Nos. 424, 425, 428, 429, 430 and 433 are from Dr. Doornik.

Nos. 543, 544, 545 and 546, from Dr. Doornik’s collection, were presented by Dr. Jones of New Orleans, through B. F. French, Esq.

**Dyaks.**

1. **1523. Skull of a Dyak woman, prepared as a trophy according to the usage of these people.** Obtained in an assault upon a native village, on the river Baryà, near Pontianck, in the S. W. region of Borneo. Brought from Sarawak, in that Island, A. D. 1850, by Mr. Wm. A. Gliddon, and by him presented to me. I. C. 81. æEtat. 25.

2. **1525. Kiong-Dyak, from the dead-house of those people, in the interior of Borneo: Woman, ætat. 30. I. C. 86.** From J. Hopkinsinon, M. D., U. S. N.

**II. POLYNESIAN RACE.**

*Kanakas.*

(Case 5.)

1. **564. Kanaka, of Oahu: woman.** I. C. 82.

2. **565. Kanaka, or Sandwich Islander of Oahu.** I. C. 83.

3. **566. Kanaka, or Sandwich Islander of Oahu: man.**

These three skulls, Nos. 564, 565, 566, were presented to Dr. Ruschenberger by a chief of the Sandwich Islands, Dr. R. having solicited them for scientific purposes. Two of these skulls have the face-bones completely and somewhat skilfully separated from the head; which, so far as I can learn, was a customary usage in the performance of human sacrifices: and these remains were probably disinterred from that part of the Morai devoted in former years to this class of persons. Capt. Cook’s head, when restored to his friends after his murder at Owyhee, had been divided precisely in this way, although but a few days had elapsed. See Cook’s Third Voyage, Volume 2, page 80.


(This head affords a good idea of the general cranial type of Poly-
nesia. It is elongated; the forehead recedent; the face long and oval; the breadth between the orbits considerable; the alveolar margin of the superior maxillary slightly prominent; the lower jaw large and regularly rounded. The breadth and shortness of the base and the peculiar flatness of the sub-occipital region give to the whole head an elongated or drawn-out appearance."


7. **1308. Head of a Kanaka or Sandwich Islander**: woman? ætat. 30. Dr. Gibbon.

**New-Zelanders, Marquesas, &c.**

1. **680. New Zealand chief**: tattooed. Dr. Samuel McClellan.

2. **1324. Head of a New Zealand chief**: embalmed according to the custom of those Islanders.

3. **1325. Head of a New Zealander**: prepared in the same manner as No. 1324.

4. **202. New Zealand head**: tattooed. From the late Dr. Harlan’s collection. Presented by Mr. Harlan.

1. **1531. Marquesas skull from the village of Whytahoo, Resolution Bay**: in the Island of Christina, where it was obtained in 1841, by Lt. H. A. Steele, U. S. N., for Dr. L. P. Bush, and by the latter presented to me. F. A. 82°. I. C. 90.5. The Christina Islanders are cannibals.

[This head exhibits a narrow, dolicho-cephalic form; the frontal region flat and narrow; the posterior region broad and ponderous;
the face massive and roughly marked; the superior maxilla more
everted than in the Sandwich Islander; altogether a low and brutal
form.]

IV. AMERICAN GROUP.

I. BARBAROUS RACE.

a. NORTH AMERICANS.

(Case 5.)

Arickarees.

1. 649. Indian of the Arickaree tribe of Upper Missouri: woman,
ætat. 40. F. A. 76°. I. C. 73. Dr. B. B. Brown.

2. 949. Arickaree Indian of the Upper Missouri: woman, ætat. 20,
with the frontal suture. I. C. 75. Mr. J. N. Nicollet.

From Mr. J. N. Nicollet.

Assinaboins.

1. 659. Assinaboin Indian of Upper Missouri: man ætat. 50.


Nos. 1230 and 1231 from J. J. Audubon, Esq., A. D. 1845.

Cherokees.

a cave at Springtown, north of the river Hiwassee, and near an
ancient battle-ground. The form of the cranium and the develop-
ments are strikingly characteristic of the mountain Cherokee of the
present day."

2. 633. Cherokee? girl of 14. F. A. 76°. Found with the pre-
ceeding.


4. 635. Cherokee child, eight years of age.
Nos. 632 to 635, inclusive, from Dr. Martin, U. S. A.

5. 1285. Cherokee, from a mound in South Carolina. I. C. 96.
Dr. Hardy, of Asheville, North Carolina.

6. 1297. Cherokee: man, ætat. 50. I. C. 84. From South Caro-
lina. Dr. Hardy.
HUMAN CRANIA.  57

Chetimaches.

1.  **43. Chetimache** Indian of Louisiana: man, ætat. 40.  F. A. 77°.  I. C. 84.  See No. 70.  Dr. Le Beau.

Chinooks.

2.  **462. Skull of a Chinook** chief of Oregon, greatly flattened by art: ætat. 60.  F. A. 72°.  I. C. 72.  From Dr. J. K. Townsend, who also brought me the cradle and other apparatus by means of which this singular distortion is produced.  See Crania Americana, page 208 and plate 43.
4.  **641.** Indian child of the Chinook tribe, about four years old: much flattened by art.  Dr. J. K. Townsend.
7.  **1350.** Entire desiccated body of a Chinook infant, aged about two years.  The head is greatly flattened by artificial processes.  From Dr. Wm. Maxwell Wood, U. S. N.  1847.

(Case 6.)

Chippeways.


Cotonays.


Cotonay (1227).

**Creeks.**


4. **1454. Creek Indian of Western Arkansas: woman, ætat. 70.** I. C. 86. Dr. S. W. Woodhouse, 1850.

**Dacotas.**

1. **605. Dacota or Sioux Indian of Wisconsin: man, ætat. 20.**

Dacota or Sioux (605).

F. A. 77°. I. C. 90. Dr. Poole. Crania Americana, plate 39 and page 198.
2. **112. Dacota or Sioux Indian.**

3. **204. Dacota or Sioux Indian.** From Dr. T. G. Morton.

### Hurons.

1. **15. Huron chief, ætat. 60, killed near Detroit in a rencontre with another Indian.** F. A. 73°. I. C. 75. See Crania Americana, plate 37.


4. **1218. Huron Indian: woman, ætat. 40. I. C. 83.**

These two skulls were taken from a mound near Detroit, by Lt. Meigs, U. S. A., A. D. 1844.

### Illinois.

1. **1010. Illinois Indian.**

2. **1042. Illinois Indian.**

### Iroquois.


2. **119. Iroquois Indian.**

3. **989. Indian warrior: Iroquois? ætat. 80. I. C. 89. Dr. W. B. Casey.**

### Lenapes, or Delawares.

1. **40. Lenape or Delaware Indian: woman, ætat. 40.** F. A. 76°. I. C. 82. Dr. Z. Pitcher. See Crania Americana, plate 32 and page 189.

2. **115. Lenape or Delaware Indian.**

3. **118. Lenape or Delaware Indian.**

4. **418. Manta Indian? A tribe of the Lenapé or Delaware nation.** F. A. 79°. I. C. 75. Found in excavating near the bank of the Delaware River in New Jersey, about four miles above Burlington. The body, with several others, was buried in the sitting posture. Dr. Edward Swain.

5. **1263. Cranium of a Lenape or Delaware Indian: man, ætat. 30.** I. C. 80. Dug from an aboriginal cemetery at Richmond, on the Delaware River, about four miles north of Philadelphia, A. D. 1847. The atlas vertebra is anchylosed with the occipital bone. Mr. Isaac Morris.
6. **1264. Lenape or Delaware Indian**: woman, æetat. 50. I. C. 81.
One of those massacred by the whites at the settlement on White
River, Indiana. Dr. E. Fussell.

7. **1265. Lenape or Delaware Indian.**

8. **205. Delaware Indian**: fragmentary.

Nos. 205 and 206 were dug up from a street in Philadelphia.
Presented by Dr. Geo. P. Oliver, November, 1852.

10. **568. Minsi (?) Lenape.**

**Mandans.**

I. C. 86. Dr. B. B. Brown.

I. C. 79. Dr. B. B. Brown.

3. **738. Mandan Indian of the Upper Missouri**: woman, æetat. 30.
I. C. 77.

4. **739. Mandan Indian of the Upper Missouri**: woman, æetat. 30.
I. C. 81.

5. **740. Mandan Indian of the Upper Missouri**: man, æetat. 40.
I. C. 91.

6. **741. Mandan Indian of the Upper Missouri**: man, æetat. 50.
I. C. 85.

7. **742. Mandan Indian of the Upper Missouri**: man, æetat. 50.
I. C. 86.
Nos. 738 to 742, inclusive, from J. N. Nicollot, Esq.

**Menominees.**

1. **35. Menominee Indian of Michigan**: woman, æetat. 30. F. A.

2. **44. Menominee Indian of Michigan**: woman, æetat. 50. F. A.
75°. I. C. 77. J. A. Lapham, Esq., of Milwaukee.

3. **78. Indian of the Menominee tribe of Michigan**: man, æetat.

Dr. Saterlee, U. S. A. Crania Americana, plate 29 and page 179.

5. **563. Menominee Indian**: woman, æetat. 40. F. A. 76°. I. C.
87. J. A. Lapham, Esq.


7. **1222. Natonake, a Menominee chief, æetat. 40. I. C. 86. Mr.
J. P. Wetherill.**
HUMAN CRANIA.

Miamis.

1. **106.** Miami Indian.
3. **541.** Miami Indian.
5. **1052.** Miami Indian.
6. **1053.** Miami Indian.
8. **1056.** Miami Indian.
11. **1058.** Miami: child twelve years old.
   The preceding three Miami skulls were obtained near Pendleton, Indiana, by Dr. Edwin Fussell.

Minetarís.

2. **746.** Minetari or Gros-ventre of Missouri: woman, ætat. 30. I. C. 82.
3. **747.** Minetari or Gros-ventre Indian of Missouri: woman, ætat. 40. I. C. 83.
4. **749.** Minetari or Gros-ventre of Missouri: man, æetat. 40. I. C. 94.
   Nos. 746 to 749, inclusive, from Mr. J. N. Nicollet.

Mohawks.

   Nos. 895 to 897, inclusive, from L. Vanuxem and J. Beardsley, Esqs.
   *(Case 7.)*

Narragansets.

1. **693.** Narragansett Indian, from an old cemetery of that tribe on the western shore of Tiverton, in Rhode Island. Man, ætat. 30. I. C. 85. Dr. Thomas C. Dunn.
Series of eight skulls, 950 to 957, of the Narraganset tribe of Indians, of Rhode Island: from Dr. Usher Parsons, of Providence, R. I. 1840.


Natchez.

2. 1106. Natchez Indian, moulded by art into a flattened cone. Mr. J. Tooley, Jr., of Natchez, 1840. See American Journal of Science, for July, 1846.

For further information on this mode of moulding the head among the Natchez tribes, see Garulaso de la Vega, Hist. de la Florida, Lib. IV. cap. 13; and Crania Americana, page 160.

Naticks.

1. 103. Natick Indian of Nantucket.
2. 104. Natick Indian of Nantucket.
4. **110.** Natick Indian of Nantucket.
5. **401.** Natick Indian of Nantucket. Dr. Paul Swift.

*Oregon Tribes.*

2. **207.** Clickitat Indian from Dewamish or White river (Lat. 47° 30' N.). Presented by Dr. J. H. B. McClellan, who received it from Mr. George Gibbs, of Steilacoom, Washington Territory.
3. **573.** Indian of the Kowalitsk tribe of Oregon: artificially com-

![Kowalitsk (573).](image)


CATALOGUE OF


6. **576. Killemook chief.**


**Osages.**

1. **54. Osage warrior of Arkansas, ätat. 30.** F. A. 77\(^\circ\). I. C. 81. Dr. Z. Pitcher. See Crania Americana, plate 41 and page 199.

Otoes.

1. **755.** Otoe warrior of the Upper Missouri, ætat. 50. I. C. 80.
2. **756.** Otoe warrior of the Upper Missouri, ætat. 60. I. C. 94.
3. **757.** Otoe warrior of the Upper Missouri, ætat. 50. I. C. 83.
4. **758.** Otoe child, eight months old.

Nos. 755 to 758, inclusive, from Dr. J. Walker, U. S. A.

Ottawas.

1. **1006.** Ottawa chief of Michigan, ætat. 50. I. C. 85.
2. **1007.** Ottawa warrior, ætat. 75. I. C. 89.
3. **1008.** Ottawa woman, ætat. 60. I. C. 76.

The four preceding skulls were obtained in Michigan by Dr. George C. Leib, A. D. 1842.

Ottigamies.

1. **415.** Indian of the Ottigamie tribe, a half-breed, killed in a quarrel at Quincy, Illinois, A. D. 1830. F. A. 76°. Dr. S. P. Hildreth.
3. **694.** Ottigamie or Fox Indian of Illinois: man, ætat. 80. I. C. 95. Dr. P. Gregg.
4. **209.** Ottigamie Indian.

Pawnees.


Penobscots.

1. **105.** Penobscot Indian.
2. **89.** Indian of the Penobscot tribe, from Maine: man, ætat. 50. F. A. 76°. I. C. 80. Prof. Cleveland.

Potawatomies.

2. **736.** Potawatomie Indian.
4. **1322.** Young Potawatomie warrior, who killed the Miami chief
Majinnik, on the Wabash River, A. D. 1841, for which he was himself slain by the Miamis: ætat. 20. I. C. 79. Dr. Edwin Fussell.

Sauks.
3. 1246. Sac (?) Indian: man, ætat. 60. I. C. 88. From a cemetery of the Sac and Fox tribes. Dr. Kite, 1845.

Seminoles.


7. 727. **Seminoles** boy of six years.

8. 728. **Seminoles** boy of Florida, ætat. 4.


Nos. 726 to 730, inclusive, from Dr. E. H. Abadie, U. S. Army.

11. 732. **Seminoles** warrior, ætat. 40, killed at the battle of Okeechobee, in Florida, December 25, 1837. I. C. 90. Dr. Abadie, U. S. A.


13. 754. **Seminoles** warrior of Florida, ætat. 40. I. C. 89. From Dr. J. Walker, U. S. A.

14. 1105. **Seminoles**: man, ætat. 40. F. A. 75°. I. C. 82. Dr. F. M. Robinson, Augusta, Georgia.


16. 1556. **Seminoles** Indian. Presented by Dr. C. D. Meigs, May, 1852.

**Shawnees.**

1. 440. **Shawnee** skull? Man, ætat. 50. I. C. 88. Dr. S. P. Hildreth, Marietta.

2. 606. **Shawnee**? woman, of Ohio, ætat. 30. I. C. 70. Dr. Hildreth.


4. 1210. **Shawnee**? Indian of Ohio: man, ætat. I. C. 104. Mr. M. S. Weaver.

**Shoshonis.**


2. 1447. **Shoshoni** or Root-digger nation, from the mountains of Salmon trout River. Woman, ætat. 40. I. C. 75. Capt. Fremont.
3. **1448.** From the eastern slope of the Sierra Nevada, and does not pertain to any tribe of the Shoshonés: man, ætat. 60. I. C. 91. Capt. Fremont.


*Upsarookas.*

1. **1228.** Upsarooka or Crow Indian: man, ætat. 40. Upper Missouri. I. C. 93.


*Winnebagos.*


*Yamassee.*

1. **1214.** Yamassee? Indian, of Florida: man, ætat. 50.

2. **1215.** Yamassee? Indian, of Florida: man, ætat. 60.

3. **1216.** Yamassee? Indian, of Florida: man, ætat. 60. I. C. 70. The three preceding skulls were obtained from a mound near Tampa, in Florida, by Dr. R. S. Holmes, U. S. A., A. D. 1844. They appear to have lain in the earth upwards of a century. Two of them are perforated by musket balls, and of course date subsequent to European discovery.

*Californians.*


2. **1565.** Indian cranium: fragment of an upper jaw, with teeth and several other fragments of human bones, thickly encrusted with carbonate of lime. From a cave in Vallecita, Calaveras Co., California. In this cave upwards of 300 human crania were found embedded in limestone. Presented by Mr. Charles Ellet, Jr., through Dr. C. D. Meigs, May, 1854.

