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SMITHSONIAN INSTITUTION,
UNITED STATES NATIONAL MUSEUM.

BULLETIN

OF THE

UNITED STATES NATIONAL MUSEUM.

No. 41.

BIBLIOGRAPHIES OF AMERICAN NATURALISTS:

V. THE PUBLISHED WRITINGS OF DR. CHARLES GIRARD.

BY

G. BROWN GOODE.

♦♦♦

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1891.

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ADVERTISEMENT.

This work (Bulletin No. 41) is one of a series of papers intended to illustrate the collections belonging to the United States, and constituting the National Museum, of which the Smithsonian Institution was placed in charge by the act of Congress of August 10, 1846.

The publications of the National Museum consist of two series—the Bulletins, of which this is No. 41, in continuous series, and the Proceedings, of which the fourteenth volume is now in press. A small edition of each paper in the Proceedings is distributed in pamphlet form to specialists in advance of the publication of the bound volume.

The Bulletins of the National Museum, the publication of which was commenced in 1875, consist of elaborate papers based upon the collections of the Museum, reports of expeditions, etc., while the Proceedings facilitate the prompt publication of freshly acquired facts relating to biology, anthropology, and geology, descriptions of restricted groups of animals and plants, the discussion of particular questions relative to the synonymy of species, and the diaries of minor expeditions.

Other papers, of more general popular interest, are printed in the Appendix to the Annual Report.

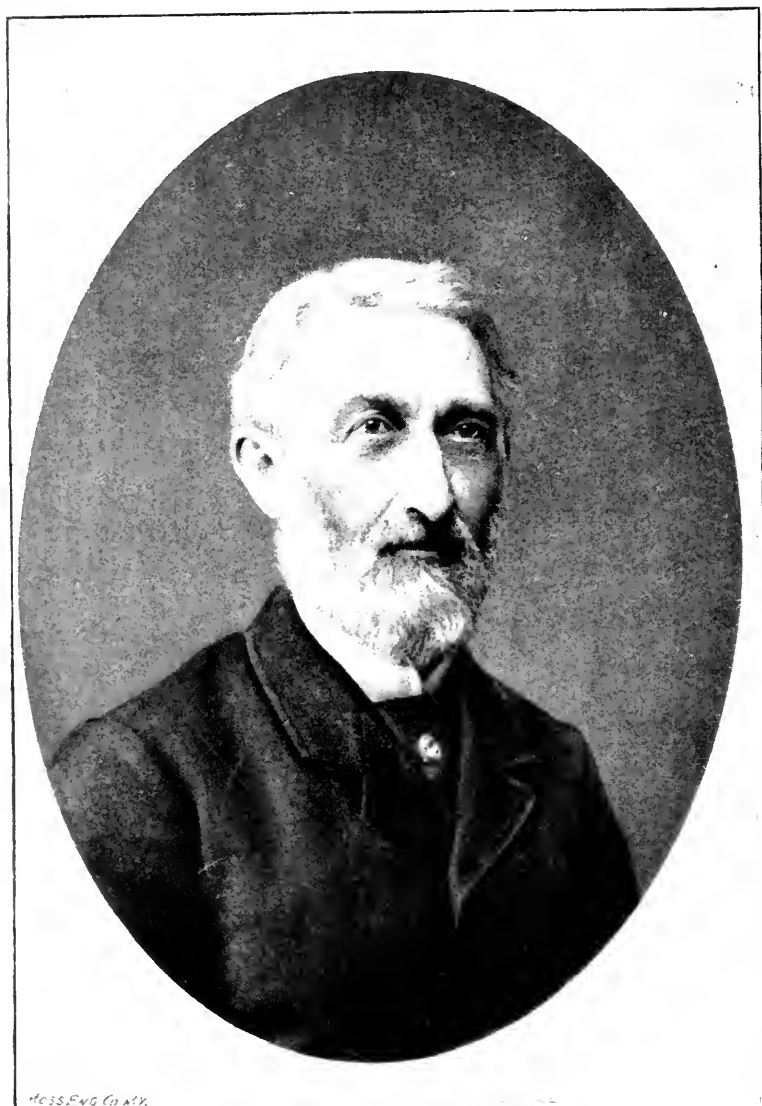
Full lists of the publications of the Museum may be found in the current catalogues of the publications of the Smithsonian Institution.

Papers intended for publication in the Proceedings and Bulletins of the National Museum are referred to the Committee on Publications, composed as follows: T. H. Bean, A. Howard Clark (editor), R. E. Earl, Otis T. Mason, John Murdoch, Leonhard Stejneger, Frederick W. True, and Lester F. Ward.

S. P. LANGLEY,

Secretary of the Smithsonian Institution.

WASHINGTON, D. C., May 28, 1891.



CHARLES GIRARD, M. D.

BIBLIOGRAPHIES OF AMERICAN NATURALISTS.

V.

THE PUBLISHED WRITINGS

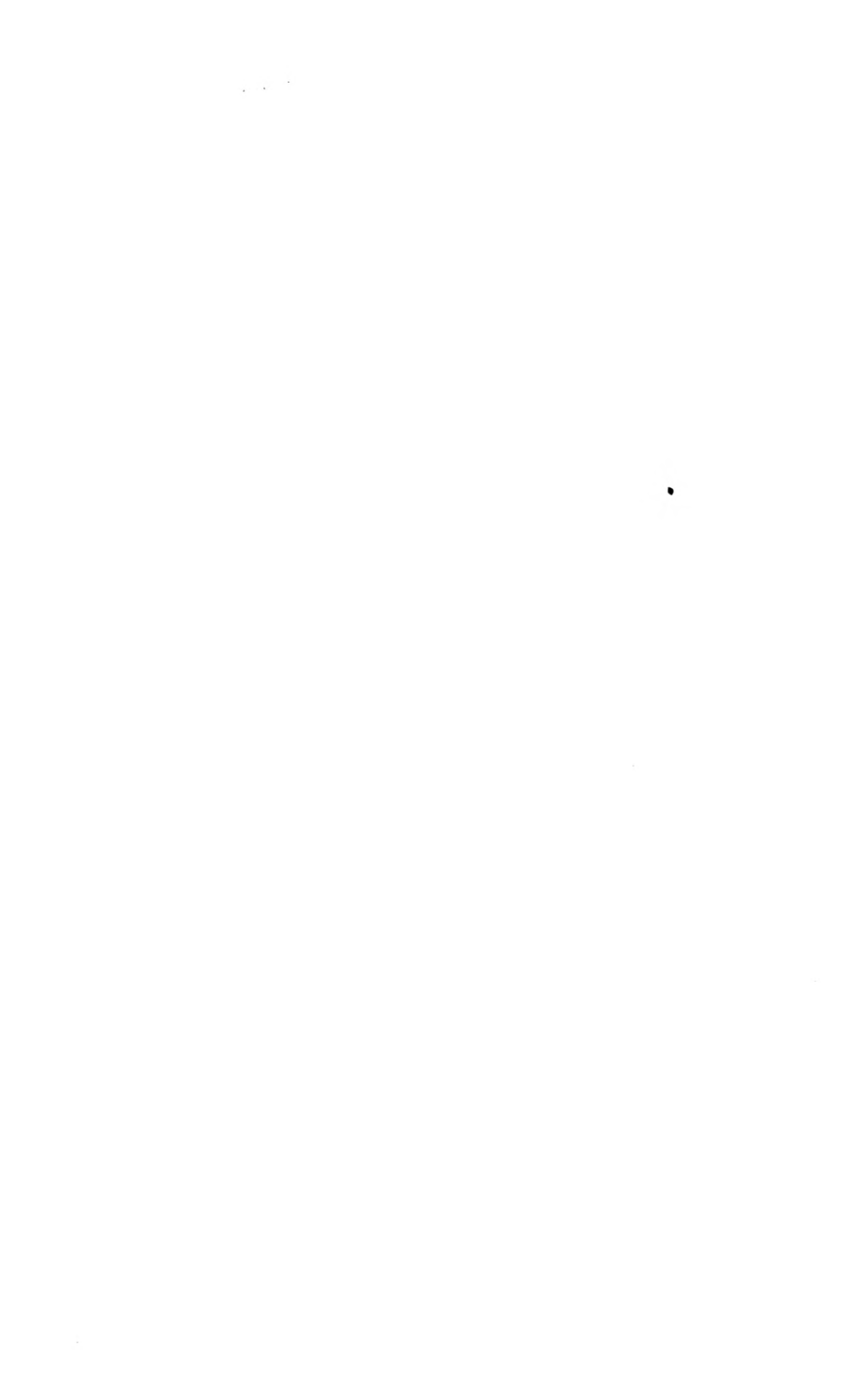
OF

DR. CHARLES GIRARD.

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WASHINGTON:
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BIOGRAPHICAL SKETCH OF DR. CHARLES GIRARD.

In the preface to Bulletin No. 20 of the U. S. National Museum, "The Published Writings of Spencer Fullerton Baird," mention was made of the contemplated publication of others in the same series, among them the "Bibliography of Dr. Charles Girard." The pressure of other duties has delayed the completion of this work, which is now presented as the fifth of the special bibliographies of prominent naturalists. Charles Girard was born in Mulhouse, France, March 9, 1822, and received his education at Neuchatel, Switzerland, where he was the assistant and pupil of Professor Agassiz, who brought him to the United States in 1847, in company with Mr. E. Desor. Dr. Girard remained in Cambridge, Massachusetts, as a student and assistant to Agassiz until the fall of 1850, when he removed to Washington, and engaged in the natural history work of the Smithsonian Institution, where for a number of years he was Professor Baird's principal assistant, showing marked aptitude for scientific work. The Smithsonian Institution afforded him new opportunities for the pursuit of scientific work, and becoming a naturalized citizen in 1854, he took a medical course at Georgetown College, and was graduated therefrom in 1856. In connection with his medical studies he pursued his scientific researches in the Smithsonian Institution where he remained until 1860, when he decided to visit Paris. Meanwhile the civil war occurred which delayed his return to Washington, he having accepted a commission to supply the Confederate army with drugs and surgical instruments. In 1863 Dr. Girard made a tour of the Southern States, and in 1865 returned to Paris, entering immediately upon the practice of medicine, to which he has devoted fifteen years of his life. He now lives in comparative retirement at Neuilly sur Seine, near Paris, where he still devotes himself to scientific study. He is a man of retiring habits and great industry. While in America he held high rank among descriptive naturalists.

His special studies were the herpetology and ichthyology of North America, and in the domain of ichthyology he is particularly well known for his work on the cyprinidae of North America and the fauna of the Pacific coast. His monograph of the cottoids is the most elaborate of his scientific writings, although his ichthyology of the Pacific coast, that of the Mexican boundary, and his herpetology of the United States Exploring Expedition are much more extensive. Several papers upon helminthology, the practice of medicine, the theory of life, the bibliography of science, and kindred subjects were published by him.

In 1861 Dr. Girard was awarded the Cuvier prize by the Institute of France.*

Dr. Girard's connection with the Smithsonian Institution is best remembered by his association with Prof. Spencer F. Baird, in preparing the well known Catalogue of North American Reptiles, Part 1, Serpents, and in describing numerous species and genera of American reptiles and fishes. His career as an author covered a period of about forty years, extending from 1850 to 1891. His contributions to science number eighty-one papers, distributed as follows: Herpetology, 21; ichthyology, 42; helminthology, 14; theoretical biology, 3; medicine, 1; bibliography, 3.

No portrait of Dr. Girard has been published, but the National Museum has a small portrait painted in Paris in 1847, by Albert de Menron.

The following genera and species have been named in his honor:

- Girardinus, Poey.
- Girardinichthys, Bleeker.
- Cambarus Girardianus, Faxon.
- Microcyphus Girardi, Desor.
- Synapta Girardi, Pomrtales.
- Vortex Girardi, Schmidt.

*The commission on awards in its report published in "Comptes Rendus des Séances de l'Académie des Sciences, 1861, Vol. LII, p. 594," says:

"Parmi les ouvrages adressés au concours pour le prix Cuvier, la Commission a remarqué ceux d'un zoologiste américain, M. Girard, sur la faune ichthyologique des régions occidentales du nouveau monde, et sur les reptiles recueillies pendant le voyage d'exploration du Capitaine Wilkes dans les mers antarctiques. Le dernier travail publié aux frais du gouvernement des États-Unis n'est pas indigne de prendre place à côté des beaux et importants ouvrages dont le principal naturaliste de cette expédition, M. Dana, avait précédemment enrichi la science."

BIBLIOGRAPHY
OF THE
PUBLISHED WRITINGS OF CHARLES GIRARD, M. D.

I.—CHRONOLOGICAL CATALOGUE.

1.

1849. GIRARD, CHARLES. On the Genus *Cottus* *Auct.*

Proceedings Boston Society Natural History, iii, 183-90, 1849.

Thus far the *Cottus* embodied both fresh-water and marine species. In compliance with the strict rules of scientific nomenclature, the name of *Cottus*, properly so called, created by Artédi, is henceforth retained for the fresh-water species, or Miller's Thumb; whilst that of *Acanthocottus* is made to include the marine species, or Sculpins and Bullheads.

The American species are recorded as follows:

ACANTHOCOTTUS, n. g.