*Miscellaneous.*

*(Case 8.)*


2. **1236.** Indian cranium, exhumed near Fort Chartres, Illinois, by Dr. Wislizenus. See American Journal of Science and Arts for May, 1846.
3. **1237.** Another **Indian** cranium from the same place, and from the same gentleman: woman, ætat. 68. I. C. 81.


5. **1510.** **Indian** skull: man, ætat. 50. I. C. 89. Taken from an ancient mound in Illinois by Dr. Lippincott, of Chandlerville, in that State, and presented to me through Dr. R. S. Holmes. 1849.

6. **1511.** **Indian** cranium, found with the preceding, and also presented by Dr. Lippincott. Man, ætat. 70. I. C. 80.


8. **435.** Skull from the Indian Cave-cemetery at Steubenville, Ohio: man, ætat. 60. F. A. 77°. I. C. 92. Dr. McDowell.


11. **439.** **Indian** from the Cave at Steubenville, Ohio: woman, ætat. 70. F. A. 78°. I. C. 78. Dr. J. Andrews.

12. **210.** **Indian** from the Cave at Steubenville, Ohio.

13. **658.** Aboriginal **American,** from the Cave near Steubenville, Ohio. F. A. 79°. Dr. S. P. Hildreth.


15. **53.** **Indian** from a mound at Circleville, Ohio. F. A. 78°. I. C. 90. Dr. S. P. Hildreth.

16. **1287.** **Indian** skull from a mound at Chilicothe, Ohio. I. C. 90. Dr. E. H. Davis and Mr. Squier. 1846.

17. **1288.** **Indian** cranium. Found with the preceding. Man of 60. I. C. 86. Dr. E. H. Davis and Mr. E. G. Squier. 1846.

18. **736.** Infant **Indian** skull from a mound in Wisconsin. Mr. J. J. Libhart, of Columbia, Pennsylvania.

19. **992.** From a mound in Tennessee, at the junction of French, Broad and Holston rivers. I. C. 90. Dr. G. Troost. Crania Americana, plate 55.

20. **1270.** **Indian** cranium, thrown out in making the fortifications at Detroit, A. D. 1844. Woman, ætat. 40. From Lt. Meigs, U. S. Army.
21. **1271.** Skull of an Indian obtained from a mound about three miles from the mouth of Huron river, Ohio, by Mr. Charles W. Atwater: man, ०५७०. See American Journal of Science, for July, 1846.

22. **1272.** Skull of a woman, ०५७०. Found with the preceding.

23. **1455.** Skull flattened by art: man, ०५४०. I. C. ०७०. Taken from a mound in Florida. From Dr. Isaac Hulse, U. S. N., from whom I also received the following memorandum, A. D. 1849:

"This skull was exhumed from a mound, the apex of which is about thirty feet above the ground in its vicinity. The locality is Baldwin county, Alabama, near Bear Point, on the west side of the Bay of Perdido, and about two or three miles north of the shore of the Gulf of Mexico. Near the apex of the mound there stood a live oak tree, supposed to be more than 100 years old. Near the foot of this live oak the party made their excavations, and a few feet below the surface they found the skull which I have had the happiness to place among your collection. The skull was covered with a hollow demi-sphere of pottery, composed of clay and shell, well burned. Upon the convex surface were sketched two whales, rather rudely, but sufficiently well to be recognizable."

24. **1512.** Aboriginal American; a very remarkable head, found by Dr. Davis and Mr. Squier in a mound in the Scioto Valley, Ohio, and described and figured by them in their "Ancient Monuments of the Mississippi Valley," Pl. XLVII. and XLVIII. This is, perhaps, the most admirably-formed head of the American race hitherto discovered. It possesses the national characteristics in perfection, as seen in the elevated vertex, flattened occiput, great interparietal diameter, ponderous bony structure, salient nose, large jaws and broad face. It is the perfect type of Indian conformation, to which

![Aboriginal American (1512)](image_url)

the skulls of all the tribes from Cape Horn to Canada more or less approximate. Similar forms are common in the Peruvian tombs.
and have the occiput, as in this instance, so flattened and vertical as to give the idea of artificial compression; yet this is only an exaggeration of the natural form, caused by the pressure of the cradle-board in common use among the American nations. F. A. 81°. I. C. 90. Dr. E. H. Davis and E. G. Squier, Esq., A. D. 1849.

"The circumstances," writes Mr. Squier, in the work above quoted, "under which this skull was found, are altogether so extraordinary as to merit a detailed account. It will be observed, from the map, that the mound above indicated is situated upon the summit of a high hill, overlooking the valley of the Scioto, about four miles below the city of Chillicothe. It is one of the most prominent and commanding positions in that section of country. Upon the summit of this hill rises a conical knoll, of so great regularity as almost to induce the belief that it is itself artificial. Upon the very apex of this knoll, and covered by the trees of the primitive forests, is the mound. It is about eight feet high, by forty or fifty feet base. The superstructure is a tough, yellow clay, which, at the depth of three feet, is mixed with large, rough stones; as shown in the accompanying section.

"These stones rest upon a dry, calcareous deposit of buried earth and small stones, of a dark black color, and much compacted. This deposit is about two feet in thickness in the centre, and rests upon the original soil. In excavating the mound, a large plate of mica was discovered, placed upon the stones. * * * * * Immediately underneath this plate of mica, and in the centre of the buried deposit was found the skull figured [on the opposite page.] It was discovered resting upon its face. The lower jaw, as indeed the entire skeleton, excepting the clavicle, a few cervical vertebrae, and some of the bones of the feet, all of which were huddled around the skull, were wanting.

"From the entire singularity of this burial, it might be inferred that the deposit was a comparatively recent one; but the fact that the various layers of carbonaceous earth, stones, and clay were entirely undisturbed, and in no degree intermixed, settles the question beyond doubt that the skull was placed where it was found at the time of the construction of the mound. * * * * * *

"This skull is wonderfully preserved; unaccountably so, unless the circumstances under which it was found may be regarded as most favorable to such a result. The imperviousness of the mound to water, from the nature of the material composing it, and its position on the summit of an eminence, subsiding in every direction from its base, are circumstances
which, joined to the antiseptic qualities of the carbonaceous deposit
enveloping the skull, may satisfactorily account for its excellent preser-
vation.” (See pp. 288-9.)

25. **417.** Chief of the Cayuga tribe of Indians, State of New York, 
ætat. 70. F. A. 78°. I. C. 94. Dr. Z. Pitcher. See Crania Americana, plate 35 and page 192.


27. **211.** Missouri Indian.


29. **22.** Young Choctaw female of Georgia. Dr. J. Hutchins.


31. **212.** Cast of a Kenhawha skull.


33. **455.** Indian of the Mingo tribe, Ohio. F. A. 77°. Dr. S. P. Hildreth.

34. **213.** Naas Indian from Fort Simpson, Washington Territory.

35. **214.** Naas Indian from Fort Simpson, Washington Territory.

These two heads were presented by Dr. J. H. B. McClellan, May 5th, 1856.


38. **33.** Oneida warrior, Iroquois confederacy. I. C. 95. Dr. B. Tappan. Crania Americana, plate 36 and page 193.

39. **1036.** Pocasset Indian.


42. **1557.** Indian cranium from the banks of the Susquehanna river. From Dr. Alexander Janney, May, 1852.

44. **216. Indian cranium from Gambel's Western collection.** Presented by Dr. Wilson.

45. **217. Fragment of cranium from the Grave Creek mound.**

46. **218. Fragments of cranium from a mound, with a portion of the os femoris.**

47. **219. Fragment of cranium from Tippecanoe battle-ground.** Presented by Mr. L. H. Sands.

48. **220. Cast of the skull of an Indian named Walk-in-the-water.** Presented by Mr. Harlan.

**6. CENTRAL AMERICANS.**

*(Case 8.)*


2. **1050.** Fragments of the skull and other parts of the skeleton of a young aboriginal female, taken from an ancient tomb at Ticul, a ruined city near San Francisco, in Yucatan, A. D. 1842. From J. L. Stevens, Esq. Vide Incidents of Travel in Yucatan, vol. i.

3. **1067.** Fragments of cranial and other bones of three human skeletons, obtained by Mr. B. M. Norman from mounds in Yucatan. Vide Rambles in Yucatan, page 217.

**c. SOUTH AMERICANS.**

*Araucanians.*


5. **656. Araucanian woman, ætat. 30.** F. A. 76°. I. C. 76.

I received this and the four preceding skulls through the kindness of Dr. J. N. Casanova, of Valparaiso, who informed me that the three heads, Nos. 654, 655, 656, were taken from chiefs killed in an encounter with the Chilian army under General Bulnes, on the river Bio-Bio, in 1835. I took occasion, however, to intimate to Dr.
Casanova my suspicion that these were not recent crania, inasmuch as they had yet adhering to them some shreds of a peculiar mummy-cloth common in the old cemeteries of Peru and Chili, at the same time that they bore unequivocal evidences of long inhumation. Dr. Casanova, however, could not suppose that he had been deceived by his agent, and I therefore published the circumstances as related by him, and on his authority, in my Crania Americana, page 243. I may add that, judging from the size and conformation of the skull No. 654, I inferred that it had belonged not to a chief, as was supposed by Dr. C., but to a woman.

Subsequent examinations have satisfied me that my suspicions were well founded; and I am further confirmed in this belief by comparing these crania with the plates of a series obtained by the Naturalists of the Astrolabe from an ancient cemetery on the Bio-Bio river, near its confluence with the Moticha in Chili. It is sufficient to add that both collections of skulls were evidently obtained from the same place; and, although Dr. Casanova was misled as to particulars, the crania I received from him pertain to a veritable but ancient Araucanian tribe, and possess a great interest, both in regard to their sepulchral locality and their admirably developed characteristics. See Voyage de l'Astrolabe: Anthropologie par le Dr. Dumoutier, planche 27.


The two preceding Araucanian skulls from the interior of Arauco, were received from Dr. Thomas Page, of Valparaiso, in Chili.

8. 221. Two Araucanian skulls in a fragmentary condition. Obtained from a well on the premises of Mr. Keen, at Talcahuano. One of the heads was enclosed in an earthen, unglazed jar. Near it was found a peculiar lozenge-shaped stone. Presented by Dr. W. S. W. Ruschenberger, U. S. N., June 10th, 1856.

10. 223. Araucanian skull.
12. 120. Cast of an Araucanian skull.

From Mounds.

1. 1242. "Indian cranium from an ancient town called Chiuchiu, or Atacama Baja, situated on the river Loa, at the eastern edge of the Desert of Atacama, eight leagues from Calamo, and 57 from the Pacific Ocean. Here are extensive remains of Indian houses, and a fortress built of mud, and loop-holed. The huaco or burial place
is along a terrace of soft sandstone, and the bodies are buried in the sitting posture.”

From Dr. John Houston, of Valparaiso, who obtained this and the following skull and presented them with the above memorandum:

![Indian Cranium (1242)](image)

2. **1243. Indian cranium**, found with the preceding.

Both these heads are elongated upwards in the sugar-loaf form, by pressure applied both back and front. See Crania Americana, page 116; Proceedings of the Academy of Natural Sciences, for December, 1845, and American Journal of Science and Arts, for July, 1846.


*Charibs.*

1. **638. Skull of a Charib of Venezuela**, flattened by art: found in a terra cotta vase, with the os sacrum and some small bones. Man, ætat. 40? F. A. 70°. From Ex-President Vargas, of Caraccas. Crania Americana, plate 64 and page 237.

2. **692. Skull of a Charib of the Antilles**, obtained in the island of Nassau by the late Rev. Thomas Leaver, for several years a missionary there. He presented the cranium to Dr. Thomas C. Dunn, of
CATALOGUE OF

Newport, Rhode Island, by whom it was added to the present collection, A. D. 1849. Man, ætat. 30. I. C. 89.

3. **225.** Cast of a **Charib** skull.

**Patagonians.**

1. **1357.** Cast of the skull of a **Patagonian.** Prof. Retzius.

2. **1359.** Cast of the head of a **Puelche** girl of Patagonia. Prof. Retzius.

3. **226.** Cast of a **Patagonian** skull. Presented by Mr. Harlan.

**Brazilians.**

1. **1254.** Skull of a **Tapuyo** Indian of Brazil.

2. **1513.** Head of a **Brazilian** Indian, artificially preserved with false eyes, &c.: woman, ætat. 60. I. C. 75. From the interior of Brazil. Mr. Henry Bond Dewey, of Para, A. D. 1850. Vide Blumenbach, Decades Craniorum, tab. xlvii.

3. **1528.** Desiccated head of a **Brazilian** Indian, from the head waters of the Tapajos river, a tributary of the Amazon: woman, ætat. 30. I. C. 69. Amory Edwards, Esq., of New York, 1851.

4. **1529.** **Brazilian** Indian, prepared like the last and obtained with it: man ætat. 70. I. C. 76. Amory Edwards, Esq., 1851.

No. 1513 has probably been obtained from this aboriginal cemetery, and no doubt pertains to the same tribe.

5. **1530.** **Guaycuru** Indian of Brazil: girl, ætat. 13. Died at Buenos Ayres in the professional care of Dr. Kennedy, who presented me the skull, A. D. 1851.

6. **1555.** **Gentoo** Indians: two prepared heads from the Purus river, a tributary of the Amazon. Presented by Mr. Amory Edwards, March, 1852. I. C.

II. **TOLTECAN RACE.**

**a. PERUVIAN FAMILY.**

From Arica.

(Case 9.)


2. **496.** **Peruvian** child of five years, from Arica: artificially elongated. Crania Americana, plate 2.

The following highly interesting series of crania, ten in number, (1275 to 1284, inclusive,) was sent me by my friend William A. Foster, Esq., now of Lima, who obtained them from the celebrated Peruvian cemetery at Arica. "This cemetery," he observes, "lies on the face of a sand-hill, sloping towards the sea. The extent of surface occupied by these tombs, as far as we explored, I should say was five or six acres. In many of the tombs three or four bodies were found clustered together, always in the sitting posture, and wrapped in three or four thicknesses of cloth, and a mat thrown over all. Each one has about the person a pouch or bag, an ear or two of maize, fruit of some kind, and not unfrequently a drinking vessel." Lima, December 17, 1845.

See Proceedings of the Academy of Natural Sciences, for April, 1846; and American Journal of Science, for July, 1846.

4. **1275.** Cranium of a child, partially compressed and elongated.

5. **1276.** Cranium of a child about four years old: natural form.

6. **1277.** Skull of a man, òetat. 65, remarkably altered by art into the elongated, symmetrical form. I. C. 69.

The annexed wood-cut shows the course of the bandages used in obtaining this singular modification of the cranium. The forehead was pressed downwards and backwards by a compress probably of folded cloth. To keep it in its place, a bandage was carried over it from the base of the occiput and thence across the forehead. To confine the lateral portions of the skull, and in order to produce the symmetrically elongated form, the same bandage was continued over the top of the head, immediately behind the coronal suture, probably with an intervening compress; and the bandaging was
repeated upon these parts until they were immovably confined in the desired position; thus permitting the head to expand only in the posterior direction. See my Illustrated System of Human Anatomy, p. 90.

7. 1278. Skull of a man, ætat. 50, of similar form to the preceding, but in less degree. I. C. 85.
8. 1279. Man, of the same configuration as 1277: ætat. 40. I. C. 87.
9. 1280. Peruvian, conformation same as the last: woman, ætat. 50. I. C. 70.
10. 1281. Peruvian skull moulded in the same manner as the last: woman, æetat. 20.
11. 1282. Peruvian head, same form as the preceding: ætat. 50. I. C. 87.
12. 1283. Peruvian head, same form as the preceding: man, æetat. 65. I. C. 75.
13. 1284. Peruvian, same form as the preceding, but wants the face.
   The following six crania were obtained at the ancient Peruvian cemetery at Arica, by my friend and former pupil Dr. S. J. Oakford, A. D. 1847.
15. 1364. Female Peruvian cranium from Arica; elongated by art. æetat. 60. I. C. 74.
   From Arica.
   From Arica.
19. 1368. Peruvian female head, artificially elongated: ætat. 60.
   I. C. 78. From Arica.
20. 227. Peruvian from Arica (?)

From Pachacamac.

(Cases 9-10.)

   W. A. Foster, Esq.
   W. A. Foster, Esq.
3. 75. Peruvian from Pachacamac, or the Temple of the Sun, near Lima: woman, ætat. 60. F. A. 72°. I. C. 87. Dr. Ruseh-
berger. No one was permitted to be buried in this sanctuary but the families of priests, nobles and other persons of distinction. See Herrera, Hist. Lib. vi Dec. 5, and Crania Americana, page 132.


5. **77. PERUVIAN from Pachacamac:** man, ætat. 50. F. A. 75°. I. C. 76.

6. **84. PERUVIAN from Pachacamac.** I. C. 75. W. A. Foster, Esq.

7. **85. PERUVIAN from Pachacamac:** man, ætat. 40. F. A. 80°. I. C. 76. See Crania Americana, plate 11 B, and page 129.


9. **87. PERUVIAN from Pachacamac.** F. A. 75°. I. C. 73. See Crania Americana, plates 8 and 9, and page 125.

10. **90. PERUVIAN from Pachacamac:** woman, ætat. 30. F. A. 75°. I. C. 71.

11. **92. PERUVIAN from Pachacamac:** man, ætat. 60. I. C. 75.


Nos. 85, 86, 87, 90, 92 and 93 from Dr. Ruschenberger.


15. **97. PERUVIAN from Pachacamac:** man, ætat. 50. F. A. 75°. I. C. 77. See Crania Americana, plate 11 D, and page 131.


17. **100. PERUVIAN from Pachacamac:** woman, ætat. 40. F. A. 70°. I. C. 67.
18. **108. Peruvian from Pachacamac.**

19. **400. Peruvian from Pachacamac: woman, ätat. 50. F. A. 76°. I. C. 75.**


22. **404. Peruvian from Pachacamac: child of five years.**

23. **405. Peruvian from Pachacamac. F. A. 75°. I. C. 70.**


Nos. 402 to 406, inclusive, from Dr. Ruschenberger.

25. **409. Peruvian from Pachacamac: woman, ätat. 70. I. C. 82. W. A. Foster, Esq.**


27. **450. Peruvian from Pachacamac: woman, ätat. 50. F. A. 75°. I. C. 77.**

Nos. 446 and 450 from Dr. Ruschenberger.
31. **568.** Peruvian of Pachacamac.
33. **571.** Peruvian from Pachacamac: woman, ætat. 35. I. C. 75.
34. **631.** Peruvian from Pachacamac: woman, ætat. 35. I. C. 68.
35. **642.** Peruvian from Pachacamac: man, ætat. 40. I. C. 73.
36. **685.** Peruvian from Pachacamac: man, ætat. 35. I. C. 78.
37. **686.** Peruvian from Pachacamac: man, ætat. 40. I. C. 70.
38. **687.** Peruvian from Pachacamac: man, ætat. 30. I. C. 71.
40. **696.** Peruvian from Pachacamac: woman, ætat. 30. I. C. 68.

The preceding 13 skulls, Nos. 453 to 696, inclusive, are from W. A. Foster, Esq.

41. **697.** Ancient Peruvian from Pachacamac: man, ætat. 50. F. A. 73°. I. C. 74. Dr. Ruschenberger.
42. **699.** Ancient Peruvian from Pachacamac: woman, ætat. 40. F. A. 74. I. C. 76. Dr. Ruschenberger.
44. **752.** Peruvian from Pachacamac: woman, ætat. 60. I. C. 67.
45. **947.** Peruvian child from Pachacamac: ætat. 4. Mr. Foster.
46. **1042.** Peruvian child from Pachacamac: ætat. 6.
47. **1059.** Peruvian child from Pachacamac: ætat. 2. W. A. Foster, Esq.
49. **1225.** Peruvian of Pachacamac: man, ætat. 50. I. C. 85.
50. **1232.** Peruvian of Pachacamac: woman, ætat. 80. I. C. 68.
51. **1241.** Peruvian of Pachacamac: man, ætat. 60. I. C. 67.
52. **1453.** Peruvian child from Pachacamac: ætat. 9 years.

For the following series of Peruvian skulls, 1456 to 1509, I am indebted to my friend Wm. A. Foster, Esq.

53. **1456.** Peruvian. Pachacamac: man, ætat. 70. I. C. 79. The atlas is ankylosed to the occiput.
56. **1459.** Peruvian. Pachacamac: man, ætat. 60. I. C. 68.
57. **1460.** Peruvian. Pachacamac: woman, ætat. 40.
58. **1461.** Peruvian. Pachacamac: woman, ætat. 80. I. C. 64.
60. **1463.** Peruvian child of four years. Pachacamac.
61. **1464.** Peruvian. Pachacamac: woman, ætat. 60. I. C. 64.
63. **1466.** Peruvian child of five years. Pachacamac.
64. **1467.** Peruvian child of four years. Remarkable for the fulness of the occipital region. Pachacamac.
65. **1468.** Peruvian child of eight years. Pachacamac.
66. **1469.** Peruvian child of eight years. Pachacamac.
69. **1472.** Peruvian: man, ætat. 60. I. C. 77.
71. **1474.** Peruvian. Pachacamac: man, ætat. 50. I. C. 86.
72. **1475.** Peruvian: man, ætat. 60. I. C. 81. Pachacamac.
73. **1476.** Peruvian. Pachacamac: woman, ætat. 70.
74. **1477.** Peruvian. Pachacamac: woman, ætat. 60. I. C. 74.
76. **1479.** Peruvian. Pachacamac.
82. **1490.** Peruvian: man, ætat. 80. I. C. 78. Pachacamac.
83. **1491.** Peruvian. Pachacamac: woman, ætat. 70. I. C. 77.
84. **1492.** Peruvian child of six years. Pachacamac.
85. **1493.** Peruvian child of twelve years. Pachacamac.
87. **1495.** Peruvian: man, ætat. 50. I. C. 73. Pachacamac.
88. **1496.** Peruvian from Pachacamac: man, ætat. 40. I. C. 75.
89. **1497.** Peruvian child of four years. Pachacamac.
90. **1498.** Peruvian. Pachacamac: woman, ætat. 40.
92. **1500.** Peruvian. Pachacamac: woman, ætat. 60. I. C. 69.
96. **1504.** Peruvian. Pachacamac: man, ætat. 70. I. C. 77.
97. **1505.** Peruvian. Pachacamac: woman, ætat. 70.
HUMAN CRANIA.

100. **1508. Peruvian.** Pachacamac: woman, ætat. 50. I. C. 72.
101. **1509. Peruvian.** Pachacamac: man, ætat. 70. I. C. 76.
102. **228. Peruvian.** Pachacamac.
103. **229. Peruvian.** Pachacamac.
104. **230. Peruvian.** Pachacamac.

The three preceding skulls were found on the side of a hill two miles south of the Temple of the Sun, July, 1845.

*From Pisco.*

(Cases 10-11.)

1. **38. Peruvian from the ancient cemetery at Pisco.**
3. **495. Ancient Peruvian from Pisco.**
6. **630. Peruvian child from the ancient cemetery at Pisco.**
7. **996. Peruvian from the ancient cemetery at Pisco: woman, ætat. 60. I. C. 84.
8. **1048. Peruvian from the ancient cemetery at Pisco.**
10. **1221. Ancient Peruvian: man, ætat. 60. I. C. 82. From the Huacas of Pisco.**
Nos. 38 to 1326, inclusive, from W. A. Foster, Esq.
15. **1371. Ancient Peruvian from Pisco: man, ætat. 60. I. C. 77.
17. **1373. Ancient Peruvian from Pisco: man, ætat. 60. I. C. 77.
19. **1375. Peruvian child of six years old. Pisco.**
20. **1376. Peruvian child eight years of age. Head elongated in the upward direction. Pisco.**
22. **1407.** Peruvian from Pisco: man, ætat. 60. I. C. 77.
23. **1408.** Peruvian from Pisco: man, æetat. 45. I. C. 81.
24. **1409.** Peruvian from Pisco: woman, ætat. 25. I. C. 70.
25. **1410.** Peruvian from Pisco: man, ætat. 40. I. C. 73.
26. **1411.** Peruvian from Pisco: man, ætat. 50. I. C. 89.
27. **1412.** Peruvian from Pisco: man, ætat. 70. I. C. 88.
28. **1413.** Peruvian from Pisco: man, ætat. 60.
29. **1414.** Peruvian from Pisco.
30. **1415.** Peruvian from Pisco: child of twelve years.
31. **1416.** Peruvian from Pisco: man, ætat. 50. I. C. 73.
32. **1417.** Peruvian from Pisco: man, ætat. 70. I. C. 79.
33. **1418.** Peruvian from Pisco: woman, ætat. 50. I. C. 64.
34. **1419.** Peruvian from Pisco: woman, ætat. 25. I. C. 62.
35. **1420.** Peruvian from Pisco; conical form: man, ætat. 55. I. C. 76.
36. **1421.** Peruvian from Pisco: man, ætat. 50. I. C. 81.
37. **1422.** Peruvian from Pisco: woman, ætat. 80. I. C. 77. Atlas anchylosed to the cranium. See also Nos. 1263 and 1456.
38. **1423.** Peruvian from Pisco: child of two years.
39. **1424.** Peruvian from Pisco: man, ætat. 70. I. C. 60. Skull compressed, with frontal suture.
41. **1426.** Peruvian from Pisco: man, ætat 60. I. C. 85. Conical form.
42. **1427.** Peruvian from Pisco: man, ætat. 70. I. C. 77. Conical form.
43. **1428.** Peruvian from Pisco: man, ætat. 40.
44. **1429.** Peruvian from Pisco: woman, ætat. 70. I. C. 71.
45. **1430.** Peruvian from Pisco: a child of 8 years. Head compressed.
47. **1432.** Peruvian from Pisco: woman, ætat. 35. I. C. 74. Conical form.
48. **1433.** Peruvian from Pisco: child of seven years.
49. **1434.** Peruvian from Pisco: woman, ætat. 40. I. C. 75. Much compressed.
50. **1435.** Peruvian from Pisco: woman, ætat. 60. I. C. 66. Conical form.
51. **1436.** Peruvian from Pisco: man, ætat. 50. I. C. 76. Strongly resembles a Malay skull.

52. **1437.** Peruvian from Pisco: woman, ætat. 70. I. C. 74.


54. **1439.** Peruvian from Pisco: woman, ætat. 50. I. C. 69.

55. **1440.** Peruvian from Pisco: man, ætat. 60. I. C. 84.

56. **1441.** Peruvian from Pisco: child of 8 years. Conical form.

57. **1442.** Peruvian from Pisco: woman ætat. 35. I. C. 72.

58. **1443.** Peruvian from Pisco: man, ætat. 50. I. C. 73.


60. **1445.** Peruvian from Pisco: woman, ætat. 80.

For the preceding series of Peruvian crania from Pisco, I am indebted to my friend Wm. A. Foster, Esq., formerly of this city, and now a resident of Lima, who accompanied them with the following memorandum:

"These skulls were all collected from the surface of three or four huacas (tumuli) within a short distance, perhaps a couple of miles, of each other, having been disturbed and left lying there by previous diggers; that is, by the common people of the country, who are full of notions about buried treasure. All the huacas I saw were evidently those of the poorer classes.

"The whole country around Pisco is covered with Indian remains. It is a rich valley, with a small stream running through it, and has every appearance of having been thickly populated and well and extensively cultivated."

61. **1484.** Peruvian from Pisco: man, ætat. 50.

62. **1485.** Peruvian from Pisco: woman, ætat. 40.

*From Santa.*

*(Case 11.)*

1. **71.** Peruvian child from Santa. Dr. Waters Smith, U. S. Navy.


5. **82.** Peruvian from Santa: woman, æetat. 60. F. A. 79°. I. C. 76.

Nos. 79, 81 and 82 from Dr. Ruschenberger.

7. **569.** Peruvian child of 8 years, from Santa. Dr. Ruschenberger.

8. **109.** Peruvian from Santa.

*From Lima.*


2. **91.** Peruvian from Chorillos, near Lima: woman, æetat. 60. F. A. 75°. I. C. 66. Dr. Ruschenberger.


4. **414.** Peruvian, the os frontis flattened by art. From a tumulus at Rimac, near Lima. F. A. 72°. I. C. 81. Dr. H. S. Rennolds, U. S. N. See Crania Americana, plate 57 and page 226.


6. **576.** Peruvian from a mound near Lima. I. C. 72. Dr. H. S. Rennolds, U. S. N.

7. **231.** Peruvian from an Indian tumulus in the valley of Lima, near Magdalena, June, 1845.

*Miscellaneous.*

*(Case 11.)*

1. **11.** Ancient Chimuyan from the ruined city near Truxillo, in Peru: woman, æetat. 40. I. C. 71. Dr. M. Burrough. See Crania Americana, plate 6 and page 112.


4. **1348.** Peruvian skull, artificially elongated upwards and backwards: man, æetat. 50. I. C. 66. Dr. Dickeson.

5. **1517.** Peruvian child of 8 years. Payta. Dr. S. J. Oakford. 1850.

6. **1518.** Peruvian: man, æetat. 50. I. C. —. From a mound in the province of Payta. Dr. S. J. Oakford. 1850.

7. **113.** Peruvian of the Inca race.


9. **1046.** Peruvian from an ancient cemetery at Guamay. I. C. 74. Dr. Paul Swift. 1843.
Nos. 447 and 448 from Dr. Ruschenberger.

1. **710. Cast of an elongated Peruvian skull.** Dr. O. S. Fowler.
2. **711. Cast of another ancient Peruvian skull.** Dr. O. S. Fowler.
3. **700. Cast of the head of an ancient Peruvian, from a tomb on the Island of Titicaca, in Bolivia.** Crania Americana, page 97, &c.
4. **701. Cast of an ancient Peruvian skull, from a tomb on the Island of Titicaca.**
5. **702. Cast of a skull found with the preceding.**
6. **703. Cast of a skull taken by Mr. Pentland from an ancient tomb at Coracolla, latitude 17° 38' south.**
7. **704. Cast of a skull of the ancient Peruvian race, taken from the tombs between Pometé and Chimgaugé, by Mr. Pentland.**

b. **Mexican Family.**

*(Case 12.)*

1. **34. Mexican** Indian of the Tlahuica tribe: woman, ætat. 40. F. A. 76°. I. C. 84. W. Maclure, Esq., 1836. The following is a copy of Mr. Maclure's note to me:

"The skull of an Indian from Acapancingo, eighteen leagues south of Mexico, and a league and a half from Cuernavaca, State of Mexico." See Clavigero's Hist. of Mexico, Cullen's Trans., vol. i. p. 7; and Crania Americana, plate 18 A, and page 156.

1. **734. Skull of an ancient Mexican, of the Aztec? nation; exhumed near the Indian village of Guahapan, on the mountain Popocatapetl.** Man, ætat. 40. I. C. 85. Dr. J. Macartney, of Mexico.
2. **735. Aztec? found with the preceding.** Woman, ætat. 40. I. C. 76. Dr. Macartney.
1. **714. Mexican Indian from an ancient cemetery at Otumba:** man, ætat. 40. I. C. 90. Crania Americana, plate 61 and page 233.

The preceding seven skulls, 714 to 720, inclusive, were transmitted to me by the late William Maclure, Esq., with the following note: "Skulls obtained by Mr. Joseph Smith from the ancient tombs of Tacuba and Otumba, for Dr. Morton, May, 1, 1839."

1. **1323.** The skull of Vicente Rivaz, an Otomie Cazique of the pure Mexican race, born and died in the village of San Pedro Flacoapan, in the department of Tula, 20 leagues from the city of Mexico. He lived to be 80 years of age, and was remarkable for his literary attainments and amiable disposition. Sent me by Senor Don Jose Gomez de la Catina, of the city of Mexico, A. D. 1848, through Dr. Henderson, U. S. A. I. C. 72.


The six preceding crania were obtained and presented by Don J. Gomez de la Cortina, of the city of Mexico, through Mr. W.