<i>Acanthocottus Greenlandicus</i> , G.	185
Davis Strait, Richardson; Maine and Massachusetts, D. H. Storer; Connecticut, Ayres; Hellgate, New York, De Kay.	
<i>Acanthocottus scorpionides</i> , Grd.	185
Greenland, O. Fabricius.	
<i>Acanthocottus polaris</i> , Grd.	186
Peninsula of Boothia, Ross, Sabine; North Georgia, Richardson.	
<i>Acanthocottus polyacanthocephalus</i> , Grd.	186
Off Cape St. Elias, Billings, Richardson, Valenciennes.	
<i>Acanthocottus psittilyger</i> , Grd.	186
Unalaska and harbor of Avatcha, Cuv. and Valenciennes; coast of Kamtschatka, Richardson.	
<i>Acanthocottus hexacornis</i> , Grd.	186
Mouth of Tree River, Richardson.	
<i>Acanthocottus porosus</i> , Grd.	186
Ballin's Bay, Richardson.	
<i>Acanthocottus æneus</i> , Grd.	186
New York, Mitchill, De Kay; Massachusetts, Storer.	
<i>Acanthocottus Mitchilli</i> , Grd.	186
New York, Mitchill, De Kay.	
<i>Acanthocottus Virginianus</i> , Grd.	187
Coast of Virginia, Willoughby; New York, Mitchill, De Kay; Newfoundland, Richardson.	
COTTUS, Artédi.	
<i>Cottus cognatus</i> , Rich.	189
Great Bear Lake, Richardson.	
<i>Cottus Richardsoni</i> , Agass.	189
Northern shore of Lake Superior, Prof. Agassiz.	
<i>Cottus Bairdi</i> , Grd.	189
Pennsylvania, in the tributaries of Ohio River, Baird; Mahoning River, Kirtland.	
<i>Cottus meridionalis</i> , Grd.	189
James River, Baird.	
<i>Cottus gracilis</i> , Heck.	189
Massachusetts, Connecticut, W. O. Ayres.	
<i>Cottus viscosus</i> , Hald.	189
Eastern Pennsylvania, Haldeman, Baird.	

849. GIRARD, CHARLES—Continued.

<i>Cottus boleooides</i> , Grd	189
Windsor, Vermont, Ed. C. Cabot, Dr. Storer.	
<i>Cottus Franklini</i> , Agass	189
Eastern and southern shores of Lake Superior, Agassiz.	
<i>Cottus gobioides</i> , Grd	189
Burlington, Vermont, Z. Thompson, Dr. D. H. Storer.	
<i>Cottus Fabricii</i> , Grd	189
Greenland, O. Fabricius.	

2.

1850. GIRARD, CHARLES. On the so-called Biogen Liquid.

Proceedings Boston Society Natural History, iii, 239-40, 1850. *Silliman's American Journal Science and Arts*, 2d ser., ix, 399. 1850.

Refutation of Mr. Desor's theory on the formation of the primitive egg.

3.

850. GIRARD, CHARLES. Additional Observations on the Nomenclature and Classification of the Fishes of the genus *Cottus*.

Proceedings Boston Society Natural History, iii, 302-4. 1850.

TRACHIDERMUS, Heck	302
<i>Trachidermis faciatus</i> , Heck	302
Philippine Islands, Heckel.	
<i>Trachidermis uncinatus</i> , Grd	302
China Seas, Richardson.	
<i>Trachidermis intermedius</i> , Grd	302
Jesse Island, Siebold.	
COTTOPSIS, n. g.	303
<i>Cottopsis asper</i> , Grd	303
River Oregon, Lewis and Clarke, Richardson.	
PODABRUS, Richards	304
<i>Podabrus cottoides</i> , Richards	304
China Seas, Richardson.	
<i>Podabrus centropomus</i> , Richards	304
Island of Guelpert, Richardson.	

4.

1850. GIRARD, CHARLES. A Monograph of the Fresh-Water Cotti.

Proceedings American Association for Advancement of Science, ii, 409. 1850.

An abstract of a fuller work in preparation (n. 26). The following species are enumerated:

<i>Cottus cognatus</i> , Richards	410
<i>Cottus Richardsoni</i> , Agass	410
<i>Cottus Bairdi</i> , Grd	410
<i>Cottus meridionalis</i> , Grd	410
<i>Cottus Franklini</i> , Agass	411
<i>Cottus viscosus</i> , Hald	411
<i>Cottus gracilis</i> , Heck	411
<i>Cottus boleooides</i> , Grd	411
<i>Cottus gobioides</i> , Grd	411
<i>Cottus Fabricii</i> , Grd	411

5.

1850. GIRARD, CHARLES. "On Acanthocotti" in Storer's Fishes of Nova Scotia. *Boston Journal of Natural History*, vi, 1850, pp. 247-250 (figs.).

<i>Acanthocottus Greenlandicus</i> , Grd	248
Greenland.	
<i>Acanthocottus Labradoricus</i> , Grd	248
Labrador, H. R. Storer.	
<i>Acanthocottus variabilis</i> , Grd	248
Maine, Massachusetts, Connecticut, New York; Storer, Ayres, DeKay.	

6.

1850. GIRARD, CHARLES. "On *Gasterosteus*" in Storer's Fishes of Nova Scotia.
Boston Journal of Natural History, vi, 1850, pp. 254-260.
Gasterosteus Curieri, Grd. Pl. vii, fig. 1. 254
 Bras d'Or and Red Bay, Labrador H. R. Storer.

7.

1850. GIRARD, CHARLES. On the Development of *Planocera elliptica*.
Proceedings Boston Society Natural History, iii, 318. 1850.
 Tracing the egg through successive periods.

8.

1850. GIRARD, CHARLES. On the Embryology of Planaria.
Proceedings American Association Advancement of Science, ii, 398. 1850.
 Abstract of a fuller paper on the subject. (See below Nos. 58 and 59.)

9.

1850. GIRARD, CHARLES. Sur l'Embryologie des Planaires.
Bulletin Société des Sciences Naturelles, ii, 300. 1850. Neuchatel, Switzer-
 land.
 A French version of the preceding paper (No. 8).

10.

1850. GIRARD, CHARLES. Descriptions of Several New Species of Marine Planariae
 from the Coast of Massachusetts.
Proceedings Boston Society of Natural History, iii, pp. 251, 261.
Polyecelis variabilis, n. s. 251
 Boston and Beverly Harbors, Girard.
Prosthlostomum gracile, n. s. 251
 Boston Harbor, Girard.
 PROCERODES, n. g.
Procerodes Wheatlandi, n. s. 251
 Manchester, Massachusetts, Girard.
Planocera elliptica, n. s. 251
 Massachusetts, Girard.
Vortex Warreni, n. s. 264
 Boston Harbor, Girard.
Vortex candida, n. s. 264
 Chelsea Beach, Girard.

11.

1850. GIRARD, CHARLES. Brief Account of the Fresh-Water Planariae so far known
 in the United States.
Proceedings Boston Society of Natural History, iii, 261-7. 1850.
Planaria gracilis, Hald. 264
 Cambridge.
Planaria tigrina, n. s. 264
 New Jersey.
Dendroecolium pulcherrimum, n. s. 265
 New Jersey.
Dendroecolium superbum, n. s. 265
 Vicinities of Philadelphia and Boston.
 DUGESIA, n. g. 265
Dugesia gonocephaloides, n. s. 265
 New Jersey.

12.

1850. GIRARD, CHARLES. Observations upon Planarian Worms.
Proceedings Boston Society of Natural History, iii, 363-1. 1850.
Vortex Warreni and *Phagoceata gracilis*, bringing forth living young.

13.

1850. GIRARD, CHARLES. Descriptions of Several New Species of Echinoderms.

Proceedings Boston Society Natural History, iii, 363-7. 1850.

HELECHINUS, n. g.	365
<i>Heliechinus Gouldi</i> , n. s.	365
Key West, Florida.	
MELEBOSIS, n. g.	365
<i>Melebosis mirabilis</i> , n. s.	365
East India.	
<i>Psammochinus asteroides</i> , n. s.	366
New Zealand.	
<i>Echinometra nigra</i> , n. s.	366
Cape Palmas, Western Africa, Dr. G. A. Perkins.	
<i>Echinogrammus minutus</i> , n. s.	367
Mediterranean.	
<i>Schizaster lochesis</i> , n. s.	368
Gulf of Mexico, Texas shore, J. Bartlett.	

14.

1851. GIRARD, CHARLES. On a New American Saurian Reptile.

Proceedings American Association for Advancement of Science, iv, 200-2. 1851.

HOLBROOKIA, n. g.	200
<i>Holbrookia maculata</i> , n. s.	201
Grand Island, Platte River, Colorado, William Tappan.	

15.

1851. GIRARD, CHARLES. A New Generic Type in the Class of Worms.

Proceedings American Association for Advancement of Science, iv, 124. 1851.

PHYLLOBRANCHIUS, n. g.	124
<i>Phyllobranchus Ravenelii</i> , n. s.	125
Specimen found attached to the body of a skate caught in Charleston Harbor, South Carolina, observed by Dr. Julian Ravenel.	

16.

1851. GIRARD, CHARLES. An Essay on the Classification of Nemertes and Planariæ, preceded by Some General Considerations on the Primary Divisions of the Animal Kingdom. *Silliman's American Journal of Science*, xi, 2d series, 41, 1851. Revised edition in *Proceedings American Association for Advancement of Science*, iv, 258, 1851.

17.

1851. GIRARD, CHARLES. On the Organs of Vision and Nervous System in the Embryo of Ascidia.

Proceedings Boston Society of Natural History, iv, 30-31, 1851.Views on the ocelliform spot in embryo representing the nervous system of *Ascidia*.

18.

1851. GIRARD, CHARLES. Die Planarien und Nemertinen Nordamerikas. *Nordamerikanischer Monatsbericht für Natur und Heilkunde*. Keller and Tiedeman, Philadelphia, ii, 1851, p. 1.

PLANARIANS.

PHAGOCATA, Leidy.	1
<i>Phagocata gracilis</i> , Leidy.	1
<i>Dendrocoelum pulcherrimum</i> , Grd.	2
<i>Dendrocoelum superbium</i> , Grd.	2
<i>Planaria tigrina</i> , Grd.	2
DUGESIA, Grd.	2
<i>Dugesia gonocephaloides</i> , Grd.	2

1851. GIRARD, CHARLES—Continued.

<i>Imgesia maculata</i> , Grd	3
Vicinity of Phila., Leidy, Girard.	
<i>Prostomat marginatum</i> , Leidy	3
Vicinity of Phila., Leidy.	
<i>Planocera elliptica</i> , Grd	3
<i>Polyceles variabilis</i> , Grd	3
<i>Prosthodontum gracile</i> , Grd	3
PROCERODES, Girard	4
<i>Procerodes Wheatlandi</i> , Grd	4
<i>Vortex Warreni</i> , Grd	4
<i>Vortex caudata</i> , Grd	4
<i>Monoecelis spatulicauda</i> , n. s.	4
Boston Harbor, Ch. Girard.	

NEMERTEANS.

<i>Polia gracilis</i> , n. s.	4
Boston Harbor, Ch. Girard.	
<i>Tetrastemma serpentina</i> , n. s.	4
Boston Harbor, Ch. Girard.	
<i>Meekelia fragilis</i> , n. s.	4
Chelsea Beach (Mass.), Ch. Girard.	

19.

1851. GIRARD, CHARLES. On a new Genus of American Cottoids.

Proceedings Boston Society of Natural History, iv, 18-19. 1851.

TRIGLOPSIS, n. g.	19
<i>Triglopsis Thompsoni</i> , n. s.	19
Oswego, Professor Baird.	

20.

1851. GIRARD, CHARLES. Historical sketch of Gordiacea.

Proceedings Academy of Natural Sciences Philadelphia, v, 279-284. 1851.

Observations on the anatomical structure of Gordiacea.

21.

1851. GIRARD, CHARLES. The Seventeen-year Locusts (*Cicada septendecim*.)

Boston Evening Traveller, Sept. 3, 1851.

The metamorphosis of the 17-year locust have been so thoroughly investigated, especially by the late Miss H. Morris, of Germantown, Pa., that no room is left for any doubt as to the period of 17 years of its underground life.

The phenomenon of its regular appearance above ground every 17 years has attracted the attention of the learned community, which carefully recorded the periods during the present century. A curious statement resulted therefrom, viz, that, although reappearing regularly every 17 years in the same locality, minor swarms of that insect were noticed in other localities, appearing likewise regularly every 17 years, the periods of which, however, were not synchronous with those of the appearance of the larger swarms.

The question then arose whether the insect had been created at repeated times during a given epoch in the history of the earth, or whether they all proceeded from a single creation in a single locality, whence they subsequently spread into the manifold places where they are now observed.

The late Dr. Burnett, of Boston, having brought the matter before the American Association for the Advancement of Science at the Albany meeting of August, 1852, upheld the theory of repeated creations of the insect in various localities.

Dr. Girard took up the opposite view, defending the idea of one sole creation on a single locality, imputing the existence of the minor swarms to accidental migrations and climatic influences, without actual transformation in their anatomical and zoölogical characters.

22.

1851. GIRARD, CHARLES. Description of a new Planaria and a new Nemertes from the Coast of Florida.

Proceedings Boston Society of Natural History, iv, 137. 1851.

<i>Thysanozoön nigrum</i> , n. s.	137
Cape Florida, L. F. Pourtales.	
<i>Meckelia atra</i> , n. s.	137
Cape Florida, L. F. Pourtales.	

23.

1851. GIRARD, CHARLES. Mammalia. *Iconographic Encyclopædia of Science, Literature, and Arts*. New York, 8. 1851. (See No. 25.)

24.