1. **1226.** Ancient **Mexican** skull, from the cemetery of Santiago de Tlatilolco, near the city of Mexico, in which many thousands of the natives were interred after the brave defence of their city against Cortes. I. C. 79.5. From his Excellency the Baron von Gerolt, A. D. 1845. See Proceedings of the Academy of Natural Sciences for July, 1845.


1. **1314.** Ancient Mexican chief, exhumed, together with various aboriginal arms and utensils, from the Cerro de Quesilas, near the city of Mexico, and brought from thence by the Hon. J. R. Poinsett, U. S. Minister to Mexico. F. A. 72°. I. C. 86. See Crania Americana, plate 14 and page 152.


3. **234.** Skull said to be taken from under the vast Altar of Sacrifices at Mexico. Presented by Dr. E. H. Barton, of N. Orleans.

1. **1353.** Cast of a singularly deformed Mexican skull. Prof. Andreas Retzius, of Stockholm.

1. **1566.** Indian cranium. Pimos village, Mexico. Presented by Dr. Heermann, August, 1854. F. A. 78°. I. C. —.

1. **1345.** Skull of a chief of the Lipan tribe of Indians, killed in a skirmish with Col. Doniphan's legion, on the 5th of May, 1847, at Poyo, near Parsos, in New Mexico. Man, ætat. 40. I. C. 84. This skull was procured and presented by Dr. A. Wislizenus, of St. Louis, Missouri.

2. **1346.** Skull, supposed to be of an ancient tribe of Lipan Indians, from the celebrated sepulchral cavern of Bolson de Massimi, be-
tween San Sebastian and San Lorenzo, in the State of Durango, New Mexico. Man, ætat. 50. I. C. 99. Obtained and presented by Dr. A. Wislizenus, of St. Louis, Missouri, A. D. 1847.


2. 1347. Head of a young Mexican sergeant, killed at the battle of Buena Vista, in New Mexico, May, 1847. An example of natural desiccation. Dr. R. S. Holmes, U. S. A.

3. 555. Mexican soldier, ætat. 40, with three cicatrizd gunshot wounds through the right parietal bone. Slain at the battle of San Jacinto, in Texas, A. D. 1836.

4. 556. Mexican soldier, ætat. 40, with cicatrizd depression of the frontal and nasal bones. Slain at the battle of San Jacinto.

5. 557. Mexican soldier, ætat. 50, slain at San Jacinto. A rifle ball has entered the occipital bone and passed out of the left parietal.


Nos. 555 to 558, inclusive, from J. J. Audubon, Esq.


V. NEGRO GROUP.

1. American-Born.

(Case 12.)


4. 74. Negro; died of malignant polypus of the antrum. I. C. 76. Dr. F. Turnpenny.


HUMAN CRANIA.


Negro (983).

10. 1301. Fragment of a Negro skull of remarkable thickness.
13. 1320. Negress of South Carolina, ætat. 30. I. C. 73. Dr. Hardy.
14. 1321. Cast of the skull of a Negro, remarkable for the flatness of the lateral or temporal regions, and for a grooved surface over the posterior part of the coronal suture, and deep depressions which supply the place of the parietal protuberances. Dr. J. Wyman, of Boston. See Nos. 444, 893 and 1290.
15. 235. Cast of a Negro skull.
16. 236. Cast of a Negro skull.

2. Native Africans.

(Cases 12-13.)

2. 114. Negro, from Western Africa.

[In the Benguella skull (No. 421), the forehead is broad and capa-
cious, the calvarial arch full and regular, the posterior region appears elongated in consequence of the angle formed by the junction of a large Wormian piece and the occiput proper; face regular, superior maxillae prognathous. The Mozambique skull (No. 423), resembles in form that of the Benguella and Kroos. In another Mozambique head (No. 1245), however, the forehead is narrower and higher. The cast of a Mozambique skull (No. 237), presents an exceedingly low and degraded form.


I received this skull, together with the preceding three, from Dr. Robert McDowell, with the following memorandum:

"The skull of an African Gree-gree man, or doctor. For committing some crime he was tried by the ordeal of drinking red-wood water, and being found guilty, was cut in pieces, and thrown into the St. John's river, Grand Bassa, Africa, where his skull was found—a very good specimen of the Bassa tribe. A. D. 1835.

14. 823. Negress, ætat. 60, with gray, woolly hair. I. C. 73. Crania Ægyptiaca, plate 12, fig. 7.

Negress (823).


The following series of 29 skulls, of Native African Negroes, was received from Don José Rodriguez Cisneros, M. D., of Havana.

Second series of crania of Native African tribes, Nos. 958 to 981 inclusive, from Don José Rodriguez Cisneros, M. D., of Havana.

48. **961. Native African:** girl of 14 years. F. A. 82°.
56. 969. **Native African:** girl of 12 years. F. A. 74°.
57. 970. **Native African:** girl of 16. F. A. 78°. I. C. 76.
58. 971. **Native African Negro, ætat. 25.** F. A. 80°. I. C. 86.
59. 972. **Native African:** boy of 15 years. F. A. 75°.
63. 976. **Native African Negro, ætat. 18.** F. A. 80°. I. C. 82.
64. 977. **Native African, ætat. 16.** F. A. 83°. I. C. 86.
67. 980. **Native African, ætat. 14.**
68. 981. **Native African Negro, ætat. 30.** F. A. 75°. I. C. 97.
70. 994. **Native African Negro, ætat. 30.** F. A. 76°. I. C. 76.

Liberia.

73. 1095. **Pessah: man, ætat. 40.** F. A. 80°. I. C. 90.

The five preceding skulls are of Negroes killed in the attack on Heddington, in Liberia, A. D. 1840.

77. 1099. **Krooman, ætat. 50.** F. A. 73°. I. C. 95.

The last two were hanged in Liberia for murder.

81. 1103. **Native African:** woman, ætat. 25. F. A. 75°. I. C. 65.

The preceding eleven skulls of Native Africans, were received A. D. 1842, from Dr. S. M. E. Goheen, for several years physician to the colony of Liberia in Western Africa.

The Golah skull (No. 1093), is remarkable for its massiveness and density. The calvaria is well-formed, expanding from the frontal region back towards the occiput, which is flat and shelving. The two halves of the os frontis form a double inclined plane, whose summit coincides with the sagittal suture. The basis cranii is full and round, and the mastoid processes large; nasal bones flat, and falling in below the glabella; orbits large, and widely sepa-
rated; malar bones laterally prominent. This latter feature, in conjunction with the double inclination of the os frontis, gives to the head a pyramidal form. The superior maxilla is distinctly everted at the alveolar margin. Another head of the same tribe is longer and narrower, and, in consequence of the flatness of the malar bones, has less of the pyramidal form.—The calvaria of a Pessah skull (No. 1095) is oblong in figure; the forehead flat, and receding; superciliary ridges ponderous; malar bones large and flat; upper jaw everted; lower jaw retracted, occiput pro-
tuberant. In a Kroo head (No. 1098), I find the forehead broad and high; the calvaria regularly arched, and having its greatest diameter between the anterior and inferior parts of the parietalia; the occipital region flat and shelving downwards and forwards to a small foramen magnum; mastoid processes large; face very broad; malar bones shelving slightly like those of the Eskimo; inter-orbital space very large; upper jaw slightly everted; teeth rather small, and vertical; zygomatic fossae deep. In another Kroo skull, the vertex is flat, the forehead recedent, and the jaws more prognathous. The calvaria of a Dey skull is narrow in front and broad posteriorly, with a flat vertex; face small, regular, and compact, and, were it not for the projection of the superior alve-
olus, might be considered as almost European. The skull of an Eboe (No. 1102), presents characters similar to those just de-
tailed. It is chiefly remarkable for the great obliquity of the orbital opening, and the unusual smallness of the mastoid pro-
cesses.]

82. 1224. CONGO NEGRO; a young native. Remarkable for the absence of the coronal, sagittal and lambdoidal sutures. Dr. David Gilbert, 1844.

83. 1107. HOTTENTOT: woman, æt. 35. F. A. 75°. I. C. 68.
84. 1244. HOTTENTOT: woman, æt. 40. I. C. 75.
85. 1351. HOTTENTOT: woman, æt. 25. I. C. 83.

The above three Hottentot skulls were sent me by Mr. John Watson, of Cape Town, through Dr. Gavin Watson, 1845–8.

86. 1358. KAFFER skull: man, æt. 50. I. C. 80. From Mr. John Watson, through Dr. G. Watson.
87. 1360. Cast of a KAFFER skull. Prof. Retzius.
88. 238. Cast of the skull of a BOSJIE woman. Presented by Mr. Harlan.

[The three Hottentot heads are long, compressed anteriorly; fore-
heads low; the whole face small and prognathous, the slope, from
3. Hovahs.

(Case 13.)


These two Hovah skulls were procured by Lieut. Isaac G. Strain, U. S. N., at Majunga, Bembatooka Bay, on the west coast of Madagascar, A. D. 1846.

The Hovahs, who constitute the ruling caste of this island, are a black race closely allied to the Kaffers. They are more or less blended with the Arabs, Hindus and Malays, but not to such a degree as to materially affect their national traits or their peculiar language, as Mr. Crawfurd has shown.

[These two Hovah skulls have the base long and narrow, the vertex flat, the orbits narrow and high, and the superior maxillae prominent.]

IV. ALFORIAN RACE.

Australians.

(Case 13.)

The following three native Australian skulls were presented to me A. D. 1849, by Dr. Charles Nicholson, of Sydney, New South Wales.


This man, whose name was Durabub, was killed in a fray after having himself killed two savages of a hostile tribe, A. D. 1841. His skull is the nearest approach to the Orang type that I have seen. Ætat. 40. I. C. 81.

[It is a truly animal head. The forehead is exceedingly flat and receded, while the prognathism of the superior maxillary almost degenerates into a muzzle. The alveolar arch, instead of being...
round or oval in outline, is nearly square. The whole head is elongated and depressed along the coronal region, the basis cranii flat, and the mastoid processes very large and roughly formed. The immense orbits are overhung by ponderous superciliary ridges. This latter feature is still more evident in No. 1451 of the Collection, which, though varying somewhat in type, presents in general the same brutal appearance.

5. **1328.** Native Australian boy, about 16 years old, native of Port St. Philip, at which place he was hanged for murder. I. C. 82. Procured in Calcutta by my friend Dr. Chas. Huffnagle, and by him presented to me, A. D. 1847.

6. **1261.** New Hollander, of a tribe near the Goulbourn settlement: man, ætat. 60. I. C. 81.

7. **1262.** New Hollander, from a tribe of the Goulbourn settlement, killed in an affray with the people of another tribe: woman, ætat. 55. I. C. 75.

The two preceding skulls were sent me by Charles Nicholson, M. D., of Sydney, in Australia, 1845. See Proceedings of the Academy of Natural Sciences, for December, 1845.


9. **239.** Fragment of the skull of a New Hollander.

10. **240.** Australian: man, from Moreton Bay.

11. **241.** Australian: woman, from Moreton Bay.

*Oceanic Negroes.*

1. **435.** Oceanic Negro, from the Indian Archipelago: woman, ætat. 40. I. C. 77. Dr. Doornik.

2. **1343.** Tasmanian, of Van Diemen's land (?) Oceanic Negro of the Indian Archipelago; ætat. 35. I. C. 76.
VI. MIXED RACES.

Copts.

(Case 14.)


2. 760. Coptic child, a year old. Obtained with No. 759.


[Dr. Morton describes No. 761 as elongated, narrow, but otherwise mediately developed in front, with great breadth and fulness in the whole posterior region. The nasal bones, though prominent, are broad, short, and concave, and the upper jaw is everted. There is also a remarkable distance between the eyes. See Crania Ægyptiaca, p. 57.]

4. 795. Skull exhumed from the front of the First or Northern Brick Pyramid of Dashour, Memphite necropolis, by Mr. Perring, Civil Engineer. Blends the Coptic with the Egyptian form. F. A. 76°. I. C. 75. Crania Ægyptiaca, page 7. For an engraving of this skull, see page 39.
5. **786.** Skull sent me from Old Cairo, in Egypt, by Mr. Gliddon, who knew nothing of its history. A eunuch? ætat. 40. I. C. 77.

**Negroid Egyptians.**

1. **800.** Negroid form: head of a child.

2. **835.** Negroid form: woman of 30, with long, coarse hair. F. A. 73°. I. C. 71. Crania Ægyptiaca, plate 4, fig. 3.

Nos. 800 and 835 are from G. R. Gliddon, Esq.


4. **857.** Egyptian blended with the Negro form? Hair fine. F. A. 77°. I. C. 83. Crania Ægyptiaca, plate 7, fig. 3.

Nos. 852, 857 and 858 are from M. Clot Bey.


8. **874.** Egyptian and Negro form? child of ten years.


Nos. 864, 869, 874 and 885 are from G. R. Gliddon, Esq.

10. **1238.** Mummied head from Egypt. Negroid form; hair long, coarse and curling. Dr. C. Pickering. 1845.

12. **1294.** Embalmed head from the Grottoes of Maabdeh. **Negroid** form (mixed Negro and Egyptian) with short frizzled hair: man, ætat. 50. From A. C. Harris, Esq., of Alexandria, in Egypt, A. D. 1846.

*Nubians.*


Nos. 787 to 888 from G. R. Gliddon, Esq.

4. **242.** Cast of a Nubian skull. From the late Dr. Harlan's collection. Presented by Mr. Harlan.

*Hispano-Peruvians.*

1. **50.** Cholo, or Hispano-Peruvian? From the church vault at Old Callao, into which were thrown the dead bodies of the Royalist garrison of San Philippo, A. D. 1825. I. C. 96. Dr. H. S. Rennolds, U. S. Navy.


*Hispano-Indian.*

1. **690.** Mexican soldier, with a cicatrised sabre wound of the os

Negroid Indians.

1. 408. Choctaw and Negro? I. C. 79. Dr. Wilson, who dissected this man, considered him a full-blooded Choctaw; but the skull strongly indicates a mixture of the Negro.


Malayo-Chinese.


Mulattoes.

1. 1234. Mulatto? man, ætat. 50, with an anchylosed fracture and displacement of the left occipital condyle. Dr. Edward Hallowell.

2. 1319. Skull of John Voorhees, a Mulatto porter, born in Chester county, Pennsylvania, and died of consumption in the Blockley Hospital, November 5, 1846, aged 35 years. About an hour before his death, he called the nurse to him and confessed as follows: That eighteen or twenty years before, having a hatred against another boy of his own color, two years younger than himself, he strangled and killed him. After committing the murder he became alarmed, and placed the dead body in a chair near the window, hoping to revive it. He then fled; and not having been seen to enter the house was never suspected of the murder; and the boy, being found dead in the chair, was supposed to have died of apoplexy. I have these facts and the skull from my friend Dr. Adolphus L. Heerman.

VII. LUNATICS AND IDIOTS.

(Case 14.)

1. 9. Negro Idiot, ætat. 60. I. C. 70.

2. 10. Anglo-American boy: hydrocephalous, aged 8 years.

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<td><strong>58. German Lunatic:</strong> man, ëstat. 70.</td>
<td>I. C. 87.</td>
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<td>10.</td>
<td><strong>62. Lunatic Englishman,</strong> aged 30 years.</td>
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<td>12.</td>
<td><strong>64. Mulatto Lunatic:</strong> woman, ëstat. 18.</td>
<td>I. C. 76. Died of Cholera, A. D. 1832.</td>
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<td>15.</td>
<td><strong>551. Idiot:</strong> European, ëstat. 30.</td>
<td>I. C. 79. From Dr. Doornik’s collection. Presented by Dr. Jones, of New Orleans.</td>
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<td>17.</td>
<td><strong>863. Head of an Idiot:</strong> man, ëstat. 40.</td>
<td>Crania Ægyptiaca, page 16.</td>
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<td>19.</td>
<td><strong>243. Skull of an Idiotic Negress,</strong> of a most remarkable charac-</td>
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Presented by Mr. B. H. Warden, while these sheets were passing through the press.

VIII. SKULLS ILLUSTRATIVE OF GROWTH.

(Case 15.)