1851. GIRARD, CHARLES. On the Classification of Mammalia.

Proceedings of American Association for Advancement of Science, iv, 319-35. 1851.

Two schematic plates represent, one, the classification of mammalia from a biological point of view; the other illustrates the historic development of that class through geological eras.

25.

1851. GIRARD, CHARLES, WITH SPENCER F. BAIRD AND OTHERS. Outlines | of | General Zoölogy | "Mammals," Charles Girard | "Birds," John Cassin | "Reptiles," Spencer F. Baird | "Fishes," Spencer F. Baird | "Invertebrates," S. S. Haldeman | — | Reprinted from the *Iconographic Encyclopædia* | of Science, Literature, and Art | — | New York: | Rudolph Garrigue, Publisher | 2 Barclay St., Astor House | 1851. | 8vo. 502. 1851.

This extract constitutes the zoölogical portion of the work entitled "*Iconographic Encyclopædia*," specially compiled and rewritten, with special reference to adaptation to this country.

Section relating to mammalia, pp. 392-502, contains a full classification of the group, with a special chapter on Geographical Distribution of Mammalia, p. 498.

26.

1852. GIRARD, CHARLES. Contributions to the Natural History of the Fresh-water Fishes of North America. I. Monograph of the Cottoids, with 3 plates. [*Smithsonian Contributions to Knowledge*, vol. iii.] 1852. 4to.

COTTUS, Attedi	33
<i>Cottus Richardsonii</i> , Agass., pl. i, figs. 1-2.	39
Northern shore of Lake Superior, Agassiz.	
<i>Cottus cognatus</i> , Richards	41
<i>Cottus Wilsoni</i> , n. s., pl. i, figs. 3, 4.	42
French Creek, Pa., L. D. Williams; Alleghany River, Professor Baird.	
<i>Cottus Bairdi</i> , Grd., pl. i, figs. 5, 6.	44
Mahoning River, Professor Baird.	
<i>Cottus Alvordi</i> , n. s., pl. i, figs. 7, 8.	46
Lake Huron, Major Alvord.	
<i>Cottus meridionalis</i> , Grd., pl. i, figs. 9, 10.	47
James River, Va., Rock Creek, District of Columbia.	
<i>Cottus gracilis</i> , Heck., pl. i, figs. 11, 12.	49
Massachusetts, Connecticut, and New York States.	
<i>Cottus viscosus</i> , Hald., pl. ii, figs. 1, 2.	51
Reading and Carlisle, Pennsylvania, Professor Baird; Rohrsersville, Maryland; Rock Creek, District of Columbia.	
<i>Cottus Fraacklini</i> , Agass., pl. ii, figs. 5, 6.	53
Southern and eastern shores Lake Superior, Agassiz.	
<i>Cottus gobioides</i> , Grd., pl. ii, figs. 3, 4.	55
Lamoille River, Ransom Colberth.	

1852. GIRARD, CHARLES—Continued.

<i>Cottus boreoides</i> , Grd., pl. ii, figs. 7, 8	56
Windsor, Vermont, Ed. Cabot.	
<i>Cottus formosus</i> , n. s.	58
Lake Ontario, Professor Baird.	
<i>Cottus Fabricii</i> , Grd.	59
Greenland, O. Fabricius.	
COTTOPSIS, Girard.	62
<i>Cottopsis asper</i> , Grd.	67
Columbia River, Dr. Gairdner.	
TRIGLOPSIS, Girard.	64
<i>Triglopsis Thompsoni</i> , Grd., pl. ii, figs. 9, 10	65
Lake Ontario, Professor Baird.	

26.a

1852. GIRARD, CHARLES. On *Salmo Oquassa*, a new species of Lake Trout.

<i>Proceedings Boston Society of Natural History</i> , iv, 262-3. 1852.	
<i>Salmo oquassa</i> , n. s.	262
Moosemegantic Lake, Charles Girard.	

27.

1852. GIRARD, CHARLES. American Zoölogical, Botanical, and Geological Bibliography for the year 1851. Prepared at the request of Prof. Spencer F. Baird, Assistant Secretary, Smithsonian Institution.

Silliman's American Journal Science and Arts, xiii, 2 ser. 1852. Appendix. (See No. 28.)

28.

1852. GIRARD, CHARLES. Bibliographia Americana | Historico-naturalis | A. D. 1851 | Auctore | Carolo Girard | Smithsonian Institution | Washington | December, 1852. |

Reprint of the former paper (No. 27). The plan was to publish a yearly report, similar to the above; the second year was ready for the press when its publication was suspended and never resumed.

29.

1852. GIRARD, CHARLES. A revision of the North American Astaci with observations on their habits and geographical distribution.

Proceedings Academy of Natural Sciences Philadelphia, vi, 87-91. 1852.

FIRST GROUP.

ASTACUS, Gronor	87
ASTACOIDES, Guérin	87
CAMBARUS, Erichs	87
<i>Cambarus pellucidus</i> , Erichs.	87
Manmoth Cave, Kentucky, Tellkampf.	
<i>Cambarus affinis</i> , Erichs	87
Schuylkill River at Reading, Pennsylvania, Baird; Delaware River, Say, Rafinesque.	
<i>Cambarus Oregonus</i> , Erichs.	87
Columbia River, Nuttall.	
<i>Cambarus Peabii</i> , n. s.	87
Potomac at Washington, District of Columbia, Girard.	
<i>Cambarus rusticus</i> , n. s.	88
Ohio River at Cincinnati, Baird.	
<i>Cambarus propinquus</i> , n. s.	88
Lake Ontario, Sackett's Harbor, Oswego, Baird.	
<i>Cambarus fossor</i> , Grd	88
Virginia, Pennsylvania, New York, Girard. (Rafinesque.)	

1852. GIRARD, CHARLES—Continued.

SECOND GROUP.

<i>Cambarus Bartonii</i> , Erichs.	88
Pennsylvania, New York, De Kay; Massachusetts, Gould, etc.	
<i>Cambarus Carolinus</i> , Erichs.	88
Carolina, Erichson; Anderson, South Carolina, Girard.	
<i>Cambarus montanus</i> , n. s.	88
Virginia and Maryland, Girard.	
<i>Cambarus diogenes</i> , n. s.	89
Meadows about Washington, District of Columbia, Charles Girard.	
<i>Cambarus longulus</i> , n. s.	90
Middle States of the United States, Girard.	
<i>Cambarus pusillus</i> , Grd.	90
Lake Ontario, near Saratoga, Lake George, Lake Champlain, Utica, Oswego, (Rafinesque) Baird.	
<i>Cambarus robustus</i> , n. s.	90
Humber River near Toronto, Canada, Girard.	
<i>Cambarus Gambeli</i> , n. s.	90
California, Dr. W. Gambel.	
<i>Cambarus Nebraskaensis</i> , n. s.	91
Fort Pierre, Nebraska, Culbertson.	

THIRD GROUP.

<i>Cambarus Blandingi</i> , Erichs.	91
Southern States, Harlan; Summerville, South Carolina, Charles Girard.	
<i>Cambarus Clarki</i> , n. s.	91
Texas, John H. Clark.	
<i>Cambarus acutus</i> , n. s.	91
Mobile River, Mississippi, D. C. Lloyd.	
<i>Cambarus acutissimus</i> , n. s.	90
Mobile River, Mississippi, D. C. Lloyd.	
CHERAPS, Erichs.	87
ENGÆUS, Erichs.	87

30.

1852. GIRARD, CHARLES. Révision du genre *Cottus* des auteurs.
Schweizerische Gesellschaft für die Gesammten Naturwissenschaften, xii, 1852,
 pp. 28.

SPECIES OF THE ORIENTAL HEMISPHERE.

<i>Acanthocottus scorpius</i> , Grd.	6
European oceans at large.	
<i>Acanthocottus bubalis</i> , Grd.	6
Coasts of France and England, North Sea	
<i>Acanthocottus quadricornis</i> , Grd.	7
Baltic Sea, England and Scandinavia.	
<i>Acanthocottus juok</i> , Grd.	7
Kamtschatka, Pallas.	
<i>Acanthocottus platycephalus</i> , Grd.	7
Pallas, Chuvier and Valenciennès.	
<i>Acanthocottus discreus</i> , Grd.	7
Sea of Kamtschatka, Tilesius.	
<i>Acanthocottus ventralis</i> , Grd.	8
Sea of Kamtschatka, Collie.	
<i>Acanthocottus clariger</i> , Grd.	8
Sea of Kamtschatka, Collie.	
<i>Acanthocottus Mertensi</i> , Grd.	8
Sea of Kamtschatka, Mertens.	
<i>Acanthocottus marmoratus</i> , Grd.	8
Sea of Kamtschatka, Mertens.	
The following two species are from the Tertiary epoch	
<i>Acanthocottus aries</i> , Grd.	8
Aix en Provence, L. Agassiz.	
<i>Acanthocottus puppaeus</i> , Grd.	8
Monte Viale, Vicentia, L. Agassiz.	

1852. GIRARD, CHARLES—Continued.

TRACHIDERMIS, Heck	13
<i>Trachidermis fasciatus</i> , Heck	13
Philippine Islands, Heckel.	
<i>Trachidermis uncinatus</i> , Grd	13
Northern coasts of Chinese Seas, Richardson.	
<i>Trachidermis intermedius</i> , Grd	13
Jesse Island, Siebold.	
PODABRUS, Richards	14
<i>Podabrus coltooides</i> , Richards	14
Chinese Seas, Richardson.	
<i>Podabrus centropomus</i> , Richards	15
Island of Quelpert, Richardson.	
<i>Cottus affinis</i> , Heck	17
Scandinavia and Mayhøp, Denmark.	
<i>Cottus gobio</i> , Artdeli	17
France, Belgium, Germany, and Switzerland are to be re-examined virtually.	
<i>Cottus gobio</i> of Reisinger, from the Danube and rivulets of Hungary	18
<i>Cottus gobio</i> of Pennant, from England	18
<i>Cottus gobio</i> of Pallas, from Siberia and Lake Baikal	18
<i>Cottus minutus</i> , Pall	18
Sea of Okhotsk, Mertens.	
<i>Cottus pacilopus</i> , Heck	18
Carpathian Mountains, Heckel.	
<i>Cottus microstomus</i> , Heck	18
Vicinity of Craew, Heckel.	
<i>Cottus ferrugineus</i> , Heck	27
Lakes of Italy, Bonaparte, Heckel.	
The following species is from the Tertiary epoch.	
<i>Cottus brevis</i> , Agass.	18
Oeningen (Bavaria), Agassiz.	

The list of species of *Acanthocottus* and *Cottus* being given above (p. 1) we simply mention here:

COTTOPSIS, Girard	20
<i>Cottopsis usper</i> , Grd	21
TRIGLOPISIS, Girard	27
<i>Triglopsis Thompsoni</i> , Grd	27

31.

1852. GIRARD, CHARLES. Description of two new genera and two species of Nemertees.

Proceedings Boston Society of Natural History, iv, 185-6. 1852.

HECATE, n. g.	185
<i>Hecate elegans</i> , n. s.	186
Boston Harbor.	
POSEIDON, n. g.	186
<i>Poseidon colvi</i> , n. s.	86
Boston Harbor.	

32.

1852. GIRARD, CHARLES. Description of two new genera and two new species of Planaria.

Proceedings Boston Society of Natural History, iv, 210-19. 1852.

NIÖBE, n. g.	210
<i>Niobe zonata</i> , n. s.	211
Boston Harbor.	
FOVIA, n. g.	211
<i>Fovia Warreni</i> , Grd	211
<i>Dugesia Foremani</i> , n. s.	211
Tiber Creek, District of Columbia, and Four-Mile Run. C. Girard.	
<i>Bdelloura parasitica</i> , Leidy, being identical with <i>Fortex candida</i> , Grd., the species will be recorded henceforth as follows:	
<i>Bdelloura candida</i> , Grd	211

33.

1852. GIRARD, CHARLES. An account of a new species of Spatangidae.
Proceedings Boston Society of Natural History, iv., 213. 1852
Amphidetus Kurtzi, n. s. 213
 Folly Island, South Carolina, J. D. Kurtz; Cape Fear, North Carolina, Ch.
 Girard.

34.

1852. GIRARD, CHARLES, with SPENCER F. BAIRD. Characteristics of some New Reptiles in the Museum of the Smithsonian Institution. First Part.
Proceedings Academy of Natural Sciences Philadelphia, vi, 68-70. 1852.
- | | |
|--|----|
| <i>Siredon lichenoides</i> , n. s. | 68 |
| Lake at the head of Santa Fé Creek, New Mexico, R. H. Kern. | |
| <i>Cnemidophorus tigris</i> , n. s. | 69 |
| Valley of Great Salt Lake, Stansbury. | |
| <i>Crotaphytus Wizlizeni</i> , n. s. | 69 |
| Santa Fé, Dr. Wizlizenus; between San Antonio and El Paso del Norte, J. D. Graham. | |
| UTA n. g. | 69 |
| <i>Uta Stansburiana</i> , n. s. | 69 |
| Valley of Great Salt Lake, Captain Stansbury. | |
| <i>Sceloporus graciosus</i> , n. s. | 69 |
| Valley of Great Salt Lake. | |
| <i>Elgaria scienciana</i> , n. s. | 69 |
| Oregon. | |
| <i>Plestiodon skiltonianus</i> , n. s. | 69 |
| Oregon, Rev. George Geary. | |
| <i>Phrynosoma platyrhina</i> , n. s. | 69 |
| Valley of Great Salt Lake, Stansbury's party. | |
| <i>Phrynosoma modestum</i> , n. s. | 69 |
| Valley of the Rio Grande, General Churchill; between San Antonio and Paso del Norte, Colonel Graham. | |
| CHURCHILLIA, n. g. | 70 |
| <i>Churchillia belona</i> , n. s. | 70 |
| Rio Grande, General Churchill. | |
| <i>Crotuber mormon</i> , n. s. | 70 |
| Valley of Great Salt Lake, Captain Stansbury. | |
| <i>Heterodon nasium</i> , n. s. | 70 |
| Texas, General Churchill. | |

35.

1852. GIRARD, CHARLES, with SPENCER F. BAIRD. Characteristics of some New Reptiles in the Museum of the Smithsonian Institution. By Spencer F. Baird and Charles Girard. Second Part. Containing the species of the Samrian order, collected by John H. Clark, under Col. J. D. Graham, head of the Scientific Corps, United States and Mexican Boundary Commission, and a few others from the same adjoining territories, obtained from other sources, and mentioned under their special headings.
Proceedings Academy of Natural Sciences Philadelphia, vi, pp. 125-9. Presented for publication July 6, ordered printed Aug. 31, 1852.
- | | |
|--|-----|
| <i>Holbrookia Texana</i> , B. and G. R. | 125 |
| <i>Holbrookia affinis</i> , n. s.
Along the Rio San Pedro. | |
| <i>Holbrookia propinqua</i> , n. s. | 126 |
| Texas, between Indianola and San Antonio. | |
| <i>Crotaphytus Gambeli</i> , n. s.
California, Wm. Gambel. | |
| <i>Crotaphytus dorsalis</i> , n. s.
Desert of Colorado, California, A. L. Leconte | |
| <i>Uta ornata</i> , n. s.
Rio San Pedro, Texas. | |

1852. GIRARD, CHARLES—Continued.

<i>Sceloporus Poinsetti</i> , n. s.	127
Rio San Pedro, and the province of Sonora.	
<i>Sceloporus Clarki</i> , n. s.	
<i>Sceloporus Thayeri</i> , n. s.	
Indianola, Texas.	
<i>Sceloporus dispar</i> , n. s.	
Vera Cruz, Dr. Birrroughs.	
<i>Cnemidophorus marmoratus</i> , n. s.	128
Between San Antonio, Texas, and El Paso del Norte.	
<i>Cnemidophorus Grahami</i> , n. s.	
Found with preceding species.	
<i>Cnemidophorus gularis</i> , n. s.	
Indianola, Texas, and the Valley of the Rio San Pedro.	
<i>Cnemidophorus perplexus</i> , n. s.	
Valley of the Rio San Pedro.	
<i>Cnemidophorus gracilis</i> , n. s.	
Desert of Colorado, J. L. Leconte.	
<i>Cnemidophorus prosignis</i> , n. s.	
Chagres, C. B. Adams.	
<i>Plestiodon obsoletum</i> , n. s.	
Valley of the Rio San Pedro.	
<i>Elgaria nobilis</i> , n. s.	
Fort Webster, New Mexico	
	129

36.

1852. GIRARD, CHARLES, with SPENCER F. BAIRD. Characteristics of some New Reptiles in the Museum of the Smithsonian Institution. By Spencer F. Baird and Charles Girard. Third Part. Containing the Batrachians in the collection made by J. H. Clark, esq., under Col. J. D. Graham, on the United States and Mexican Boundary.

Proceedings Academy Natural Sciences Philadelphia, vi, p. 173. Presented for publication Oct. 21, ordered printed Oct. 26, 1852.

<i>Amblystoma proserpine</i> , n. s.	173
On the route from Montgomery, Mexico.	
<i>Rana arcolata</i> , n. s.	
Rio San Pedro of the Gila.	
<i>Bufo punctatus</i> , n. s.	
Rio San Pedro of the Rio Grande del Norte.	
<i>Bufo granulatus</i> , n. s.	
Between Indianola and San Antonio, Texas.	

37.

1852. GIRARD, CHARLES, with SPENCER F. BAIRD. Descriptions of New Species of Reptiles, collected by the U. S. Exploring Expedition under the command of Capt. Charles Wilkes, U. S. N. First part.—Including the species from the Western Coast of America.

Proceedings Academy Natural Sciences Philadelphia, vi, 171-177, 1852. Presented for publication Oct. 6, ordered printed Oct. 26, 1852.

<i>Amblystoma tenebrosum</i> , n. s.	174
Oregon.	
<i>Rana aurea</i> , n. s.	
Puget Sound.	
<i>Rana Draytoni</i> , n. s.	
San Francisco, California, and on Columbia River.	
<i>Hyla regilla</i> , n. s.	
Sacramento River, in Oregon and Puget Sound.	
<i>Bufo boreas</i> , n. s.	
Columbia River and Puget Sound.	
<i>Sceloporus gracilis</i> , n. s.	175
Oregon.	

1852. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

<i>Sceloporus occidentalis</i> , n. s.	176
California, probably Oregon.	
<i>Sceloporus frontalis</i> , n. s.	175
Puget Sound.	
<i>Elgaria principis</i> , n. s.	
Oregon and Puget Sound.	
<i>Elgaria formosa</i> , n. s.	
California.	
<i>Elgaria graudlis</i> , n. s.	176
<i>Tropidonotus ordinoides</i> , n. s.	
Puget Sound.	
WENONA, n. g.	
<i>Wenona Isabella</i> , n. s.	
Puget Sound.	
<i>Calamaria tenuis</i> , n. s.	
Puget Sound.	
<i>Crotalus lucifer</i> , n. s.	
Oregon and California.	
<i>Emys marmorata</i> , n. s.	
Puget Sound.	

38.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. Catalogue of North American Reptiles in the Museum of the Smithsonian Institution. — Part I.—Serpents. By S. F. Baird and C. Girard. — [Seal of the Smithsonian Institution.] Washington: Smithsonian Institution. January, 1853. [Accepted for publication November, 1852.] 8vo, pp. xvi, 172.

CONTENTS.

	Page.
Preface	v
Introduction	vii
Explanations of Terms used.	
Synopsis of families and genera and systematic order of species of North American Serpents	ix
Catalogue of Serpents	1-144
Appendix A.—Species examined, of which no specimens are in possession of the Smithsonian Institution	145
Appendix B.—Species described by authors, but of which no specimens could be obtained	150
Appendix C.—Species collected on the United States and Mexican Boundary Survey by John H. Clark and Arthur Schott, under Maj. Wm. H. Emory, and received too late for insertion in their proper places	156
Appendix D.—Index of Sources from which the specimens have been received.....	162
Appendix E.—Index of States and Territories from which specimens have been received.....	164
Alphabetical Index	165
1. Vernacular Names	165
2. Systematic Names.....	167

Although published under the names of the two authors as a joint production, this work is a series of monographs for which the individual authors only claimed to be responsible. The record of authorship is lost. In the following list of species discussed, the parts written by Professor Baird, so far as he can recall the matter to memory, are printed in italic type, those by Girard in heavy-faced type.

"In the present catalogue it is proposed to present a systematic account of the collection of North American Serpents in the museum of the Smithsonian Institution. In the Appendix will be found such species not in possession of the Institution, as could be borrowed for description, as well as notes on more or less authentic species of which no specimens could be found.

"A complete synonymy of all the species has not been attempted, as tending to swell the bulk of a catalogue too much. All those, however, necessary to a proper understanding of the history or character of the species, have been introduced, and all the synonyms quoted have been actually verified by original reference.

Owing to the want of osteological preparations, it has been a difficult task to arrange the genera in a natural succession. In many cases forms are now combined which will hereafter

1852. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

necessarily be widely separated. The almost entire deficiency of modern general works upon the *Crotalidae*, has also been a serious obstacle to any correct idea of a natural system. The forthcoming work of M. M. Duméril will undoubtedly clear up much of the obscurity which now exists. But when systematic writers all carefully avoid the subject of the Ophidians, each waiting for the others to make the first step, the attempt to combine genera by well-marked, though perhaps artificial points of relation, will, it is hoped, be looked upon with indulgence, even after more comprehensive and extended investigations shall render it necessary to break up the combinations here adopted.

"The collections upon which the original descriptions of the present catalogue have been based are as follows:—

- Spencer F. Baird. Species from Massachusetts, New York, Ohio, and Pennsylvania.
 Charles Girard. Maine, Massachusetts, and South Carolina.
 Rev. Charles Fox. Species from eastern Michigan.
 Dr. P. R. Hoy. Species from eastern Wisconsin.
 Prof. L. Agassiz. Lake Superior, Lake Huron, and Florida.
 Dr. J. P. Kirkland. Northern Ohio.
 G. W. Falmestock. Western Pennsylvania.
 Miss Valeria Blaney. Eastern Shore of Maryland.
 Dr. C. B. R. Kennerly. Northern Virginia.
 John H. Clark. Maryland, Texas, New Mexico, and Sonora.
 John Varden. District of Columbia and Louisiana.
 Dr. J. B. Barratt. Western South Carolina.
 Miss Charlotte Paine and Mrs. M. E. Daniel. Western South Carolina.
 Dr. S. B. Barker. Charleston, S. C.
 Prof. F. S. Holmes and Dr. W. J. Burnett. South Carolina.
 R. R. Cuyler and Dr. W. L. Jones. Georgia.
 D. C. Lloyd. Eastern Mississippi.
 Dr. B. F. Shumard and Col. B. L. C. Wailes. Mississippi.
 James Fairie. Mexico and Western Louisiana.
 Capts. R. B. Marcy and G. B. McClellan, U. S. A. Red River, Ark.
 Ferdinand Lindheimer. Central Texas.
 Col. J. D. Graham, U. S. A. The specimens collected while on the U. S. and Mex. Boundary Survey, by Mr. J. H. Clark, viz., in Texas, New Mexico, and Sonora.
 Maj. W. H. Emory. Specimens collected on the U. S. and Mexican Boundary Survey by Arthur Schott, at Eagle Pass, Tex., and by J. H. Clark, in Texas and New Mexico.
 Gen. S. Churchill, U. S. A. Valley of the Rio Grande.
 Dr. L. Edwards, U. S. A. Northern Mexico.
 Dr. Wm. Gambel. New Mexico and California.
 Dr. John L. Le Conte. Littoral California.
 Dr. C. C. Boyle and J. S. Bowman. Central California.
 Dr. A. J. Skilton. Species collected in California by Henry Moores, Esq.
 U. S. Exploring Expedition. Littoral California and Oregon.
 Academy of Natural Sciences of Philadelphia. Various unique specimens described by Dr. Holbrook.
 Boston Society of Natural History. California.
 "SMITHSONIAN INSTITUTION, January 5, 1853."

SYSTEMATIC INDEX OF WELL-ASCERTAINED SPECIES OF NORTH AMERICAN SERPENTS.

	Page.
1. <i>Crotalus durissus</i> , Linn.....	Penna., Louisiana, Mississippi..... 1
2. " <i>adamanteus</i> , Beauv.....	South Carolina..... 3
3. " <i>atrox</i> , B. & G., n. s.....	Texas..... 5
4. " <i>luceifer</i> , B. & G.....	Oregon..... 6
5. " <i>confuentus</i> , Say.....	Arkansas, Texas..... 8
6. " <i>molossus</i> B. & G., n. s.....	Sonora..... 10
7. " <i>oregonus</i> , Holbr.....	Columbia River..... 145
CROTALOPHORUS, Gray.	
1. <i>Crotalophorus miltariarius</i> , Holbr.....	Georgia, South Carolina..... 11
2. " <i>consors</i> , B. & G., n. s.....	Texas..... 12
3. " <i>tergenianus</i> , Holbr.....	Wisc., Mich., Ohio..... 14
4. " <i>Edwardsi</i> , B. & G., n. s.....	Mexico, Sonora..... 15
5. " <i>Kirtlandi</i> , Holbr.....	Ohio..... 16

1853. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

AGKISTRODON, BEAUV.

1. *Agkistrodon contortrix*, B. & G. Ohio, Penn., S. C., La. 17

TOXICOPHIS, TROOST.

1. *Toxicophis piscivorus*, B. & G. Louisiana 19
2. " *pugnax*, B. & G., n. s. Texas 20

ELAPS, FITZ.

1. *Elaps fulvius*, Cuv. South Carolina 21
2. " *tenere*, B. & G., n. s. Texas 22
3. " *tristis*, B. & G., n. s. Mississippi, Texas 23

EUTAINIA, B. & G., n. g.

1. *Eutainia saurita*, B. & G. Mass., Penna., N. Y., Md., Va. 24
2. " *Fuireyi*, B. & G., n. s. Louisiana 25
3. " *proxima*, B. & G. Ark., Texas, New Mexico 25
4. " *infernalis*, B. & G. California 26
5. " *Pekeringi*, B. & G., n. s. Oregon 27
6. " *parietalis*, B. G. Texas 28
7. " *leptocephala*, B. & G., n. s. Oregon 29
8. " *sirtalis*, B. & G. Me., Mich., N. Y., Penna., Md., Va., S. C., Miss. 30
9. " *dorsalis*, B. & G., n. s. Texas 31
10. " *ordinata*, B. & G. Georgia 32
11. " *ordinoides*, B. & G. California 33
12. " *radix*, B. & G., n. s. Wisconsin 34
13. " *elegans*, B. & G., n. s. California 34
14. " *vagrans*, B. & G., n. s. Mex., Cal., Oregon 35
15. " *marciana*, B. & G., n. s. Ark., Texas 36
16. " *concinna*, B. & G. Oregon 146

NERODIA, B. & G., n. g.