1. 65. Skull of a child born at the seventh month. Dr. P. B. Goddard.
2. 66. Child six months old. Dr. Goddard.
3. 419. Head at the full period of utero-gestation.
4. 709. Skull of a foetus at the sixth month of utero-gestation.
5. 1211. Cranium of a child five months old.
6. 1212. Cranium of a child nine months old.
7. 1213. Cranium of a child eight months old.

Miscellaneous and Uncertain.

1. 244. Cranium phrenologically marked, according to Dr. Spurzheim. From Dr. W. S. W. Ruschenberger.
2. 245. Cranium phrenologically marked.

1045 Total.

It will be seen that this total differs from that given on page 16. This discrepancy is due to the incorporation of several skulls received while these sheets were passing through the press. (See page 52, note, and page 102, No. 243).
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ACT OF INCORPORATION

AND

BY-LAWS

OF THE

Academy of Natural Sciences

OF

PHILADELPHIA.

PHILADELPHIA:
MERRIHew & THOMPSON, PRINTERS.
1857.
AN ACT

TO INCORPORATE THE

ACADEMY OF NATURAL SCIENCES
OF
PHILADELPHIA.

WHEREAS it is represented to the Legislature that a number of persons have formed a Society in Philadelphia for the encouragement and cultivation of the Sciences, by the name of "The Academy of Natural Sciences of Philadelphia," as a Society devoted entirely to the advancement of useful learning, and in order that the purposes thereof may be carried into better effect,

Therefore,

SECTION 1. Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in General Assembly met, and it is hereby enacted by the authority of the same, That all such persons as now are members of said Society, according to its rules heretofore adopted, or that hereafter may become members of the same, agreeably to its rules and regulations, be and they are hereby incorporated into a Society by the name of "The Academy of Natural Sciences of Philadelphia," and by that name shall have perpetual succession, with power to have a common seal, and change the same at pleasure, to make contracts relative to the said institution, to sue and be sued, and by that name and style be capable, in law, of purchasing, taking, holding, and conveying any estate, real or personal, for the use of said corporation: Provided, that the annual income of such estate shall not exceed in value eight thousand dollars, nor be applied to any other purposes than those for which this corporation is formed.

Sect. 2. And be it further enacted by the authority aforesaid, That the Society may establish By-Laws and orders for its government and regulation, and for the preservation and application of the funds
thereof; Provided the same be not repugnant to the Constitution and Laws of the United States, or of this Commonwealth.

Sect. 3. And be it further enacted by the authority aforesaid, That the Society shall consist of members and correspondents; and candidates for admission shall be elected under such rules, and upon such terms, as the Society shall establish; aliens shall enjoy the full rights of members or correspondents in the Society; but members only shall have the right of voting, of holding offices, and of transacting business; and correspondents shall have the privilege of attending the meetings, and visiting the museum.

Sect. 4. And be it further enacted by the authority aforesaid, That the officers of the Society shall be a president, two vice-presidents, a corresponding secretary, a recording secretary, a treasurer, a librarian, and four curators, whose respective duties may be assigned by the By-Laws of the said Society, and they shall be elected at the last stated meeting of the Society in December in each year, and if any office should become vacant, it may be supplied by a special election, until the annual election then ensuing; and until the next annual election for officers in the month of December, one thousand eight hundred and seventeen, the present officers are hereby vested with power to perform the duties prescribed by the existing rules of the Society, unless there be intermediate vacancies, and then the officer or officers to be elected shall have the full power of his or their predecessors.

Sect. 5. And be it further enacted by the authority aforesaid, That if the annual election for officers shall not be held at the stated day, the said corporation shall not be thereby dissolved, but the officers shall continue in office until a new election.

REES HILL,
Speaker of the House of Representatives.

ISAAC WEAVER,
Speaker of the Senate.

Approved the twenty-fourth day of March, one thousand eight hundred and seventeen.

SIMON SNYDER.

Office of the Secretary of the Commonwealth,
Harrisburg, April 25th, 1817.

I certify that the above and foregoing is a true copy of the original law remaining on file in this office. Witness my hand and seal.

JAMES TRIMBLE, [L. S.]
Deputy Secretary.
BY-LAWS

OF THE

ACADEMY OF NATURAL SCIENCES

OF

PHILADELPHIA.

CHAPTER I.

Art. I. The Society shall be called The Academy of Natural Sciences of Philadelphia.

Art. II. The Society shall consist of members and correspondents.

Art. III. The right of voting, of holding offices, and of transacting business, lies solely with the members: correspondents have the privilege of attending the meetings, and of visiting the museum.

Art. IV. The common seal of the Society shall be the title of the association, surrounding the words,

Instituted, 1812.
Incorporated, 1817.

Art. V. The Academy shall grant to each member and correspondent a certificate of membership, as follows:

The Academy of Natural Sciences of Philadelphia has elected ______ a member of their association, this ______ day of ______

Correspond. Sec. [L. s.] President.
Record. Sec. Vice-President.

Art. VI. The hall of the Academy shall be used for the purposes of the Society only.

Art. VII. The officers of the Academy shall be a President, two Vice-Presidents, a Recording Secretary, a Corresponding Secretary, a Treasurer, a Librarian, and four Curators, who shall be elected at the last stated meeting in December.
CHAPTER II.

ELECTION OF MEMBERS AND CORRESPONDENTS.

Art. I. All candidates for admission into the Academy, whether as members or correspondents, must be proposed in writing by two members at a meeting of business, and be balloted for at the meeting of business next succeeding; the affirmative votes of three-fourths of the members present shall be necessary to elect a candidate.

Art. II. No person residing in Philadelphia can be chosen a correspondent; nor shall any correspondent continue such after he shall have removed permanently to Philadelphia. In such case a re-election is not necessary, but the correspondent becomes liable for the semi-annual contributions, and is entitled to all the privileges of a member.

Art. III. No person shall be entitled to the privileges of membership until he shall have paid the fee of initiation (except in cases of correspondents removing to the city), and signed the following obligation:

In becoming a member of the Academy of Natural Sciences of Philadelphia, I promise to conform myself to its constitution, laws, and regulations, and in testimony thereof I do hereunto subscribe my name.

Art. IV. If any member elect shall not sign the above declaration, and pay the fee of initiation within six months from the date of his election into the Society, the said election may be declared null and void by a majority of the members present at any meeting of business.

Art. V. If any person shall be balloted for and rejected, or his name withdrawn previous to the ballot, no note of said rejection or withdrawal shall be made on the minutes of the Academy.

Art. VI. No person thus rejected shall again be proposed before the expiration of one year; nor shall any one whose name has been withdrawn previous to the ballot, be again proposed before the expiration of six months from said withdrawal.

CHAPTER III.

CONTRIBUTIONS AND PAYMENTS.

Art. I. Every member elect shall pay to the treasurer an initiation fee of five dollars.

Art. II. Every member shall be subject to a semi-annual contri-
bution of five dollars, payable at the last stated meeting in June and December.

Art. III. But any member who shall pay into the hands of the treasurer the sum of one hundred dollars, shall be exempt from all future semi-annual contributions.

Art. IV. The Academy may, as a mark of distinction, exempt any member from his contributions, provided it be proposed at one meeting of business, lie on the table for one month, and all the members present at the subsequent meeting of business agree thereto.

Art. V. Every member who shall be absent from the city during the space of six or more months, may be exonerated from the payment of his dues accruing during his absence.

Art. VI. No member shall be entitled to vote at the annual election for officers, unless he can exhibit to the tellers a receipt in full for all his arrearages due to the Academy.

Art. VII. No pecuniary contributions shall be required from correspondents: but correspondents residing in the United States shall be charged with a diploma fee of five dollars.

CHAPTER IV.

RESIGNATION AND EXPULSION OF MEMBERS.

Art. I. Any member shall have leave to resign upon application made therefor, in writing, provided he can produce a certificate from the Treasurer that all arrears due from him to the Society have been discharged.

Art. II. Members may be expelled from the Academy for any flagrant act of disrespect to the officers or members of the Academy, or wilful disregard of the Constitution and By-laws.

Art. III. No member shall be expelled from the Academy unless three-fourths of the members present agree thereto, at least twelve members being present, and then not without having an opportunity of being heard in his own defence.

Art. IV. No person thus expelled shall, under any circumstances, be received as a candidate for re-election.

CHAPTER V.

OF OFFICERS AND THEIR DUTIES.

Art. I. The duties of the president are, to occupy the chair at the meetings of the Academy, to preserve good order and decorum, to
regulate the debates, to nominate the chairman of all committees, other than those specially excepted; and to call special meetings of the Society at such times as he shall deem necessary, or at the request of five members.

Art. II. The duties of the vice-president shall be the same as those of the president during his absence.

Art. III. The recording secretary is to take and preserve correct minutes of the proceedings of the Society, to notify all members of their election, and all committees of their appointment, to keep a correct list of the members of the Society, with the date of their election, resignation, or death, to have charge of the common seal of the Academy, and to lay before the Society, at the last stated meeting in December, a written report of its transactions during the preceding year.

Art. IV. The corresponding secretary is to maintain and conduct the correspondence of the Academy, and to acknowledge all donations made by those who are not members of the Society. He is to notify all correspondents of their election, and to keep a correct list of all such elections, as well as of any deaths, resignations, &c., that may occur, noting the time; he is also to keep correct copies of all letters written on the business of the Academy, to have the care of the certificates of membership, and to have them filled up, signed, sealed, and forwarded to correspondents, or delivered to members, provided they exhibit to him a receipt from the treasurer that they are not in arrears to the Society, and shall read a minute of his transactions at each meeting for business.

Art. V. The duty of the treasurer is to take charge of the funds of the Society, and to attend to the collection and payment of moneys; but no moneys are to be paid by him except on an order from the auditors. He is to keep a clear and detailed statement of all receipts and expenditures, which is to be laid before the Academy at the last stated meeting in December.

Art. VI. The duty of the librarian shall be to attend daily at the Hall from 11 o'clock A. M. to 2½ P. M., to take charge of all books belonging to the Academy, under the rules prescribed in Chapter VII, to keep a correct list of all donations or deposits of books, of those missing or lent, and to report on the state of the library at the last stated meeting in December.

Art. VII. The curators shall have charge of the Hall of the Academy, purchase all articles wanted, hire janitors, report on what
repairs are necessary, and see that they are properly executed; they shall keep the keys of all cases in the museum, and have charge of it under the rules prescribed in Chapter VIII; they shall report all additions made to the different departments under their charge, at the last stated meeting in December.

Art. VIII. The chairman of the curators shall attend daily at the Hall from 2½ p.m. until sunset, to perform the duties of his office.

CHAPTER VI.
COMMITTEES AND THEIR DUTIES.

Art. I. There shall be fifteen standing committees, viz.: 1, the Ethnological committee; 2, the committee on Comparative Anatomy and General Zoology; 3, committee on Mammalogy; 4, on Ornithology; 5, on Herpetology and Ichthyology; 6, on Conchology; 7, on Entomology; 8, on Botany; 9, on Palaeontology; 10, on Geology and Mineralogy; 11, on Physics; 12, on the Library; 13, on the Proceedings; 14, the Auditors, each to consist of three members; and 15, the Publication Committee, to consist of five members, whose term of service shall be one year: and all these, except the Auditors and Publication Committee, shall be elected at the last meeting in January of each year.

Art. II. The committees of auditors and of publication shall be elected in the same manner and at the same time as the officers of the Academy.

Art. III. In appointing all other committees, the president is to nominate the first member of it, who is to nominate a second, the second a third, and in like manner successively, until the number agreed on be completed.

Art. IV. All committees must report in writing; and every report must be signed by a majority of the committee offering it.

Art. V. All special committees must report at the meeting of business next succeeding their appointment.

Art. VI. The committee of auditors shall, in conjunction with the treasurer, have the superintendence of the moneyed concerns of the Academy; they shall examine all bills, and, if correct, give an order on the treasurer for the amount; examine the treasurer's books and accounts, keep correct minutes of their proceedings, and report at the last stated meeting in December.

Art. VII. The committee of publication shall conduct the publica-
tion of the Journal, under the rules prescribed in Chapter IX, and shall report to the Academy at the last stated meeting in December.

**Art. VIII.** The library committee shall, in conjunction with the librarian, have the superintendence of the books belonging to the Society, negotiate all exchanges of duplicates, and keep a correct list of all additions to the library, and report at the last stated meeting in January.

**Art. IX.** The standing committees shall have charge, in conjunction with the curators, of their respective departments, make exchanges of duplicates, arrange and keep in order all donations and deposits, carefully labelling each article, and keep a correct catalogue of all additions to their respective departments, and report at the last stated meeting in January.

**CHAPTER VII.**

**LIBRARY.**

**Art. I.** All works in the library must be classed according to their subjects.

**Art. II.** The librarian shall keep a correct catalogue of all books belonging to the Society, which shall always be open to the inspection of members.

**Art. III.** There shall be two sets of keys to the cases containing the books, one of which shall be kept by the librarian, and the other by the chairman of the library committee.

**Art. IV.** The library shall be open to the gratuitous admission of the public on as many days and evenings of the week as the funds of the Society will enable them to command the attendance of a Librarian.

**Art. V.** Members of the Academy alone shall have free access to the library. All other persons must obtain permission of the librarian, and minors under sixteen years of age shall not be permitted to examine any work, except under the immediate supervision of the librarian.

**Art. VI.** The library shall be amply provided with chairs, tables, and writing apparatus, for the convenience of persons desirous to consult the books.

**Art. VII.** Members may borrow books, the property of the Academy, from the librarian, on signing a promissory note for fifty dollars, which shall become void on the book being returned.
Art. VIII. But no works shall be loaned from the hall on any account whatever, except those marked with an asterisk (thus *) in the catalogue, unless by an affirmative ballot-vote of three-fourths of the members present when the application is made; and in the case of deposited books, the written consent of the depositor having been previously obtained; the name of the borrower and the title of the book to be recorded on the minutes, and security given for its safe return, by note or otherwise, for the full value thereof, according to the estimate of the librarian or the library committee.

Art. IX. And whenever the librarian may deem it necessary to withhold the loan of books, permission must be obtained from the Society, two-thirds of the members present agreeing thereto.

Art. X. Every book must be returned on the evening of business next succeeding the time at which it was borrowed, under a penalty of twenty-five cents for each week it shall be detained beyond such time.

Art. XI. No member shall be allowed to renew the loan of a book if any other member shall be desirous of obtaining it.

Art. XII. The librarian and library committee shall be responsible for all works committed to their charge.

CHAPTER VIII.

MUSEUM.

Art. I. No specimen of Natural History contained in the collections of the Academy shall be loaned from the Hall under any pretence, or for any purpose whatever.

Art. II. The keys of the cases containing the collections shall be kept by the curators and members of the committees attached to the different departments, who alone shall have liberty to open the cases, and shall be responsible for all articles committed to their charge.

Art. III. If any member is desirous to inspect more closely the specimens in the collection, for purposes of study or description, he must apply to the curators or the members of the committee on that department.

Art. IV. All articles in the museum must be properly labelled as far as practicable, and a catalogue of the articles in each department kept by the committee attached to said department.

Art. V. Articles presented to the Academy for the museum must, if possible, be arranged therein before the stated meeting next succeeding their presentation.
Art. VI. When a member of the Academy deposits in the museum a sufficient number of articles to fill an entire case, the key of said case shall be at all times at his command.

Art. VII. Books or objects of natural history deposited with the Academy shall be returned only on a request of the owners or their representatives, and in all cases a receipt shall be given to the curators on the articles being returned.

Art. VIII. No specimen which is not capable of being arranged in the cabinet shall be received on deposit, unless the sanction of the committee on the department in which the specimen may be classed, and that of the curators, be first reported in writing.

Art. IX. The museum of the Academy shall be open to the gratuitous admission of the public on the afternoons of Tuesday and Friday from one o'clock until sunset.

CHAPTER IX.

JOURNAL.

Art. I. The committee of publication shall immediately after their election appoint a secretary and treasurer, who shall keep correct minutes of the financial and other concerns of the Journal.

Art. II. If any member absent himself from the meetings of the committee for three months, his place may be considered as vacant, and may be supplied by the Academy.