1. *Nerodia sipedon*, B. & G. Mich., Mass., Penna., N. Y., Md. 38
2. " *fasciata*, B. & G. South Carolina 39
3. " *erythrogaster*, B. & G. La., S. C. 40
4. " *Agassizi*, B. & G., n. s. Lake Huron 41
5. " *Woodhousi*, B. & G., n. s. Texas 42
6. " *taxispilota*, B. & G. Georgia 43
7. " *Holbrookii*, B. & G., n. s. Louisiana 43
8. " *nier*, B. & G. Massachusetts 147
9. " *rhombifer*, B. & G. Arkansas 147
10. " *transversa*, B. & G. Arkansas 148

REGINA, B. & G., n. g.

1. *Regina leberis*, B. & G. Mich., Ohio, Penna. 45
2. " *rigida*, B. & G. Penna., Georgia 46
3. " *Grahami*, B. & G., n. s. Texas 47
4. " *Clarki*, B. & G., n. s. Texas 48

NINIA, B. & G., n. g.

1. *Ninia diademata*, B. & G., n. s. Mexico 49

HETERODON, BEAUV.

1. *Heterodon platyrhinus*, Latr. Penna., Va., S. C., Ohio, Miss. 51
2. " *cognatus*, B. & G., n. s. Texas 54
3. " *niger*, Troost Penna., S. C., Miss. 55
4. " *atnodes*, B. & G., n. s. Ga., S. C. 57
5. " *simus*, Holbr. S. C., Miss. 59
6. " *nasicus*, B. & G. Ark., Texas, Sonora, Cal. 61

PITUOPHIS, HOLBR.

1. *Pituophis melanoleucus*, Holbr. Carolina 65
2. " *bellona* B. & G. Texas, Cal., Sonora 66
3. " *McClellani*, B. & G., n. s. Arkansas 68
4. " *cateuiter*, B. & G. California 69
5. " *Wilkesi*, B. & G., n. s. Oregon 71
6. " *annectens*, B. & G., n. s. California 72

1852. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

SCOTOPHIS, B. & G., n. g.		
1.	<i>Scotophis Alleghaniensis</i> , B. & G.	Pennsylvania..... 73
2.	" <i>Lindheimeri</i> , B. & G., n. s.	Texas..... 74
3.	" <i>rulpius</i> , B. & G., n. s.	Mich., Wisc..... 75
4.	" <i>confinis</i> , B. & G., n. s.	South Carolina..... 76
5.	" <i>letus</i> , B. & G., n. s.	Arkansas..... 77
6.	" <i>guttatus</i> , B. & G.	S. C., Ga., Miss..... 78
7.	" <i>quadrivittatus</i> , B. & G.	Florida..... 80
8.	" <i>Emoryi</i> , B. & G., n. s.	Texas..... 157
OPHIBOLUS, B. & G., n. g.		
1.	<i>Ophibolus Boylii</i> , B. & G., n. s.	California..... 82
2.	" <i>splendidus</i> , B. & G., n. s.	Sonora..... 83
3.	" <i>Sayi</i> , B. & G.	La., Miss., Ark., Texas..... 84
4.	" <i>getulus</i> , B. & G.	S. C., Miss..... 85
5.	" <i>rhombomaculatus</i> , B. & G.	Ga., S. C..... 86
6.	" <i>eximius</i> , B. & G.	Mass., N. Y., Penna..... 87
7.	" <i>clericus</i> , B. & G., n. s.	Va., Miss..... 88
8.	" <i>doliatus</i> , B. & G.	Mississippi..... 89
9.	" <i>gentilis</i> , B. & G., n. s.	Ark., La..... 90
GEORGIA, B. & G., n. g.		
1.	<i>Georgia Couperri</i> , B. & G.	Georgia..... 92
2.	" <i>obsoleta</i> , B. & G.	Texas..... 158
BASCANION, B. & G., n. g.		
1.	<i>Bascanion constrictor</i> , B. & G.	Penna., Md., Miss., S. C., La..... 93
2.	" <i>Fremontii</i> , B. & G., n. s.	California..... 95
3.	" <i>Foxi</i> , B. & G., n. s.	Michigan, Penna..... 96
4.	" <i>flaviventris</i> , B. & G.	Texas, Cal..... 96
5.	" <i>vetustus</i> , B. & G., n. s.	Cal., Oregon..... 97
MASTICOPHIS, B. & G., n. g.		
1.	<i>Masticophis flagelliformis</i> , B. & G.	South Carolina..... 98, 149
2.	" <i>flavigularis</i> , B. & G.	Tex., Ark..... 99
3.	" <i>mormon</i> , B. & G.	Utah..... 101
4.	" <i>ornatus</i> , B. & G., n. s.	Texas..... 102
5.	" <i>teniatus</i> , B. & G.	California..... 103
6.	" <i>Schotti</i> , B. & G., n. s.	Texas..... 160
SALVADORA, B. & G., n. g.		
1.	<i>Salvadora Grahami</i> , B. & G., n. s.	Sonora..... 104
LEPTOPHIS, Bell.		
1.	<i>Leptophis æstivus</i> , Bell	Ind., Va., S. C., Miss..... 106
2.	" <i>majalis</i> , B. & G., n. s.	Texas, Ark..... 107
CHLOROSOMA, Wagl.		
1.	<i>Chlorosoma vernalis</i> , B. & G.	Me., Mass., N. Y., Penna., Mich., Wisc., Miss..... 108
CONTIA, B. & G., n. g.		
1.	<i>Contia mitis</i> , B. & G., n. s.	Cal., Oregon..... 110
DIADOPHIS, B. & G., n. g.		
1.	<i>Diadophis punctatus</i> , B. & G.	N. Y., Penna., Ga., S. C., Miss..... 112
2.	" <i>amabilis</i> , B. & G., n. s.	California..... 113
3.	" <i>docilis</i> , B. & G., n. s.	Texas..... 114
4.	" <i>pulehellus</i> , B. & G., n. s.	California..... 115
5.	" <i>regalis</i> , B. & G., n. s.	Sonora..... 115
LODIA, B. & G., n. g.		
1.	<i>Lodia tenuis</i> , B. & G.	Oregon..... 116

1852. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

	SONORA, B. & G., n. g.	
1.	<i>Sonora semiannulata</i> , B. & G., n. s.	Sonora..... 117
	RHINOSTOMA, FITZ.	
1.	<i>Rhinostoma coccinea</i> , Holbr.	S. C., Ga., Miss., La..... 118
	RHINOCHILUS, B. & G., n. g.	
1.	<i>Rhinochilus Lecontei</i> , B. & G., n. s.	California..... 120
	HALDEA, B. & G., n. g.	
1.	<i>Haldea striatula</i> , B. & G.	Va., S. C., Miss..... 122
	FARANCIA, Gray.	
1.	<i>Farancia abacurus</i> , B. & G.	S. C., La..... 123
	ABASTOR, Gray.	
1.	<i>Abastor erythrogrammus</i> , Gray	Ga..... 125
	VIRGINIA, B. & G., n. g.	
1.	<i>Virginia Valeria</i> , B. & G., n. s.	Md., Va., S. C..... 127
	CELUTA, B. & G., n. g.	
1.	<i>Celuta amorna</i> , B. & G.	Penna., Md., Va., S. C., Miss..... 129
	TANTILLA, B. & G., n. g.	
1.	<i>Tantilla coronata</i> , B. & G., n. s.	Mississippi..... 131
2.	" <i>gracilis</i> , B. & G., n. s.	Texas..... 132
	OSCEOLA, B. & G., n. g.	
1.	<i>Osceola clapsoides</i> , B. & G.	S. C., Miss..... 133
	STORERIA, B. & G., n. g.	
1.	<i>Storeria Dekayi</i> , B. & G.	Wisc., Mich., Ohio, Mass., N. Y., Pa., Md., S. C., Ga., La., Tex..... 135
2.	" <i>occipito-maculata</i> , B. & G.	Me., N. Y., Lake Sup., Wisc., Pa., S. C., Ga..... 137
	WENONA, B. & G.	
1.	<i>Wenona plumbea</i> , B. & G.	Oregon..... 139
2.	" <i>Isabella</i> , B. & G.	Oregon..... 140
	RENA, B. & G., n. g.	
1.	<i>Rena dulcis</i> , B. & G., n. s.	Texas..... 142
2.	" <i>humilis</i> , B. & G., n. s.	California..... 143

SUMMARY.

GENERA.	Old.....	13
	New.....	22
	Total.....	35
SPECIES.	Old.....	65
	New.....	54
	Total.....	119

39.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. List of Reptiles collected in California by Dr. John L. Leconte, with description of New Species. *Proceedings Academy Natural Sciences Philadelphia*, vi, pp. 300-302. Presented for publication Feb. 15, ordered printed Feb. 22, 1853.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

OPHIDIANS.

- | | |
|--|-----|
| 1. <i>Crotalus lucifer?</i> ?, B. and G. | 300 |
| San Diego, California. | |
| 2. <i>Eutaenia ordinooides</i> , B. and G. | |
| San Francisco. | |
| 3. <i>Bascanion vetustus</i> , B and G. (name only). | |
| San José. | |
| 4. <i>Pituophis annectens</i> , B. and G. | |
| San Diego. | |
| 5. <i>Rhinocheilus Lecontei</i> , B. and G. | |
| San Diego. | |
| 6. <i>Contea mitis</i> , B. and G. | |
| San José. | |
| 7. <i>Diadophis amabilis</i> , B. and G. | |
| San José. | |
| 8. <i>Rena humilis</i> , B. and G. | |
| Vallecitas, California | |

SAURIANS.

- | | |
|---|-----|
| 1. <i>Crotaphytus dorsalis</i> , B. and G. | 301 |
| Desert of Colorado. | |
| 2. <i>Sceloporus occidentalis</i> , B. and G. | |
| San Francisco. | |
| 3. <i>Uta Stansburiana</i> , B. and G. | |
| Valley of Great Salt Lake. | |
| 4. <i>Uta ornata</i> , B. and G. | |
| San Diego and San Francisco. | |
| 5. <i>Phrynosoma coronatum</i> , Blainv. | |
| San Diego. | |
| 6. <i>Cnemidophorus gracilis</i> , B. and G. | |
| Desert of Colorado. | |
| 7. <i>Elgaria scincicauda</i> , B. and G. | |
| California. | |
| 8. <i>Plestiodon Skiltonianum</i> , B. and G. | |
| San Diego. | |
| 9. <i>Anniella pulchra</i> , Gray. | |
| San Diego. | |

BATRACHIANS.

- | | |
|---|-----|
| 1. <i>Bufo halophila</i> , n. s. | 301 |
| Benicia. | |
| 2. <i>Hyla regilla</i> , B. and G. | |
| San Francisco or San Francisco. | |
| 3. <i>Litoria occidentalis</i> , n. s. | |
| San Francisco. | |
| 4. <i>Rana Lecontei</i> , n. s. | |
| San Francisco. | |
| 5. <i>Ancides lugubris</i> , Baird. | |
| San Francisco. | |
| 6. <i>Batrachoseps attenuata</i> , Bon. | |
| San Francisco. | |
| 7. <i>Taricha brevis</i> , n. s. | |
| San Francisco. | |

40.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. [Report on the] Reptiles in *Stansbury's Exploration and Survey of the Valley of Great Salt Lake of Utah*. Washington. 1853. 8 .

- | | |
|---|-----|
| <i>Siredon lichenoides</i> , Baird, pl. i. | 336 |
| <i>Cnemidophorus tigris</i> , B. and G., pl. ii. | 338 |
| CROTAPHYTUS, Holbrook | 339 |
| <i>Crotaphytus Wislizeni</i> B. and G., pl. iii | 340 |

1853. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

HOLBROOKIA, Girard	341
<i>Holbrookia maculata</i> , Girard, pl. vi, fig. 1-3.....	342
UTA, Baird and Girard.....	344
<i>Uta Stansburiana</i> , B. and G., pl. v, fig. 4-6.....	345
<i>Sceloporus graciosus</i> , B. and G., pl. v, fig. 1-3.....	346
<i>Elgaria sciencicauda</i> , B. and G., pl. iv, fig. 1-3.....	348
<i>Plestiodon Skiltonianum</i> , B. and G., pl. iv, fig. 4-6.....	349
CHURCHILLIA, B. and G.....	350
<i>Churchillia billona</i> , B. and G.....	350
<i>Coluber mormon</i> , B. and G.....	351
<i>Heterodon nasicus</i> , B. and G.....	352

41.

1853. GIRARD, CHARLES. A monographic essay on the genus *Phrynosoma*.
Stansbury's Exploration and Survey of the Valley of Great Salt Lake of Utah.
Washington, 8, 1853.

The following species are discussed:	
<i>Phrynosoma Douglassi</i> Gray, pl. vii, fig. 6-10.....	362
Valley of Great Salt Lake, Captain Stansbury.	
<i>Phrynosoma platyrhinum</i> , G., pl. vii, fig. 1-5.....	363
About Great Salt Lake, Stansbury.	
<i>Phrynosoma modestum</i> , G., pl. vi, fig. 4-8.....	365
Valley of Rio Grande west of San Antonio, General Churchill.	
<i>Phrynosoma orbiculare</i> , Wiegum.....	359
Mexico and in Sonora.	
<i>Phrynosoma coronatum</i> , Gray, pl. viii, fig. 1-6.....	360
Texas, Arkansas, and Louisiana.	
<i>Phrynosoma coronatum</i> , Blainv., pl. viii, fig. 7-12.....	360
Oregon and California.	

42.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. Description of some new fishes
from the River Zuñi.

Proceedings Academy Natural Sciences Philadelphia, vi, 1853, pp. 368, 369.

GILA, B. & G., n. g.....	368
1. <i>Gila robusta</i> , n. s.....	369
River Zuñi.	
2. <i>Gila elegans</i> , n. s.....	369
River Zuñi.	
3. <i>Gila gracilis</i> , n. s.....	369
River Zuñi.	

43.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. Description of New Species of
Fishes collected by Captains R. B. Marcy and Geo. B. McClellan in Arkansas.
Proceedings Academy Natural Sciences Philadelphia, vi, 1853, pp. 390-392. Read
Aug. 30, 1853.

1. <i>Pomotis breviceps</i> , n. s.....	390
Otter Creek, Arkansas.	
2. <i>Pomotis longulus</i> , n. s.....	391
Otter Creek, Arkansas.	
3. <i>Leuciscus lutrensis</i> , n. s.,	
Otter Creek, Arkansas.	
4. <i>Leuciscus bubalinus</i> , n. s.,	
Otter Creek, Arkansas.	
5. <i>Ceratichthys vigilax</i> , n. s.	
Otter Creek, Arkansas.	

44.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. [Report on the] Fishes in *Sitgreaves' Report of an Expedition down the Zuñi and Colorado Rivers*. Washington. 1853. 8 .

GILA, B. & G.	148
1. <i>Gila robusta</i> , B. & G., pl. i (fishes)	148
Zuñi River.	
2. <i>Gila elegans</i> , B. & G., pl. ii (fishes)	150
Zuñi River.	
3. <i>Gila gracilis</i> , B. & G., pl. iii (fishes)	151
Zuñi River.	

45.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. [Report on the] Reptiles in *Marcy and McClellan's Exploration of the Red River of Louisiana in the year 1852*. Washington, 1853. pp. 217-244.

SERPENTS.

CROTALUS, L.	217
<i>Crotalus confluentus</i> , Say, pl. i	217
Western Texas.	
EUTAÏNIA, B. & G.	219
<i>Eutaïnia proxima</i> , B. & G., pl. ii	220
Red River.	
<i>Eutaïnia marciiana</i> , B. & G., pl. iii	221
Open prairie, Red River.	
HETERODON, Pal. de B.	222
<i>Heterodon nasicus</i> , B. & G., pl. iv	222
Sonora and copper mines of the Gila.	
PITUOPHIS, Holbr.	225
<i>Pituophis McClellani</i> , B. & G., pl. v	225
Red River, Arkansas.	
SCOTOPHIS, B. & G.	226
<i>Scotophis latus</i> , B. & G., pl. vi	227
Red River, Arkansas.	
OPHIBOLUS, B. & G.	
<i>Ophibolus Sayi</i> , B. & G., pl. vii	228
Cache Creek and Red River.	
<i>Ophibolus gentilis</i> , B. & G., pl. viii	229
Red River, Arkansas, and Prairie Mer Rouge, Louisiana; James Fairie.	
MASTICOPHIS, B. & G.	
<i>Masticophis flavigularis</i> , B. & G.,	230
Red River, Arkansas.	
LEPTOPHIS, Bell.	232
<i>Leptophis majalis</i> , B. & G., pl. ix	232

LIZARDS.

PHRYNOSOMA, Wiegmi	233
<i>Phrynosoma cornutum</i> , Gray	233
South Fork of Red River.	
CROTAPHYTUS, Holbr.	234
<i>Crotaphytus collaris</i> , Holbr.	235
South Fork of Red River.	
HOLBROOKIA, Girard	235
<i>Holbrookia maculata</i> , Grd	236
Canadian River, Arkansas.	
SCELOPORUS, Wiegmi	236
<i>Sceloporus consobrinus</i> , n. s., pl. x, fig. 5-12	237
Red River, Arkansas.	
CNEMIDOPHORUS, Wagl	239
<i>Cnemidophorus guttaris</i> , B. & G., pl. x, fig. 11	239
Red River, Arkansas.	
LYGOSOMA, Gray	240
<i>Lygosoma lateralis</i> , Duml. & Bibr.	241
Cache Creek, Arkansas.	

1853. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

BATRACHIANS.

<i>Bufo cognatus</i> , Say, pl. xi	242
Arkansas.	
<i>Rana pipiens</i> , Latr.	243
Arkansas.	

46.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. [Report on the] Fishes in *Marcy and McClellan's Exploration of the Red River of Louisiana in the year 1852*. Washington. 1853, pp. 245-252.

<i>Pomotis longulus</i> , B. & G., pl. xii	245
Otter Creek, Arkansas.	
<i>Pomotis brevicaeps</i> , B. & G., pl. xiii	246
Otter Creek, Arkansas.	
<i>Leuciscus vigilax</i> , B. & G., pl. xiv, fig. 1-4	248
Otter Creek, Arkansas.	
<i>Leuciscus bubalinus</i> , B. & G., pl. xiv, fig. 5-8	249
Otter Creek, Arkansas.	
<i>Leuciscus tuteensis</i> , B. & G., pl. xiv, fig. 9-12	251
Otter Creek, Arkansas.	

47.

1853. GIRARD, CHARLES. [Report on the] Orthopterous Insects in *Marcy and McClellan's Exploration of the Red River of Louisiana in 1852*. Washington. 8vo. 1853.

DAHINIA, Hald	257
<i>Dahinia brevipes</i> , Hald., pl. xv, figs. 9-13	257
Red River, Arkansas.	
ANABRUS, Hald	259
<i>Anabrus Haldemanni</i> , n. s., pl. xv, figs. 5-8	259
Red River, Arkansas.	
BRACHYPEPLUS, Charp	260
<i>Brachypeplus magnus</i> , n. s., pl. xv, figs. 1-4	260
Red River, Arkansas.	
<i>Brachypeplus vircescens</i> , Charp.	261
Red River, Arkansas.	

48.

1853. GIRARD, CHARLES. [Report on the] Arachnidians in *Marcy and McClellan's Exploration of the Red River of Louisiana in 1852*. Washington. 8vo. 1853.

ARANIDÆ.

<i>Mygale hentzi</i> , n. s., pl. xvi, figs. 1-3	262
Arkansas.	
<i>Lycosa pilosa</i> , n. s., pl. xvi, figs. 4 and 5	263
Canadian River.	

TARENTULIDÆ.

<i>Thelyphonus exubitator</i> , n. s., pl. xvii, figs. 1-4	265
Arkansas.	

SCORPIONIDÆ.

<i>Scorpio (Telygonus) boreus</i> , n. s., pl. xvii, figs. 5-7	267
Valley of Great Salt Lake; Stansbury. Eagle Pass, Texas. A. Schott.	
<i>Scorpio (Atrous) Californicus</i> , n. s.	269
California; Dr. Stone.	
<i>Scorpio (Atrous) Sayi</i> , n. s.	269
Pensacola, Florida. Drs. Jeffrey and Kern.	

PSEUDOSCORPIONIDÆ.

<i>Galvodes subulata</i> , Say	270
Arkansas.	

49.

1853. GIRARD, CHARLES. [Report on the] Myriapods in *Marcy and McClellan's Exploration of the Red River of Louisiana in 1852*. Pl. xviii. Washington, 8. 1853.
- Scelopendra heros*, n. sp., pl. xviii..... 272
Sweet Water Creek, and between South Fork of Red River and Otter Creek.
- Julus ornatus*, n. s. 274
Arkansas.
- Julus atratus*, n. s. 274
Prairie Mer Rouge, Louisiana. James Fairie.

50.

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. "A communication * * * upon a species of frog, and another of toad, * * * recently described from specimens in the Herpetological Collections of the U. S. Exploring Expedition."
- Proceedings Academy Natural Sciences Philadelphia*, vi, 1853, pp. 378-379.
Read Aug. 9, 1853.
- Rana pretiosa*, n. s. 378
Puget Sound.
- Bufo Columbiensis*, n. s.
Columbia River.

51.

1853. GIRARD, CHARLES. On a New Species of the Genus *Salmo*.
- Proceedings Academy of Natural Sciences Philadelphia*, vi, 380-1, 1853.
- Salmo sebago*, n. s. 380
Southern part of the State of Maine.

52.

1853. GIRARD, CHARLES. Observations upon the American Species of the Genus *Esox*.
- Proceedings Academy of Natural Sciences Philadelphia*, vi, 386. 1853.
- A comparative examination of *Esox estor* and *Esox reticulatus*.

53.

1853. GIRARD, CHARLES. Note upon a Nest Constructed by Catfish.
- Proceedings Academy of Natural Sciences Philadelphia*, vi, 387. 1853.
- Observations at Schuylkill Falls, Pennsylvania.

54.

1853. GIRARD, CHARLES. Publications of Learned Societies and Periodicals in the Library of the Smithsonian Institution.
- Smithsonian Contributions to Knowledge*, vii, 1853, Appendix. Part ii, *Ibid.*, viii, 1856.
- STIMPSONIA, n. g.
- Stimpsonia aurantiaca*, n. s. 367
Charleston Harbor.
- Planocera nebulosa*, n. s.
Charleston Harbor, Lieutenant Kurtz and Wm. Stimpson.
- IMOGINE, n. g.
- Imogine oculifera*, n. s.
Sullivan's Island, South Carolina; Charles Girard.

1853. GIRARD, CHARLES. Descriptions of New Nemertean and Planarians from the coast of the Carolinas.

Proceedings Academy of Natural Sciences Philadelphia, vi, 365-7, 1853.

<i>Bolasia</i> Kurtzi, n. s.	366
Charleston Harbor.	
RENIERIA, n. g.	
<i>Renieria rubra</i> , n. s.	
Charleston Harbor.	
LEODES, n. g.	
<i>Leodes striolenta</i> , n. s.	
Charleston Harbor.	
<i>Amphiporus sanguineus</i> , n. s.	
Charleston Harbor.	
<i>Meckelia pochontus</i> , n. s.	
Coast of North and South Carolina.	
<i>Meckelia lizzie</i> , n. s.	367
Charleston Harbor.	

1853. GIRARD, CHARLES, with SPENCER F. BAIRD. Description of New Species of Fishes collected by Mr. John H. Clark, on the U. S. and Mexican Boundary Survey, under Lt. Col. Jas. D. Graham.

Proceedings Academy Natural Sciences Philadelphia, vi, 1853, pp. 387-390. Read Aug. 30, 1853.

<i>Pileonia carbonaria</i> , n. s.	387
Rio Salado, Texas.	
<i>Bolrasoma lepida</i> , n. s.	388
Upper tributaries of the Rio Nueces, Texas.	
<i>Pomatus aquilensis</i> , n. s.	
Eagle Pass, Texas.	
<i>Catostomus latipinnis</i> , n. s.	
Rio San Pedro of the Rio Gila.	
<i>Gila Emoryi</i> , n. s.	
Near mouth of the Gila.	
<i>Gila Grahami</i> , n. s.	389
Rio San Pedro of the Gila.	
<i>Fundulus grandis</i> , n. s.	
Brackish waters in the vicinity of Indianola, Texas.	
<i>Fundulus tenellus</i> , n. s.	
Prairie Mer Rouge, Louisiana, and Russellville, Kentucky.	
<i>Hydrargyra similis</i> , n. s.	
Brackish waters in the vicinity of Indianola.	
<i>Cyprinodon elegans</i> , n. s.	
Rio Grand del Norte.	
<i>Cyprinodon macularius</i> , n. s.	
Rio Gila.	
<i>Cyprinodon borinus</i> , n. s.	
Leon's Springs, Rio Grande del Norte.	
<i>Cyprinodon gibbosus</i> , n. s.	390
Brackish waters of Indianola.	
<i>Heterandria affinis</i> , n. s.	
Rio Medina and Rio Salado.	
<i>Heterandria nobilis</i> , n. s.	
Leona and Comanche Springs.	
<i>Heterandria patruelis</i> , n. s.	
Hydrographic basin of the Rio Nueces.	
<i>Heterandria occidentalis</i> , n. s.	
Rio Santa Cruz of the Rio Gila.	

57.

1853. GIRARD, CHARLES. Descriptions of New Species of Reptiles collected by the U. S. Exploring Expedition under the command of Capt. Charles Wilkes, U. S. N. Second Part.—Including the species of Batrachians exotic to North America.

Proceedings Academy of Natural Sciences Philadelphia, vi, 120-24, 1853.*

RANIDÆ.