Art. III. It shall be the duty of the committee to receive all such papers as have been pronounced worthy of publication by the Academy, to have them published as early as possible, and to follow in the publication, as far as practicable, the order in which they have been reported on.

Art. IV. No author shall be permitted to make any other than verbal alterations in a paper while in the hands of the publication committee, without the consent of the Academy, and the committee are not authorized to make any alteration in a paper committed to them without the consent of the author. All alterations proposed (other than verbal) must be read to the Academy.

Art. V. Drawings shall be considered the property of the individual who furnishes them, and shall be returned when called for.

Art. VI. It shall be the duty of the publication committee to read the proof-sheets of all papers, and when practicable they shall also be submitted to the author for correction.
Art. VII. Where doubts arise as to the expediency of furnishing plates to an essay, the committee shall, as soon as possible, report the case to the Academy.

Art. VIII. Every author shall be entitled to an extra copy of the number or numbers in which his papers appear, and on timely application to the committee, he shall be entitled to twenty extra copies of his paper at the Society's expense.

Art. IX. The committees shall be responsible for the cost of publication, and if the expenses exceed the receipts, they shall themselves make up the deficiency, unless, in any special case, the Academy, at a meeting of business and by a vote of three-fourths of the members present, make an appropriation to protect the committee from loss.

Art. X. It shall be the duty of the secretary and treasurer of the publication committee to take charge of all papers reported for publication, to keep an account of the number of the Journal printed, of the number presented, and to whom presented, and of those sold, and on hand; they shall also keep a correct account of the money transactions of the committee, receiving all moneys arising from the sale of the Journal, and paying all bills for publishing the same, these having been first approved by the committee.

Art. XI. The publication committee shall be authorized to exchange the Journal for any work which they may deem of sufficient value.

Art. XII. No copy of the Journal shall be presented to any individual or Society, except by special resolution of the Academy.

CHAPTER X.

COMMUNICATIONS, ETC.

Art. I. All written communications intended for publication, read before the Academy, shall be referred to special committees, who are to report thereon at the meeting of business next succeeding their appointment.

Art. II. All such communications become the property of the Academy, and shall be deposited in the archives after publication; a copy, however, of any paper read before the Academy may be taken by the author.

Art. III. But all written communications, which shall not be deemed fit for publication, may be returned to their authors, if duly requested.
CHAPTER XI.
MEETINGS.

Art. I. The stated meetings of the Academy shall be held on Tuesday evening of each week, at hours fixed from time to time by the Academy. No change, however, can be made but after one month's notice, given at a meeting for business.

Art. II. The last stated meeting in each month shall be called a Meeting for Business, and shall be appropriated to elections of members and correspondents, the enacting and altering of laws, the financial concerns of the Society, receiving reports of committees, and in general to all such business as does not appertain to the scientific transactions of the Academy.

Art. III. All other stated meetings shall be called Ordinary Meetings, and shall be devoted to scientific pursuits. No other business shall be brought forward, except in cases of urgency, and on a vote of two-thirds of the members present.

Art. IV. Special meetings may be convened by resolution of the Society, or by public notice from the president, or at the request of five members.

Art. V. Six members shall constitute a quorum.

Art. VI. Strangers may be introduced at ordinary meetings of the Society.

Art. VII. The order of business, at ordinary meetings, shall be:
1. Minutes of the last ordinary meeting shall be read.
2. Donations to the museum shall be received.
3. Donations to the library shall be received.
4. Written communications to be made.
5. Verbal communications.
6. Business called up by special resolution.
7. Rough minutes read.
8. Adjournment.

Art. VIII. The order of business, at meetings for business, shall be:
1. Minutes of the last meeting for business shall be read.
2. Reports of committees.
3. Corresponding secretary's report.
4. Deferred business.
5. New business.
6. Auditor's report of bills examined.
7. Elections.
8. Rough minutes read.

CHAPTER XII.

Art. I. In all such points of order as are not noticed in these By-laws, the Academy is to be governed by the established usages of similar institutions.

Art. II. Every proposition to alter or amend these By-laws shall be submitted, in writing, at a meeting for business, and if adopted by the affirmative votes of two-thirds of the members present, it shall be read at the meeting for business next succeeding; and then, if adopted by the affirmative votes of two-thirds of the members present, it shall be again read at the next succeeding meeting for business, and on receiving the affirmative votes of two-thirds of the members present, it shall become a part of these By-laws; Provided, that, at least, twelve members be present at each of the three readings.

Art. III. No one or more of the By-Laws of this Academy shall be suspended.
OFFICERS
OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA,
FOR 1857.

PRESIDENT.
GEORGE ORD.

VICE-PRESIDENTS.
ROBERT BRIDGES, M. D.,
ISAAC LEA.

CORRESPONDING SECRETARY.
JOHN L. LE CONTE, M. D.

RECORDING SECRETARY.
B. HOWARD RAND, M. D.

LIBRARIAN.
J. AITKEN MEIGS, M. D.

TREASURER.
GEORGE W. CARPENTER.

CURATORS.
JOSEPH LEIDY, M. D.,
WILLIAM S. VAUX,
SAMUEL ASHMEAD,
JOHN CASSIN.

AUDITORS.
ROBERT PEARSALL,
SAMUEL ASHMEAD,
WILLIAM S. VAUX.
LIST OF MEMBERS

AND

CORRESPONDENTS

OF THE

ACADEMY OF NATURAL SCIENCES

OF

PHILADELPHIA,

FROM THE

ORIGIN OF THE SOCIETY IN 1812 TO MARCH 1, 1857.
MEMBERS
OF THE
ACADEMY OF NATURAL SCIENCES
OF
PHILADELPHIA.

Names of members known to be deceased are in italics. Names of life members are preceded by an asterisk (*). Names of members who are not residents of the city, are followed by the letters (N.R.) Names of those who were originally elected correspondents, and became members by removal to the city, are followed by (corres.) The names of those who have resigned, or who have forfeited their membership, are not included. Correspondents are regarded as members, when they become permanent residents in the city.

Allinson, N. S., M.D., Dec. 1812.
Anthony, Thomas, Jan. 1813.
Alden, Charles Henry, June, 1837.
*Ashmead, Samuel, Sept. 1839.
Allen, Nathan, M.D., May, 1841.
Ashmead, Samuel B., Jan. 1843.
Allen, Wm. H., Aug. 1851.
Allen, J. M., M.D., April, 1852.
*Ashhurst, Lewis R., May, 1853.
Agnew, Wm. G. E., May, 1853.

*Barnes, John, M.D. (N.R.), April, 1812.
*Barton, Edward, M.D., Aug. 1815.
*Brown, Moses, Feb. 1817.
*Biddle, Nicholas, Jan. 1818.
Bowen, George T., Nov. 1822.
*Bancker, Charles N., April, 1824.

*Beck, Charles F., M.D., June, 1827.
Bache, Alex. Dallas (N.R.), Jan. 1829.
Bond, Henry, M.D., Jan. 1830.
*Burrough, Marmaduke, M.D., Nov. 1830.
*Bridges, Robert, M.D., Jan. 1835.
Browne, Peter A., May, 1841.
*Biddle, Alexander, Aug. 1848.
Barton, T. Pennant (N.R.), April, 1849.
Belknap, Henry (N.R.), May, 1849.
*Biddle, Clement, Jr., May, 1850.
Brinton, John H., M.D., June, 1851.
Burt, J. L., M.D., Oct. 1851.
*Budd, Chas. H., M.D. (N.R.) Mar. 1852.
Boller, Henry J., April, 1852.
Buckley, Ed. S., May, 1852.
*Biddle, Henry J., Aug. 1852.
Booth, James C., Sept. 1852.
*Biddle, Thomas, May, 1853.
*Brown, John A., May, 1853.
*Brown, David S., May, 1853.
*Brown, Joseph D., May, 1853.
Bullitt, John C., July, 1853.
Biddle, John B., M.D., Dec. 1853.
Borda, Eugene (N.R.), Sept. 1854.
Barton, Isaac, March, 1855.
*Barcroft, Stacy B., July, 1855.
Blackwood, Wm., M.D., Jan. 1856.
Brasier, Amable J., March, 1856.
Boker, Chas. S., M.D., June, 1856.

Correa de Serra, Joseph, Feb. 1814.
Coze, Alexander S., Feb. 1815.
*Collins, Zaceheus, March, 1815.
Cleaver, Isaac, M.D., Jan. 1817.
*Clark, Edward (N.R.), Jan. 1817.
*Carmalt, Caleb (N. R.), Aug. 1817.
*Coates, Benj. H., M.D., April, 1818.
*Carpenter, Geo. W., July, 1825.
*Clark, John Y., M.D., Feb. 1826.
*Conrad, Solomon W., March, 1826.
*Clay, Joseph A., Aug. 1837.
Camac, William M., March, 1839.
*Cresson, Charles C., Sept. 1840.
*Cassini, John, Sept. 1842.
Curtis, Josiah (N.R.), June, 1843.
Cuesta, Fernand de la (N.R.), Nov. 1844.
*Cope, Caleb, Jan. 1848.
*Cooke, John, Jan. 1848.
Caldecough, Robert A., Nov. 1851.
Camac, Wm. M.D., April, 1852.
*Claghorn, James L., July, 1852.
*Collet, Mark W., M.D., Sept. 1852.
Corse, James M., M.D., Nov. 1852.
*Cresson, John C., April, 1853.
Collins, Percival, Sept. 1853.
Cadwalader, Wm., March, 1855.
Clements, Richard, M.D., July, 1855.
Caldwell, Jas. E., March, 1856.
Cresson, Chas. M., M.D., March, 1856.
*Cope, Alfred, July, 1856.
Coppé, Henry, Dec. 1866.

*Dobson, Judah, Nov. 1813.
Davis, David Jones, June, 1815.
*Dulles, Joseph H., Feb. 1816.
*Delitz, Rudolph, Jan. 1821.
Durand, Elias, Aug. 1824.
Dunn, Nathan (corres.), June, 1828.
Darrach, Wm., M.D., May, 1844.
Dundas, James, Aug. 1844.
*Dickerson, M. W., M.D., Oct. 1846.
*Da Costa, J. C., Feb. 1852.
Ducachet, Rev. H. W., D.D., April, 1852.
*Dunglison, Robley, M.D., Jan. 1853.
*Draper, Edmund, May, 1853.
Dock, George, M.D., Feb. 1854.
Dysdale, Thos. M., M.D., Nov. 1854.
Dunlap, Thos., Dec. 1856.

Eberle, John, M.D., April, 1819.
*Ellmaker, Levi, April, 1829.
Elwyn, Alfred L., M.D., Dec. 1831.
*Ellet, Charles, Jr., April, 1842.
Emery, Moses H., Sept. 1847.
*Edwards, Amory (N.R.), March, 1852.
Emerson, G., M.D., Aug. 1853.
Ennis, J., Feb., 1857.

Frazier, Robert, April, 1814.
*Fisher, Joseph, May, 1821.
Fisher, Thomas, April, 1824.
Foster, Wm. A., Nov. 1833.
Foster, Hudson S., Jan. 1834.
Frazier, John F., Sept. 1835.
*Frost, John, Sept. 1844.
Foulke, Wm. Parker, Nov. 1849.
Fahnstock, Geo. W., Aug. 1852.
*Farnum, John, May, 1853.
*Fisher, J. Francis, May, 1853.
*Fell, J. G., May, 1853.
Fassitt, Francis, Nov. 1854.
Freeman, Wm. H., M.D., Dec. 1854
Forbes, W. S., M.D., Sept. 1856.
Fassitt, Louis, Jan. 1857.
Fry, J. Reese, Jan. 1857.
Land, John (N.R.), May, 1836.
*M. Le Conte, J. L., M.D. (corres.) Feb. 1845.
*Leidy, Joseph, M.D., July, 1845.
*Lewis, Elisha J., M.D., July, 1846.
*Lambert, John, Nov., 1846.
*Lea, M. Carey, Sept. 1847.
*Leunig, Charles, Oct. 1847.
*Ludlow, John L., M.D., Nov. 1847.
Lejée, Wm. R., Feb. 1848.
*Lea, H. C., Feb. 1848.
Lewis, Francis W., M.D., Oct. 1849.
*Leunig, Francis, July, 1851.
Langstroth, Rev. L. L. (N.R.), Sept. 1851.
*Lea, Joseph, June, 1852.
*Logan, J. Dickinson, M.D., March, 1853.
*Lang, Edmund, M.D., April, 1853.
*Lea, Thomas T., May, 1853.
*Lovejoy, Joseph S., May, 1853.
Lippincott, Joshua B., June, 1853.
Lesley, J. P., June, 1853.
Luther, Diller, M.D., Oct. 1854.
La Roche, C. Percy, Jr., Oct. 1855.
Lewis, Samuel, M.D., Oct. 1855.

*Maw, C. M. (founder), Jan. 1812.
*Macnab, Wm., July, 1812.
*M'Euen, Thos., M.D., May, 1818.
*Morton, Saml. George, M.D., April, 1820.
*Nickle, Andrew E., M.D., June, 1831.
Müttler, Thos. D., M.D., July, 1833.
M'Euen, Charles, Dec. 1834.
*Mifflin, George, March, 1835.
*Miller, Clement S., Dec. 1836.
*Markland, John H., May, 1839.
*Macnab, Alexander, Dec. 1840.
Moss, Theo. F. (N.R.), June, 1845.
M'Clellan, J. H. B., M.D., Nov. 1847.
Meigs, Charles D., M.D., April, 1848.
M'Michael, Wm. (N.R.), June, 1850.
*Meigs, J. Forsyth, M.D., April, 1852.
*Morris, Jacob G., April, 1852.
*Meigs, James Aitken, M.D., April, 1852.
*Mercer, Singleton A., May, 1853.
*Merrick, Samuel V., May, 1853.
*Myers, John B., May, 1853.
Mitchell, S. Weir, M.D., Sept. 1853.
Merrick, J. Vaughan, April, 1854.
M'Ilhenny, Wm. S., M.D., May, 1854.
Messchert, M. H., June, 1854.
Mallery, Garrick, Jr., Aug., 1854.
*Moore, Sami., M.D., Nov. 1855.
*M'Allister, John Jr., June, 1856.
Maybury, Wm., M.D., Aug. 1856.
Monnier, Alfred, Aug. 1856.
Morton, Thos. George, M.D., Aug. 1856.
Morehouse, Geo. R., M.D., Aug. 1856.

*Norris, Wm., Jr., Dec. 1830.
Neill, John, M.D., May, 1847.
*Norris, Octavius A., Oct. 1849.
Newbold, Thomas, M.D., Nov. 1854.

*Ord, George, Sept. 1815.

*Parmentier, N. S. (founder), Jan. 1812.
*Pierce, Jacob (N.R.), Dec. 1813.
*Patterson, R. M., M.D., Jan. 1816.
*Poulsom, Charles A., Sept. 1823.
*Pennock, C. W., M.D. (N.R.), June, 1824.
*Preston, Jonas, M.D., Jan. 1825.
Penrose, Saml. S., Nov. 1830.
*Peterson, Robert E., April, 1831.
Porter, R. R., June, 1833.
Pearsall, Robert, Dec. 1835.
Pepper, Wm., M.D., Feb. 1837.
Percival, Thomas G., Jan. 1845.
Powell, Samuel (N.R.), July, 1847.
*Pancost, Joseph, M.D., Dec. 1847.
Page, Wm. Byrd, M.D., April, 1853.
*Pepper, Henry, May, 1853.
*Price, Richard, May, 1853.
*Platt, William, May, 1853.
Pennypacker, T. A., M.D., Sept. 1854.
Patterson, Wm. H., April, 1856.
Penrose, R. A. F., M.D., April, 1856.
Packard, John H., M.D., Nov. 1856.