LEPTODACTYLUS, Fitz	420
<i>Leptodactylus ocellatus</i> , Grd	420
<i>Leptodactylus labyrinthicus</i> , Grd	420
<i>Leptodactylus typhonioides</i> , Fitz	420
<i>Leptodactylus serialis</i> , n. s.	421
Rio de Janeiro, Brazil.	
<i>Leptodactylus caliginosus</i> , n. s.	422
Rio de Janeiro, Brazil.	
<i>Cystignathus</i> , Wagl	420
<i>Cystignathus macroglossus</i> , Dum. & B.	420
<i>Cystignathus gracilis</i> , Dum. & B.	420
<i>Cystignathus roseus</i> , Dum. & B.	420
<i>Cystignathus parvulus</i> , n. s.	422
Rio de Janeiro, Brazil.	
<i>Cystignathus nebulosus</i> , n. s.	422
Valparaiso, Chile.	
PLEURODEMA, Tsch	420
<i>Pleurodema arunco</i> , Grd	420
<i>Pleurodema bibroni</i> , Tsch	420
<i>Pleurodema bufonium</i> , Bell	420
<i>Pleurodema Darwini</i> , Bell	420
<i>Pleurodema elegans</i> , Bell	420
<i>Pleurodema nodosa</i> , Grd	420
CRINIA, Tsch	420
<i>Crinia georgiana</i> , Tsch	420
Australia.	
RANIDELLA, n. g.	422
<i>Ranidella signifera</i> , n. s.	422
New Holland.	
WAGLERIA, n. g.	422
<i>Wagleria peroni</i> , Grd	422
New Holland.	
<i>Wagleria dorsalis</i> , Grd	422
New Holland.	
KASSINA, n. g.	422
<i>Kassina senegalensis</i> , Grd	422
Western Africa.	

HYLÆ.

RANOIDEA, Tsch	422
<i>Ranoidea resplendens</i> , n. s.	422
Wollongong Illawara, near the coast.	
<i>Ranoidea flavoviridis</i> , n. s.	422
Wollongong Illawara, about fresh-water streams.	
HYLARANA, Tsch	423
<i>Hylarana mindanensis</i> , n. s.	423
Caldera on Mindanao.	
<i>Hylarana erythraea</i> , Grd	423
<i>Hylarana chalconota</i> , Grd	423
<i>Hylarana waigiensis</i> , Grd	423
HALOPHILA, n. g.	423
<i>Halophila heros</i> , n. s.	423
Sebuca, Fiji Islands.	
<i>Halophila vitiensis</i> , n. s.	423
Sebuca, Fiji Islands.	

* See No. 37—the first part.

1853. GIRARD, CHARLES—Continued.

<i>Hyalodes parvus</i> , n. s.	423
Rio de Janeiro, Brazil.	
<i>Elosia bufonina</i> , n. s.	423
Rio de Janeiro, Brazil.	
<i>Elosia romerina</i> , n. s.	423
Rio de Janeiro, Brazil.	
BUFONIDÆ.	
<i>Rhinoderma signifera</i> , n. s.	424
Rio de Janeiro, Brazil.	
<i>Bufo lugubricans</i> , n. s.	424
Rio de Janeiro, Brazil.	
<i>Bufo gracilis</i> , n. s.	424
Rio de Janeiro, Brazil.	
BUFONELLA, n. g.	424
<i>Bufoella crucifera</i> , n. s.	424
New Holland.	
METACUS, n. g.	424
<i>Metacus timidus</i> , n. s.	424
Valparaiso, Chile.	

58.

1854. GIRARD, CHARLES. Embryology of Planocera elliptica.

Journal Academy of Natural Sciences. 2 Ser., ii, 307-25, 1854. (Three plates.)

59.

1854. GIRARD, CHARLES. Researches | upon | Nemerteans and Planarians. | by | Charles Girard, | corresponding member of the Academy of Natural Sciences, Philadelphia, | the Boston Society of Natural History, and the Lyceum of Natural | History of New York, member of the American Association | for the Advancement of Science, and the | National Institute of Washington | I | Embryonic Development of Planocera Elliptica. | [With Preliminary Remarks upon the general Plan of that Work.] Merrilow and Thompson, Philadelphia. 1-27. 1854.

60.

1854. GIRARD, CHARLES. On a New Entomostracan of the Family Linnadidæ inhabiting the Western Waters.

Proceedings Academy of Natural Sciences Philadelphia, vii, 3, 1854.

LIMNADILLA, n. g.	3
<i>Limnadella Kitei</i> , n. s.	
Cincinnati, Ohio; Thomas Kite.	

61.

1854. GIRARD, CHARLES, with SPENCER F. BAIRD. Description of New Species of Fishes collected in Texas, New Mexico, and Sonora, by John H. Clark, on the United States and Mexican Boundary Survey, and in Texas by Capt. Stewart Van Vliet, U. S. A. Second Part.

Proceedings Academy Natural Sciences Philadelphia, vii, 1854, pp. 24-29. Presented for publication March 7, ordered printed March 28, 1854.

<i>Pomotis speciosus</i> , n. s.	24
Brownsville, Texas.	
<i>Pomotis fallax</i> , n. s.	
Elm Creek, Texas.	
<i>Pomotis convexifrons</i> , n. s.	
Rio Cibolo, Texas.	
<i>Pomotis nefastus</i> , n. s.	
Rio Cibolo and Rio Silado, Texas.	
<i>Pomotis heros</i> , n. s.	25
Rio Cibolo, Texas.	

1851. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

<i>Bryttus longulus</i> , n. s. Rio Cibolo, Texas.	
<i>Grystes nuceensis</i> , n. s. Rio Frio and Rio Nueces, Texas.	
HERICHTHYS, n. g.	
<i>Herichthys cyanoquittatus</i> , n. s. Brownsville, Texas.	
AILURICHTHYS, n. g.	26
<i>Ailurichthys narinus</i> , n. s. Indianola, Texas. R.	
<i>Arius equestris</i> , n. s. Indianola, Texas. R.	
<i>Pimelodus affinis</i> , n. s. Rio Grande del Norte.	
ASTYANAX, n. g.	
<i>Astyanax argentatus</i> , n. s.	27
Rio Nueces, Texas.	
<i>Catostomus congestus</i> , n. s. Rio Salado.	
<i>Catostomus Clarki</i> , n. s. Rio Santa Cruz, Gila.	
<i>Catostomus plebeius</i> , n. s.	28
Rio Mimbres of Rio Gila.	
<i>Catostomus insignis</i> , n. s. Rio San Pedro of Rio Gila.	
<i>Carpiodes tumidus</i> , n. s. Near Fort Brown, Texas.	
<i>Gila gibbosa</i> , n. s. Rio Santa Cruz.	
<i>Gila pulchella</i> , n. s.	29
Rio Mimbres of Rio Gila.	

62.

1851. GIRARD, CHARLES. Notice of a new species of Salmonidae from the north-eastern part of the United States.

Proceedings Academy Natural Sciences Philadelphia, vii, 1851, 85-86.

<i>Salmo Gloveri</i> , n. s.	85-86
Union River, Maine, M. Townsend Glover.	

63.

1854. GIRARD, CHARLES. A list of the North American Bufonids, with diagnosis of new species.

Proceedings Academy Natural Sciences Philadelphia, vii, 86-88. 1854.

This paper, is a *résumé* of more complete descriptions intended for the Reports on Reptiles (Nos. 94 and 95), which, for reasons alluded to further on, were not published in full.

BUFO AMERICANUS, Lac.	86
All the other States from Maine to Virginia, Valley of Mississippi, Northwest, and Canada.	
<i>Bufo lentiginosus</i> , Holbr.	86
Seacoast from South Carolina to Florida.	
<i>Bufo Woodhousi</i> , n. s.	86
New Mexico.	
<i>Bufo cognatus</i> , Say.	86
From Nebraska to Coahuila, Mexico.	
<i>Bufo speciosus</i> , n. s.	86
Rio Grande del Norte.	
<i>Bufo punctatus</i> , B. & G.	87
Devil's River Valley and Coahuila.	
<i>Bufo debilis</i> , n. s.	87
Rio Grande del Norte.	
<i>Bufo nebulifer</i> , n. s.	87
Valley of Rio Grande del Norte.	
BUFO COLUMBIENSIS, B. & G.	87
Columbia River.	

1854. GIRARD, CHARLES—Continued.

<i>Bufo boreas</i> , B. & G. Columbia River and Puget Sound.	
<i>Bufo halophilus</i> , B. & G. California.	87
<i>Bufo queirozii</i> , Holbr. Charleston, South Carolina.	87
<i>Bufo insidiator</i> , n. s. Chilmahua, Dr. Webb.	88
<i>Engystoma Carolinense</i> , Holbr. South Carolina, Georgia, Florida, Louisiana, and Mississippi.	88
<i>Engystoma rugosum</i> , Dum. & B. (doubtful as North American species).	88

64.

1854. GIRARD, CHARLES. Descriptions of New Fishes collected by Dr. A. L. Heermann, naturalist attached to the survey of the Pacific Railroad route under Lieut. R. S. Williamson, U. S. Army.

Proceedings Natural Academy of Sciences Philadelphia, vii, 129-139. 1854.

PERCIDÆ.

<i>Centrarchus intermedius</i> , n. s. Sacramento River.	129
---	-----

COTTIDÆ.

<i>Cottopsis gulosus</i> , n. s. Rio San Joaquin.	129
ASPICOTTUS, n. g.	130
<i>Aspicottus bison</i> , n. s. San Francisco.	130
LEPTOCOTTUS, n. g.	130
<i>Leptocottus armatus</i> , n. s. San Francisco.	130
SCORPENICHTHYS, n. g.	131
<i>Scorpenichthys marmoratus</i> , n. s.	131
SCORPENIDÆ.	
<i>Sebastes auriculatus</i> , n. s. San Francisco.	131
HETEROLEPIDÆ, n. fam.	132
CHIRUS, Stell.	132
<i>Chirus pictus</i> , n. s. San Francisco.	132
<i>Chirus guttatus</i> , n. s. San Francisco.	132
OPHIODON, n. g.	133
<i>Ophiodon elongatus</i> , n. s. San Francisco.	133
GASTEROSTEIDÆ	133
<i>Gasterosteus Williamsoni</i> , n. s. Williamson's Pass, California.	133
<i>Gasterosteus microcephalus</i> , n. s. San Joaquin Valley.	133
ATHERINIDÆ	134
ATHERINOPSIS, n. g.	134
<i>Atherinopsis Californiensis</i> , n. s. San Francisco.	134
GOBIDÆ	134
<i>Gobius gracilis</i> , n. s. San Francisco.	134
EMBIOTOCAIDÆ	134
<i>Embiotoca lineata</i> , n. s. San Francisco.	134
<i>Amphistichus similis</i> , n. s. San Francisco.	135
<i>Amphistichus Heermanni</i> , n. s. San Francisco.	135

1851. GIRARD, CHARLES—Continued.

CYPRINIDÆ.....	135
<i>Gila conocephala</i> , B. & G. (n. s.)	136
Rio San Joaquin.	
POGONICHTHYS, n. g.	136
<i>Pogonichthys inaequilobus</i> , B. & G. (n. s.).....	136
San Joaquin River.	
<i>Pogonichthys symmetricus</i> , B. & G. (n. s.)	136
Fort Miller, San Joaquin Valley.	
LAVINIA, n. g.	137
<i>Lavinia exilicauda</i> , B. & G. (n. s.)	137
Sacramento River.	
<i>Lavinia crassicauda</i> , B. & G. (n. s.)	137
Rio San Joaquin.	
<i>Lavinia conformis</i> , B. & G. (n. s.).....	137
Posa Creek, California.	
<i>Leucosomus occidentalis</i> , B. & G. (n. s.)	137
Posa Creek and Grove Creek, California.	
CLUPEIDÆ	138
<i>Clupea mirabilis</i> , n. s.	138
San Francisco.	
<i>Meletta cerulea</i> , n. s.	138
San Francisco.	
<i>Engraulis mordax</i> , n. s.	139
PLEURONECTIDÆ	138
PLEURONICHTHYS, n. g.	139
<i>Pleuronichthys cænosus</i>	139
San Francisco.	
<i>Platichthys</i> , n. g.	139
<i>Platichthys rugosus</i> , n. s.	139
San Francisco.	
PAROPHRYNS, n. g.	139
<i>Parophryns vetulus</i> , n. s.	139
San Francisco.	
PSETTICHTHYS, n. g.	140
<i>Psettichthys melanostictus</i> , n. s.	140
San Francisco.	

65.

1854. GIRARD, CHARLES. Enumeration of the Species of Marine Fishes collected at San Francisco, Cal., by Dr. C. B. R. Kennerly, naturalist, attached to the Survey of the Pacific Railroad route, under Lieut. A. W. Whipple.

Proceedings Academy of Natural Sciences Philadelphia, vii, 141-2. 1854.

<i>Chirus constellatus</i> , n. s.	141
<i>Atherinopsis Californiensis</i> , Grd.	141
PORICHTHYS, n. g.	
<i>Poricthys notatus</i> , n. s.	
<i>Embiotoca lineata</i> , Grd.	
<i>Amphistichus argentatus</i> , Ag.	
<i>Holemotus rhodoterus</i> , Ag.	
<i>Meletta corrulea</i> , Grd.	
<i>Gadus proximus</i> , n. s.	
<i>Parophryns vetulus</i> , Grd.	142
<i>Psettichthys sordidus</i> , n. s.	142

66.

1854. GIRARD, CHARLES. Observations upon a collection of Fishes made on the Pacific Coast of the United States by Lieut. W. P. Trowbridge, U. S. Army, for the Museum of the Smithsonian Institution.

Proceedings Academy of Natural Sciences Philadelphia, vii, 142-56. 1854.

PERCIDÆ.

<i>Labrax nebulifer</i> , n. s.	142
Monterey, California.	
<i>Labrax clathratus</i> , n. s.	142
San Diego, California.	