*Rotch, Joseph, Feb. 1814.
*Randolph, Richard, May, 1814.
Richardson, Caleb, Dec. 1814.
*Rotch, Thomas, Feb. 1816.
Rafinesque, C. S., Feb. 1816.
*Read, James, Dec. 1824.
Reeve, Mark M., M.D., March, 1831.
*Ruschenberger, W. S. W., M.D. (corres.), May, 1832.
Rogers, Henry D. (N.R.), Nov. 1834.
Ryan, Thomas, Jan. 1836.
Rogers, R. E., M.D., Feb. 1837.
Rogers, James B., M.D., Oct. 1847.
Remington, R. P. (N.R.), Nov. 1850.
Rand, B. Howard, M.D., Jan. 1851.
Rogers, Fairman, Feb. 1854.
*Rogers, W. Frederick, March, 1855.
Rush, Madison, June, 1855.

*Shinn, John, Jr. (founder), Jan. 1812.
*Speakman, John (founder), Jan. 1812.
*Say, Thomas (founder), April, 1812.
*Stowe, Joseph, M.D., May, 1812.
*Say, Benjamin, June, 1813.
Stockton, E. B., May, 1815.
*Smith, Charles W., Dec. 1815.
*Smith, Jacob R., Dec. 1815.
Stewart, William (N.R.), June, 1823.
*Spackman, George, M.D., July, 1825.
*Smith, Joseph P., Feb. 1826.
*Seybert, Henry, Dec. 1826.
Steinhaus, Rev. Dan., July, 1829.
*Smith, John B., April, 1834.
*Simmons, John, July, 1835.
Shoemaker, Benj., (N.R.), Sept. 1835.
Snelling, Samuel, Aug. 1836.
Stephens, H. S. (N.R.), May, 1843.
Skerrett, David C., M.D., April, 1847.
Sargent, F. W., M.D. Sept. 1847.
*Sergeant, J. Dickinson, Oct. 1847.
Smith, Pruecis G., M.D., Feb. 1849.
Smith, Aubrey H., Sept. 1850.
Smith, Charles E., June, 1851.
Sherman, W., M.D., Oct. 1851.
Sharpless, Caspar W., Jan. 1852.
Struthers, William, Feb. 1852.
*Seal, Thomas F. (N.R.), May, 1852.
*Schafhirt, Frederick, March, 1855.
*Swift, Joseph, May, 1853.
*Sanderson, Ed. F. (N.R.), Sept. 1853.
Smyth, Samuel, (N.R.), June, 1855.
*Spackman, Rev. H. S., July, 1855.
Smith, Alex. Hamilton, M.D. Dec. 1854.

Troost, Gerard, M.D. (founder), Jan. 1812.
*Thompson, J. Edgar, Feb. 1831.
Tuft, John B., M.D. (N.R.), May, 1831.
*Townsend, John K., M.D., Sept. 1833.
Turnpenny, Frederick, M.D., Nov. 1833.
Trudeau, James, M.D. (N.R.), Nov. 1835.
Trautwine, John C, April, 1852.
Tingley, W. H., M.D., June, 1852.
Taggart, Wm. H., M.D., April, 1853.
Tyson, Job R., May, 1854.
Taggart, J. Edward, June, 1854.
Tiedeman, Henry, M.D., July, 1855.

Uhler, Wm. M., M.D., Jan. 1856.

Vanuxem, Lardner, June, 1815.
*Vaux, Robert, March, 1818.
*Vaughan, John, March, 1822.
*Vaux, William S., March, 1834.
Vanderkemp, John J., M.D. April, 1854.

Wilson, Alexander, June, 1813.
Warner, Benjamin, Feb. 1814.
Waterhouse, John F., M.D., March, 1814.
*Wagner, William, June, 1815.
Woodlens, Jos., M.D., June, 1815.
*Watson, Joseph, May, 1816.
*Wetherill, J. Price, March, 1817.
*Williams, Henry J., April, 1819.
*Wetherill, William, Feb. 1824.
*Wood, George B., M.D., 1825.
Ware, Nathaniel A. (N.R.), Oct 1824.
*Wetherill, Charles, Nov. 1830.
*Wistar, Richard, Jan. 1831.
*Wilson, Thos. B., M.D. June, 1832.
Walker, A. M. (N.R.), April, 1836.
Whelpley, James D. (N.R.), Mar. 1838.
Wistar, Mifflin, M.D., June, 1839.
Watson, Gavin, M.D., April, 1840.
Wetherill, Samuel (N.R.), Nov. 1843.
Woodhouse, Sam. W., M.D., Nov. 1845.
Whitman, Wm. E., Feb. 1848.
Wolganuth, Francis F., Feb. 1848.
*Wilson, Wm. S. (N.R.), June, 1848.
Wistar, Caspar, M.D., June, 1851.
*Welsh, William, May, 1853.

Total number of members, - - - - - - 338
Total number who have died members, - - - - - 103
Adrian, Robert, LL.D., 1815.
Abadie, Pedro, Lima, Peru, 1821.
Audouin, J. Victor, M.D., Paris, 1821.
Audubon, John James, New York, 1831.
Anthony, John Gould, Cincinnati, Ohio, 1833.
Agardh, Professor C. A., Lund, Sweden, 1834.
Auber, Pedro Alessandro, 1835.
Agassiz, Professor Louis, Boston, 1836.
Anton, Professor Frak., Hallé, Germany, 1840.
Alger, Francis, Boston, 1841.
Avogadro, Amedeo, Turin, 1844.
Audubon, Victor G., New York, 1845.
Adams, Chas. B., Vermont, 1846.
Aall, Nicolai, Christiana, Sweden, 1846.
Antisell, Thomas, M.D., New York, 1852.
Audubon, John W., New York, 1854.
Adamson, J. C., M. D., 1855.

Bartram, William, Kingsessing, Pennsylvania, 1812.
Bedwell, Thomas, Jr., Rio Janeiro, 1812.
Beelen A., Pittsburg, Pa., 1812.
Brongniart, Alexandre, Paris, 1812.
Bruce, Archibald, M.D. New York, 1812.
Betton, Samuel, M.D., Germantown, 1815.
Bickley, Robert, Pennsylvania, 1816.
Baldwin, William, M.D., Wilmington, Delaware, 1817.
Blainville, H. Ducrotay De, Paris 1817.
Bradbury, John, London, 1817.
Bonelli, Professor Francisco, Turin, 1818.
Brown, Samuel, M.D., Alabama, 1818.
Brantz, Lewis, Baltimore, Maryland, 1819.

Bigby, John J., M.D., Newark-on-Trent, England, 1820.


Borie, A. Amicus, Paris, 1821.

Brewster, David, LL.D., Edinburgh, 1822.


Brongniart, Adolph T., M.D., Paris, 1821.

Best, Robert, Lexington, Kentucky, 1823.

Bellingeri, M. Turin, Italy, 1826.

Bergelius, Professor J. Jacob, Stockholm, 1826.

Burr, John H., M.D., Chiloé, Chili, 1829.

Bustamente, Jose Marie, Mexico, 1828.

Bow, Ami, Paris, 1830.

Barabino, Joseph, New Orleans, 1831.

Bachman, Rev. John, D.D., Charleston, South Carolina, 1832.


Beck, Lewis C., New Brunswick, New Jersey, 1833.

Bell, Thomas, London, 1834.


Binney, Amos, M.D., Boston, 1836.

Blanding, William, M.D., Providence, R. I., 1831.

Blanding, Shubel, M.D., South Carolina, 1836.

Blandin, William, South Carolina, 1836.


Brown, Benjamin B., St. Louis, Missouri, 1837.

Barratt, Joseph, LL.D., Middleton, Connecticut, 1837.

Backmann, Professor Charles Frederick, Jena, Germany, 1840.

Bailey, Professor J. W., West Point, 1841.

Brewer, Thomas M., Boston, 1841.

Balfour, J. Hutton, M.D., Glasgow, Scotland, 1842.

Boane, W. Oland, New York, 1844.

Boudin, J. C. M., M.D., Versailles, France, 1845.

Bey, Clot, M.D., Cairo, Egypt, 1845.

Baird, W. M., Reading, Pennsylvania, 1846.

Brown, Richard, Sidney, Cape Breton, 1846.

Bromfield, William A., M.D., Isle of Wight, 1847.

Brevoort, James Carson, New York, 1847.

Barratt, John P., M.D. Barrattsville, South Carolina, 1847.


Blyth, Edward, F.Z.S., Calcutta, 1848.

Blanchard, M. Emile, Paris, 1848.

Bartlett, John R., New York, 1850.

Barr, Rev. A. C., Racine, Wisconsin, 1853.


Buch, Leopold von, Berlin, 1840.

Burnett, Waldo J., M.D., Boston, 1854.
Briicke, Professor E., Vienna, 1854.
Blake, W. P., New Haven, 1856.

Cooper, Thomas, M.D., LL.D., Columbia, South Carolina, 1812.
Cleveland, Parker, LL.D., Bowdoin College, Maine, 1812.
Chapman, Isaac, M.D., Bucks County, Pennsylvania, 1813.
Clinton, De Witt, LL.D., New York, 1815.
Carr, Robert, Kingsessing, Pennsylvania, 1816.
Cist, Jacob, Wilkesbarre, Pennsylvania, 1816.
Clifford, John D., Lexington, Kentucky, 1816.
Gogswell, Joseph H., New York, 1816.
Cloquet, Jules, Paris, 1816.
Collins, Baron de, Havana, Cuba, 1818.
Cuvier, Baron George, Paris, 1818.
Cuvier, Frederick, Paris, 1818.
Cloquet, Jules (le jeune), Paris, 1819.
Camper, Adrian, Holland, 1821.
Colla, Professor Luigi, Turin, 1822.
Cooper, William, New York, 1828.
Cohen, J. J., M.D., Baltimore, Maryland, 1833.
Casanova, J. S., M.D., Paris, 1834.
Cramer, Charles, St. Petersburg, Russia, 1834.
Croom, H. P., Tallahassee, Florida, 1835.
Carus, Professor Charles G., M.D., Dresden, 1837.
Clapp, Asahel, M.D., New Albany, Indiana, 1837.
Clark, Lewis Meriwether, St. Louis, Missouri, 1837.
Couthouy, Joseph P., Boston, 1837.
Castlenau, Count Laport de, Paris, 1837.
Combe, George, Edinburgh, 1838.
Clay, J. Randolph, Lima, Peru, 1839.
Carpenter, Wm. M., M.D., Louisiana, 1840.
Couper, J. Hamilton, Darien, Georgia, 1842.
Conyngham, Redmond, Lancaster County, Pennsylvania, 1842.
Chevreul, E., Paris, 1845.
Cantor, Theodore, M.D., Singapore, India, 1848.
Cobb, J., M.D., Kentucky, 1848.
Couch, Lieutenant D. N., U.S.N., 1853.

Davis, John, Boston, 1812.
Doddridge, C., M.D., Brook C. H.; Virginia, 1812.
Drake, Daniel, M.D.; Cincinnati, Ohio, 1812.
Ducatel, Julius F., M.D., Baltimore, Maryland, 1812.
Dana, Samuel L., Cambridge, Massachusetts, 1815.
Dillwyn, Lewis W., Penllogare, Wales, 1815.
Duncan, Thomas, Rappahannock, Virginia, 1816.
Darlington, William, M.D., West Chester, Pennsylvania, 1818.
Duméril, Constant, Paris, 1818.
Duvignan, M., Paris, 1820.
Dekay, James E., M.D., New York, 1821.
Dupont, Alfred, Wilmington, Delaware, 1821.
Deabbate, Gaspard, Turin, 1823.
Drapier, A., Brussels, 1824.
Doeberemer, Professor Johannes W., Jena, Austria, 1830.
Dewey, Chester, Berkshire, Massachusetts, 1832.
Dana, James D., New Haven, Connecticut, 1836.
De Candolle, Auguste P., Geneva, 1836.
Draper, John W., M.D., New York, 1836.
Dietz, Andrew R., St. Thomas, West Indies, 1839.
Dickson, S. Henry, M.D., Charleston, S. C., 1843.
Delapield, Major Joseph, New York, 1846.
Davis, Edwin Hamilton, M.D., Chillicothe, Ohio, 1847.
Dowler, Bennet, New Orleans, 1848.
Doane, George W., D.D., New Jersey, 1848.
Dewey, Henry B., Para, Brazil, 1850.
D'ORBIGNY, M. Alcide, Paris, 1834.
Elliott, Andrew, Pennsylvania, 1812.
Escher, Henri, Switzerland, 1813.
Elliott, Stephen, Charleston, S. C., 1815.
Kandi, Chev. A. M. Vassali, Turin, 1822.
Ellis, W. Cox, Muncy, Pennsylvania, 1828.
Eaton, Amos, Troy, New York, 1829.
Eaton, H. Hulbert, M. D., Lexington, Kentucky, 1831.
Edwards, M., Milne, Paris, 1832.
Eisenbeck, Professor C. G. Nees Von, Bonn, 1836.
Eights, James, M.D., Albany, New York, 1837.
Emmons, Ebenezer, M.D., Albany, New York, 1840.
Engelmann, George, M.D., St. Louis, Missouri, 1840.
Emerson, George B., Boston, 1840.
Eschricht, Professor Daniel F., M.D., Copenhagen, 1848.
Ehrenberg, Christian G., M.D., Berlin, 1848.
Evans, John, M.D., New Harmony, Indiana, 1850.
Enderlin, Charles, M.D., New York, 1854.
Elliott, Rev. Stephen, Savannah, Georgia, 1856.

Fonds, M. Faujas de St., Paris, 1812.
Faucker, Sylvanus, Connecticut, 1815.
Ferris Z., Wilmington, Delaware, 1815.
Forster, Thomas, M.D., London, 1815.
Francis, John W., M.D., New York, 1816.
Féroussac, Baron d'Audebard de, Paris, 1816.
Fowler, Samuel, M.D., Franklin, New Jersey, 1823.
Foote, John P., Cincinnati, Ohio, 1824.
Featherstonhaugh, G. W., Havre, 1830.
Frick, Henry, Northumberland, Pennsylvania, 1831.
Fitzinger, Professor Leopold, Vienna, 1832.
Falconer, Hugh, M.D., London, 1836.
Fussel, Edwin, M.D., Indianapolis, Indiana, 1840.
Fremont, John Charles, Washington, D.C., 1848.
Foster, J. W., Lake Superior, 1852.
Fox, Rev. Charles, Michigan, 1853.

Griscom, John, LL. D., Burlington, New Jersey, 1814.
Gibbs, George, New York, 1815.
Gümer, Francis W., Albemarle County, Virginia, 1815.
Griffith, Thomas, M.D., Columbia, Pennsylvania, 1815.
Gorham, John, M.D., Harvard University, 1816.
Gummere, John, Burlington, New Jersey, 1816.
Garcia, Manuel de la, Madrid, 1817.
Githmore, Robert, Baltimore, Maryland, 1819.
Gray, John Edward, LL.D., Edinburg, 1823.
Germar, Professor Ernst Friedrich, Halle, Saxony, 1828.
Green, Benjamin D., M.D., Boston, 1831.
Geddings, E., M.D., Charleston, South Carolina, 1832.
Goldfuss, Professor August, M.D., Bonn, Germany, 1832.
Grateloup, M., M.D., Bordeaux, 1836.
Gray, Asa, M.D., Cambridge, Massachusetts, 1836.
Goheen, S. M., M.D., Columbia, Pennsylvania, 1840.
Gesner, Abraham, M.D., St. Johns, New Brunswick, 1840.
Gould, Augustus A., M.D., Boston, 1840.
Gliddon, George R., 1841.
Galeotti, Henry, Brussels, 1842.
Giraud, Jacob P., Jr., New York, 1842.
Gibbes, Lewis R., M.D., Charleston, South Carolina, 1844.
Gibbes, Robert W., M.D., Columbia, South Carolina, 1845.
Gourlie, William, Jr., Glasgow, 1846.
Gerolt, Baron Von, Washington, 1846.
Goodsir, John D., Edinburgh, 1849.
Girard, Charles, Washington, 1851.
Garcia, Jose Anto. G. y, Lima, Peru, 1855.
Green, John W., M.D., New York, 1856.

Haines, John S., Northumberland, Pennsylvania, 1814.
Hayden, Horace H., Baltimore, Maryland, 1815.
Hosack, David, M.D., New York, 1815.
Hunt, David, M.D., Northampton, Massachusetts, 1815.
Hassenfratz, J. H., Paris, 1819.
Hazledine, George, London, 1821.
Harris, Thaddeus W., M.D., Milton, Massachusetts, 1826.
Holmes, Ezekiel, M.D., Waterville College, Maine, 1826.
Horsfield, Thomas, M.D., London, 1826.
Hadley, James, M.D., Fairfield, New York, 1828.
Harlan, Josiah, 1831.
Hildreth, Samuel P., M.D., Marietta, Ohio, 1832.
Hitchcock, Edward, L.L.D., Amherst, Massachusetts, 1832.
Holbrook, John Edwards, M. D., Charleston, South Carolina, 1832.
Hurry, William Cobb, Calcutta, 1832.
Hooper, Robert, M.D., London, 1834.
Herriot, Edward C., New Haven, 1836.
Hodgkin, Thomas, M.D. London, 1837.
Henderson, Joseph, M.D., Mifflin County, Pennsylvania, 1838.
Houghton, Douglass, M.D., Detroit, 1840.
Hubbard, Oliver P., M.D., Dartmouth College, New Hampshire, 1841.
Herbert, Rev. William, LL. D., Manchester England, 1843.
Hodgson, W. B., Savannah, Georgia, 1843.
Hall, James, Albany, New York, 1843.
Humboldt, Baron Alexander Von, Berlin, 1843.
Hayes, John Lord, Portsmouth, New Hampshire, 1844.
Haight, Richard K., New York, 1844.
Harden, John M. B., M. D., Liberty County, Georgia, 1846.
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Humboldt, Baron Alexander Von, Berlin, 1843.
Hayes, John Lord, Portsmouth, New Hampshire, 1844.
Haight, Richard K., New York, 1844.
Harden, John M. B., M. D., Liberty County, Georgia, 1846.
King, Alfred T., M.D., Greensburg, Pennsylvania, 1844.
Korthals, P. W., M.D., Leyden, 1847.
Kaup, Professor Jean J., Darmstadt, 1848.
Kirtland, J. P., M.D., Cleaveland, Ohio, 1848.
Kennedy, H. W., M. D., Buenos Ayres, 1852.
Kirkwood, Daniel, Newark, Delaware, 1854.

Logan, Algernon Sidney, Germantown, Pennsylvania, 1815.
Le Conte, Lewis, 1815.
Lakanal, Count, Paris, 1815.
Lee, Henry, Westmoreland, Virginia, 1816.
Latreille, Pierre André, Paris, 1817.
L'Herménier, Louis, M.D., Guadaloupe, 1817.
Lauzier, M., Paris, 1818.
Lamarle; Chev. de, Paris, 1818.
Lawrence, William, M.D., London, 1821.
Leighton, James, M.D., Pittsburg, 1821.
Leonhard, Karl Caesar von, Heidelberg, 1824.
Laporte, J. L., Bordeaux, 1832.
Lesson, R. P., Paris, 1832.
Le Beau, Justus, M.D., New Orleans, 1833.
Lobe, M. Guillaume, Havana, Cuba, 1836.
Liebig, Justus, M. D., Giessen, Germany, 1840.
Locke, John, M.D., Cincinnati, Ohio, 1841.
Lindley, John, Ph. D., London, 1841.
Longchamps, Ed. de Selys, Liége, 1842.
Lettsom, William G., Mexico, 1843.
Lepsius, Professor Richard, LL.D., Berlin, 1843.
Logan, Sir William E., Canada, 1846.
Lawrence, George N., New York, 1847.
Lacordaire, Th., Liége, 1848.
Lagos, Manuel Fereira, Rio Janeiro, 1849.
Lund, P. W., Denmark, 1849.
Le Conte, John, M.D., Athens, Georgia, 1853.

Magnanos, Julian, M.D., Norfolk, Virginia, 1812.
Mangouri, M., Paris, 1812.
Mercier, M., Paris, 1812.
Montreal, Champvert, Gaudaloupe, 1812.
Mitchill, Samuel L., LL.D., New York, 1812.
Melshheimer, Rev. Frederick Valentín, Hanover, Pennsylvania, 1813.
M'Dowell, Ephraim, M.D., Danville, Kentucky, 1813.
Macnevin, William J., M.D. New York, 1814.
Mott, Valentine, M.D., New York, 1814.
Montgomery, Thomas W., M.D., New York, 1814.
Montgomery, Alexander, M.D., U. S. N., 1814.
Murry, James W., Seville, Spain, 1814.
Macaulay, Patrick, M.D., Baltimore, 1816.
Morinier, Noël de la, Paris, 1819.
Müllert, F., New York, 1821.
Mylius, C., Kronstadt, 1822.
Monger, Johannes, Leipsic, 1822.
MacCulloch, James, M.D., London, 1829.
M'Gillivray Wiliiam, Edinburgh, 1831.
Martius, Professor C. F. P. von, Munich, Austria, 1832.
Mayer, Professor Hermann von, Frankfort, Germany, 1832.
Mitchell, Elisha, Chapel Hill, North Carolina, 1832.
Möléon, S. G. W. de, Paris, 1833.
Macfadyn, James, M.D., Kingston, Jamaica, 1835.
Menke, Charles Theodore, M.D., Pyrmont, Germany, 1837.
Macartney, John P., M.D., City of Mexico, 1838.
McFarland, Rev. James, 1838.
Mather, William W., Ohio, 1838.
Mousson, Albert, Zurich, 1839.
Michener, Ezra, M.D., New Garden, Pennsylvania, 1840.
Mason, Owen, Providence, Rhode Island, 1841.
Melshheimer, F. E., M.D., York County, Pennsylvania, 1843.
Mighels, J. W., Portland, Maine, 1843.
Müller, Professor John, M.D., Berlin, 1845.
Morphett, John, Adelaide, South Australia, 1845.
Michel, Myddleton, M.D., South Carolina, 1849.
Malherbe, Alfred, Metz, France, 1850.
Marsh, Dexter, Greenfield, Massachusetts, 1852.
Motschulsky, Col. Victor, St. Petersburg, 1854.
M'Clellan, Captain George B., U. S. A., 1855.
Meek, F. B. Albany, N. Y., 1856.  
Müller (von), Baron Joh. Wm., 1856.

Norwood, J. G., M. D., Madison, Indiana, 1842.  
Norman, Benjamin M., New Orleans, 1843.  
Nott, Josiah C., M. D., Mobile, Alabama, 1845.  
Nicholson, Charles, M. D., Sidney, New South Wales, 1846.  
Nilsson, Professor Sv., Lund, Sweden, 1847.  
Newberry, J. S., M. D., Cleaveland, Ohio, 1853.  
Nordmann, Alexander Von, St. Petersburg, 1854.

Oemler, Augustus J., Savannah, Georgia, 1812.  
O'Kelly, Michael J., Dublin, Ireland, 1816.  
Olmsted, Denison, New Haven, 1828.  
Oakes, William, Ipswich, Massachusetts, 1830.  
Owen, Prof. Richard, London, 1834.  
Oken, Lorenz, Basle, Switzerland, 1837.  
Owen, David Dale, M. D., New Harmony, Indiana, 1840.  
Ombrosi, James, Florence, Italy, 1843.

Pierpont, William; Barbadoes, 1812.  
Poutrel, Alexander, Guadaloupe, West Indies, 1812.  
Perkins, Jacob, Newburyport, Massachusetts, 1813.  
Paton, M., M. D., Paris, 1815.  
Palmer, John, Calcutta, 1817.  
Poli, Joseph Harrier, M. D., Naples, 1820.  
Porter, T. D., M. D., Columbia, South Carolina, 1822.  
Prévost, Constant, Paris, 1823.  
Pickering, Charles, M. D., Boston, 1826.  
Poinsett, Joel R., South Carolina, 1829.  
Pitcher, Zina, M. D., Detroit, 1830.  
Peter, Robert, M. D., Lexington, Kentucky, 1835.  
Piddington, Henry, Calcutta, 1835.  
Priencp, James, Calcutta, 1836.  
Parson, Usher, M. D., Providence, Rhode Island, 1838.  
Prichard, James Cowles, M. D., Bristol, England, 1838.  
Pouchet, Prof. F. A., Rouen, France, 1842.  
Percival, James G., M. D., New Haven, Connecticut, 1843.  
Porcher, Francis P., M. D., Charleston, S. C., 1849.  
Perley, M. H., St. Johns, New Brunswick, 1852.  
Porter, Rev. T. C., Lancaster, Pennsylvania, 1853.
Prout, Hiram A., M.D., St. Louis, 1854.
Pratten, Henry, New Harmony, Indiana, 1854.
Quinby, J. B., 1836.

Roxburgh, William, M.D., Calcutta, 1812.
Randall, John, M.D. Boston, 1816.
Risso, J. A., Nice, France, 1818.
Rueco, Julius, M.D., Naples, 1820.
Reinwardt, Prof. C. G. C., Leyden, 1821.
Ricord, Alexandre, Paris, 1823.
Ricord, Phillippe, Paris, 1823.
Ranzani, Camillo, Bologna, 1827.
Rüppel, Edward, M.D., Frankfort, Germany, 1830.
Ravenel, Edmund, M.D., Charleston, South Carolina, 1832.
Rhea, Matthew, Columbia, Tennessee, 1832.
Richardson, Sir John, M.D., London, 1832.
Riley, William, M.D., Baltimore, 1833.
Rose, Robert H., M.D., Silver Lake, Pennsylvania, 1833.
Rogers, W. B., Virginia, 1834.
Reichenback, Professor L., Dresden, 1836.
Riddell, John L., M.D., New Orleans, 1836.
Randall, John W., M.D., Boston, 1837.
Reynolds, F. N., New York, 1837.
Redfield, William C., New York, 1841.
Reinhardt, J. C., M.D., Brazil, 1845.
Rich, William, Boston, Massachusetts, 1845.
Redfield, John H., New York, 1846.
Robb, James, Frederickton, New Brunswick, 1846.
Retzius, Professor Andreas, Stockholm, 1846.
Ravenel, Henry W., South Carolina, 1849.
Rio, Prof. Andres del, Mexico, 1829.
Rauch, John H., Burlington, Iowa, 1856.

Southern, William, M.D., Maryland, 1812.
Silliman, Benjamin, M.D., LL.D., New Haven, 1815.
Scott, Andrew, M.D., Newbern, North Carolina, 1815.
Sims, Howard Baltimore, Maryland, 1817.
Steinhauer, Rev. Henry, Bethlehem, Pennsylvania.
Sparman, Andreas, Univ. Upsal, 1818.
Stevens, Alexander H., M.D., New York, 1819.
Schoolcraft, Henry R., Washington, 1820.
Sealey, James, Cork, Ireland, 1820.
Sternberg, Gaspard, Comte de, Bohemia, 1821.
Savi, Professor Paolo, Pisa, 1827.
Shepard, Charles U., New Haven, 1828.
Sagra, Eamon de la, Madrid, 1829.
Swainson, William, New Zealand, 1830.
Shannon, John, Beaver, Pennsylvania, 1831.
Short, Charles W., M.D., Lexington, Kentucky, 1831.
Serres, Marcel de, Montpellier, France, 1832.
Styles, John, M.D., New York, 1834.
Saynisch, Lewis, M.D., Tioga, Pennsylvania, 1836.
Schwaegrichen, Professor Frd., M.D., Leipsic, 1836.
Skinner, Ezekiel, M.D., Liberia, 1837.
Stacey, Col. L. R., Calcutta, 1838.
Storer, D. Humphreys, M.D., Boston, 1839.
Sager, Abram, M.D., Detroit, 1839.
Silliman, Benjamin, Jr., New Haven, 1841.
Saul, James, New Orleans, 1841.
Sullivant, Wm. S., Ohio, 1844.
Smith, J. Lawrence, Louisville, Kentucky, 1846.
Savage, Rev. Thomas S., M.D., Natchez, 1846.
Squier, George E., New York, 1847.
Selby, John Prideaux, Northumberland, England, 1847
Sturm, Jacob, M.D., Nuremberg, 1847.
Strickland, Hugh E., London, 1848.
Schouw, Professor J. Frederick, Ph. D., Copenhagen, 1848.
Shumard, Benjamin F., M.D., St. Louis, 1848.
Swift, Robert, St. Thomas, West Indies, 1851.
Smith, J. Brown, California, 1852.
Schaum, H., M.D., Berlin, 1852.
Sauvalle, P. A., Cuba, 1855.
Santos, C. A., Rio de Janeiro, 1855.
Solar, Jose del, Lima, 1855.
Sandberger, Guido, M.D., Wiesbaden, 1855.
Sandberger, Fridolin, M.D., Wiesbaden, 1855.
Suckley, George A., M. D., New York, 1855.
Steiner, Lewis H., M.D., Baltimore, 1855.
Thornton, William, M.D., Washington, 1812.
Tilden, Joseph, Boston, Massachusetts, 1812.
Turner, John, Maryland, 1814.
Travers, John, Jr., Lisbon, 1814.
Thomas, E., Baltimore, 1816.
Trescott, John S., M.D., Charleston, South Carolina, 1818.
Torrey, John, M.D., New York, 1822.
Temminek, Conrad Jacob, Leyden, 1824.
Tait, Charles, Claiborne, Alabama, 1832.
Thompson, Allan, M.D., Edinburgh, 1834.
Trail, Thomas Stewart, M.D., Edinburgh, 1835.
Trimble, James, M.D., Williamsburg, Pennsylvania, 1836.
Trinius, Professor, M.D., St. Peters burg, Russia, 1836.
Tamnau, Professor Frederick, Berlin, 1839.
Tappan, Benjamin, Ohio, 1842.
Taylor, Julius S., M.D., Carrollton, Ohio, 1845.
Tuomey, M., Tuscaloosa, Alabama, 1845.
Tremper, Jacob C., Yates County, New York, 1845.
Tiedemann, Professor F., M.D., Heidelberg, 1848.
Tuckerman, Edward, Cambridge, Massachusetts, 1848.
Thompson, William, Belfast, Ireland, 1848.

Unanué, Hippolito, M.D., Lima, Peru, 1821.
Ure, Andrew, M.D., Glasgow, 1829.

Von Schreibers, Charles, Vienna, 1818.
Von Schweinitz, Rev. Lewis D., Ph. D., Bethlehem, Pennsylvania, 1822.
Vargas, Jose Maria, M.D., Caracas, Venezuela, 1835.
Voltz, Louis Phillippe, Strasburg, Germany, 1833.
Van Rensselaer, Jeremiah, M.D., New York, 1829.
Van cleve, John, Dayton, Ohio, 1843.
Vernenil, Edward de, Paris, France, 1846.
Verreaux, Jules, Paris, 1848.
Von Hauer, Baron, Vienna, 1851.
Van Hoorebeke, Charles Joseph, Ghent, 1821.

Wallich, Nathaniel, M.D., Calcutta, 1819.
Ward, Malthus A., M.D., Athens, Georgia, 1832.
Wetherill, Samuel R., Burlington, New Jersey, 1814.
Wiedeman, D. R. G., M.D., Kiel, Germany, 1823.
Webster, John W., M.D., Cambridge, Massachusetts, 1814.
Wheelwright, Joseph, M.D., Kentucky, 1814.
Wister, Charles J., Germantown, Pennsylvania, 1814.
Worth, James, Bucks County, Pennsylvania, 1823.
Wray, Thomas J., M.D., Augusta, Georgia, 1818.
Warder, John A., M.D., Cincinnati, Ohio, 1842.
Warren, John C., M.D., Boston, Massachusetts, 1842.
Wyman, Jeffries, M.D., Boston, Massachusetts, 1844.
Wilson, Edward, Pembrokeshire, Wales, 1846.
Waldheim, Fischer, de, Moscow, 1848.
Webber, Samuel. M.D., New Hampshire, 1851.
Whitney, J. D., Boston, 1852.
Wagner, Professor A., Munich, 1852.
Wailes, B. L. C., Mississippi, 1854.
Winslow, R. K., Cleveland, Ohio, 1854.


Zimmerman, Chr., M.D., Columbia, South Carolina, 1836.
Zollicoffer, William, M.D., Middletown, Maryland, 1834.
Zuccarini, Professor Joseph G., Munich, Bavaria, 1846.
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