1854. GIRARD, CHARLES—Continued.

TRACHINIDÆ.	
<i>Heterostichus</i> , n. g.	144
<i>Heterostichus rostratus</i> , n. s.	143
San Diego, California.	
SPHYRÆNIDÆ.	
<i>Sphyræna argentea</i> , n. s.	144
San Diego, California.	
COTTIDÆ.	
<i>Coltopsis parvus</i> , n. s.	144
Presidio, California.	
<i>Leptocentrus armatus</i> , Grd.	145
San Diego, California.	
<i>Scorpenichthys marmoratus</i> , Grd.	145
<i>Scorpenichthys lateralis</i> , n. s.	145
San Luis Obispo, California.	
SCORPAENIDÆ.	
<i>Scorparna guttata</i> , n. s.	145
Monterey, California.	
<i>Sebastes auriculatus</i> , Grd.	146
Presidio, California.	
<i>Sebastes rosaceus</i> , n. s.	146
San Diego, California.	
<i>Sebastes fasciatus</i> , n. s.	146
Presidio, California.	
HETEROLEPIDIDÆ.	
<i>Chirus guttatus</i> , Grd.	147
Presidio, California.	
<i>Chirus constellatus</i> , Grd.	147
Presidio, California.	
GASTEROSTEIDÆ.	
<i>Gasterosteus plebius</i> , n. s.	147
Presidio, California.	
<i>Gasterosteus inopinatus</i> , n. s.	147
Presidio, California.	
SCLENIDÆ.	
<i>Umbrina undulata</i> , n. s.	148
San Diego, California.	
<i>Glyphisodon rubicundus</i> , n. s.	148
Monterey, California.	
SCOMBERESCIDÆ.	
<i>Belone exilis</i> , n. s.	149
San Diego, California.	
BLENNIDÆ.	
<i>Blennius gentilis</i> , n. s.	149
Monterey, California.	
<i>Gunnellus ornatus</i> , n. s.	149
Presidio, California.	
APODICHTHYS, n. g.	150
<i>Apodichthys flavidus</i> , n. s.	150
Presidio, California.	
<i>Apodichthys violaceus</i> , n. s.	150
San Luis Obispo, California.	
<i>Auarreicus felis</i> , n. s.	150
Monterey, California.	
LOPHIDÆ.	
<i>Pocichthys notatus</i> , Grd.	151
Monterey, California.	
LABRIDÆ.	
<i>Julis modestus</i> , n. s.	151
San Diego, California.	
ATHERINIDÆ.	
<i>Atherinopsis Californiensis</i> , Grd.	151
Presidio, California.	

1854. GIRARD, CHARLES—Continued.

EMBLOTOCODÆ.	
<i>Embiotoca Jacksoni</i> , Ag.	151
Presidio, California.	
<i>Embiotoca lineata</i> , Grd.	151
San Diego, California.	
<i>Embiotoca Cassidii</i> , n. s.	151
San Diego, California.	
<i>Haleconotus rhodotercus</i> , Ag.	152
San Diego, California.	
<i>Haleconotus Trocebridii</i> , n. s.	152
<i>Haleconotus megalops</i> , n. s.	152
Presidio, California.	
PHANERODON, n. g.	153
<i>Phanerodon furcatus</i> , n. s.	153
Presidio, California.	
<i>Amphistichus argenteus</i> , Ag.	153
CYPRINIDÆ.	
<i>Pogonichthys argyreusius</i> , n. s.	153
Presidio, California.	
CYPRINODONTIDÆ.	
<i>Fundulus parvipinnis</i> , n. s.	154
San Diego, California.	
GADIDÆ.	
<i>Gadus proximus</i> , Grd.	154
Presidio, California.	
CLUPEIDÆ.	
<i>Clupea mirabilis</i> , Grd.	154
Presidio, California.	
<i>Meletta cerulea</i> , Grd.	154
Presidio, California.	
<i>Engraulis mordax</i> , Grd.	154
San Diego, California.	
<i>Engraulis delicatissimus</i> , n. s.	154
San Diego, California.	
SALMONIDÆ.	
<i>Argentina pretiosa</i> , n. s.	155
Presidio, California.	
PLEURONECTIDÆ.	
<i>Pleuronectes maculosus</i> , n. s.	155
San Diego, California.	
<i>Platichthys rugosus</i> , Grd.	155
Presidio, California.	
<i>Parophrys vetulus</i> , Grd.	155
Presidio, California.	
<i>Psettichthys sordidus</i> , Grd.	155
Presidio, California.	
DISCOBOLÆ.	
<i>Lepadogaster reticulatus</i> , n. s.	156
San Luis Obispo, California.	
LOPHOBRANCHIÆ.	
<i>Syngnathus brevirostris</i> , n. s.	156
San Diego, California.	
<i>Syngnathus leptorhynchus</i> , n. s.	156
San Diego, California.	

67.

1854. GIRARD, CHARLES, with SPENCER F. BAIRD. Notice of a New Genus of Cyprinide.

Proceedings Academy of Natural Sciences Philadelphia, vii, 1854, p. 156.

COCHLOGNATHUS, n. g.	156
<i>Cochlognathus ornatus</i> , n. s.	
Brownsville, Texas.	

68.

1854. GIRARD, CHARLES. Characteristics of some Cartilaginous Fishes of the Pacific Coast of North America.

Proceedings Academy of Natural Sciences Philadelphia, vii, 196-7. 1854.

<i>Cestracion francisci</i> , n. s.	196
Monterey Bay, California, Lieut. W. P. Trowbridge, U. S. Army.	
<i>Triakis semifasciata</i> , n. s.	
San Francisco Bay, California, Lieut. W. P. Trowbridge, U. S. Army.	
<i>Spinaax (Acanthias) Suckleyi</i> , n. s.	
Puget Sound, Dr. George Suckley, U. S. Army.	
<i>Raja binoculata</i> , n. s.	197
San Francisco, California, Dr. A. L. Heermann.	

69.

1854. GIRARD, CHARLES. Abstract of a report to Lieut. James M. Gilliss, U. S. N., upon the fishes collected during the U. S. N. Astronomical Expedition to Chile.

Proceedings Academy of Natural Sciences Philadelphia, vii, 197-9. 1854.

PERCIDE.

PERCICHTHYS, n. g.	
<i>Percichthys chilensis</i> , n. s.	197
Chilian fresh waters.	
<i>Percichthys melanops</i> , n. s.	
Rio de Mayo, Chile.	
PERCILIA, n. g.	
<i>Percilia Gillissi</i> , n. s.	
Rio de Mayo, Chile.	
BASILICHTHYS, n. g.	
<i>Basilichthys microlepidotus</i> , n. s.	198
Chilian fresh waters.	
NEMATOGENYS, n. g.	
<i>Nematogenys inermis</i> , n. s.	
Chilian fresh waters.	
<i>Alosa musica</i> , n. s.	199
Caldera Bay, Chile.	
<i>Engraulis pulchellus</i> , n. s.	
Caldera Bay, Chile.	
CHEIRODON, n. g.	
<i>Cheirodon pisciculus</i> , n. s.	199
Santiago, Chile.	199
<i>Edellostoma polytrema</i> , n. s.	
Bay of Valparaiso, Chile.	

70.

1854. GIRARD, CHARLES. Abstract of a report to Lieut. James M. Gilliss, U. S. N., upon the reptiles collected during the U. S. N. Astronomical Expedition to Chile.

Proceedings Academy of Natural Sciences Philadelphia, vii, 226-7. 1854.

BATRACHIANS.

<i>Cystignathus tenuatus</i> , n. s.	226
Santiago, Chile.	
<i>Phyllobates auratus</i> , n. s.	226
Bay of Panama, Prof. C. B. Adams.	

OPHIDEANS.

<i>Elaps nigrocinetus</i> , n. s.	226
Taboga, Bay of Panama.	
<i>Dryophis vittatus</i> , n. s.	226
Taboga, Bay of Panama.	

1854. GIRARD, CHARLES—Continued.

<i>Tachymenis chilensis</i> , n. s.	226
Santiago, Chile.	
TÆNIOPHIS, n. g.	
<i>Tæniophis tautilus</i> , n. s.	227
Santiago, Chile.	
SAURIANS.	
<i>Proctotretus semoratus</i> , n. s.	227
Santiago, Chile.	
<i>Proctotretus Stantoni</i> , n. s.	227
Santiago, Chile.	

71.

1854. GIRARD, CHARLES. Description of some New Species of Fishes from the State of Massachusetts.

Proceedings Boston Society Natural History, v, 40-41. 1854.

<i>Pomotis obesus</i> , n. s.	40
Charles River, S. F. Baird.	
<i>Boleosoma fusiforme</i> , n. s.	41
Farmingham, S. F. Baird.	
<i>Esox ornatus</i> , n. s.	
Farmingham, S. F. Baird.	

72.

1854. GIRARD, CHARLES. On the family of Embiotocidae and its mode of development.

Proceedings Boston Society of Natural History, v, 81-2. 1854.

An abstract of the paper, No. 80.

73.

1854. GIRARD, CHARLES. On *Placobranchus simplex*.

Proceedings Boston Society of Natural History, v, 89, 1854.

<i>Placobranchus simplex</i> , n. s.	89
Chelsea Beach, Massachusetts: Dr. Girard.	

74.

1854. GIRARD, CHARLES. On *Arenicola natalia*.

Proceedings Boston Society of Natural History, v, 88-91, 1854.

<i>Arenicola natalis</i> , n. s.	88
Chelsea Beach, Massachusetts.	

75.

1854. GIRARD, CHARLES. On a Specimen of *Storeria Dekayi* from the Vicinity of Cambridge, Massachusetts.

Proceedings Boston Society of Natural History, v, 89, 1854.

76.

1854. GIRARD, CHARLES. Dendrocoela (Planariæ and Nemertidæ) in Stimpson's Synopsis of the Marine Invertebrates of Grand Manan.

Smithsonian Contributions to Knowledge, vi, 27, 1851.

PLANARIÆ.

<i>Typhlolepta acuta</i> , n. s.	27
Island of Grand Manan: Dr. Stimpson.	
<i>Leptoplana ellipsoides</i> , n. s., fig. 16.	27
Island of Grand Manan: Dr. Stimpson.	

1854. GIRARD, CHARLES—Continued.

NEMERTIDÆ.

<i>Pocidion affinis</i> , n. s.	28
Island of Grand Manan; Dr. Stimpson.	
NAREDA, n. g.	
<i>Nareda superba</i> , n. s., fig. 17	28
Island of Grand Manan; Dr. Stimpson.	
<i>Nemertes obscura</i> , Desor.	28
Island of Grand Manan; Dr. Stimpson.	
<i>Tetrastemma serpentina</i> , Grd.	28
Island of Grand Manan; Dr. Stimpson.	
<i>Ouatoplet Stimpsoni</i> , n. s., fig. 18.	28
Island of Grand Manan; Dr. Stimpson.	

77.

1855. GIRARD, CHARLES. Report to Lieut. James M. Gilliss, U. S. N., upon the reptiles collected during the U. S. N. Astronomical Expedition to Chile.
Report of the U. S. Naval Astronomical Expedition to the Southern Hemisphere, ii, 207-20. 1855.

BATRACHIA.

Family <i>Ranidae</i>	207
CYSTIGNATHUS, Wagler	207
<i>Cystignathus tenuis</i> , Grd., pl. xxxv, figs. 8-11.	207
Family <i>Hylidae</i>	208
PHYLLOBATES, Dum. & B.	208
<i>Phyllobates auratus</i> , Grd., pl. xxxiv, figs. 12-15	209

OPHIDIA.

Family <i>Viperidae</i>	209
ELAPS, Schu.	209
<i>Elaps nigrocapitatus</i> , Grd., pl. xxxv, figs. 1-6.	210
Family <i>Oxycephalidae</i>	211
DRYOPHIS, Fitz.	211
<i>Dryophis vittatus</i> , Grd., pl. xxxvi, figs. 1-6	211
Family <i>Colubridæ</i>	213
TACHYMENIS, Wieg.	213
<i>Tachymenis chilensis</i> , Grd., pl. xxxvii, figs. 1-6	213
TÆNIOPHIS, Grd.	215
<i>Tæniophis tantillus</i> , Grd., pl. xxxvii, figs. 7-12.	215

SACRIA.

Family <i>Stellionida</i>	217
PROCTOTRETUS, Dum. & B.	217
<i>Proctotretus tenuis</i> , Dum. & B., pl. xi, figs. 1-4	219
<i>Proctotretus femoratus</i> , Grd., pl. xi, figs. 5-12	221
<i>Proctotretus Stantoni</i> , Grd., pl. xi, figs. 13-20.	223
Family <i>Lucertidae</i>	223
APOROMERA, Dum. & B.	223
<i>Aporomera ornata</i> , Dum. & B., pl. xxxix, figs. 1-4	223
CNEMIDOPHORUS, Wagl.	226
<i>Cnemidophorus presignis</i> , B. & G., pl. xxxviii, figs. 1-5.	227

78.

1855. GIRARD, CHARLES. Report to Lieut. James M. Gilliss, U. S. N., upon the fishes collected during the U. S. N. Astronomical Expedition to Chile.
Report of the U. S. Naval Astronomical Expedition to the Southern Hemisphere, ii, 230-53. 1855.

Family <i>Percidae</i>	230
PERCICHTHYS, Girard.	230
<i>Percichthys chilensis</i> , Grd., pl. xxxix, figs. 1-4	231

1855. GIRARD, CHARLES—Continued.

<i>Percichthys melanops</i> , Grd., pl. xxx, figs. 1-5.....	233
PERCILIA, Girard.....	235
<i>Percilia Gillissi</i> , Grd., pl. xxix, figs. 5-9.....	236
Family <i>Atherinidae</i>	237
BASILICHTHYS, Girard.....	238
<i>Basilichthys microlepidotus</i> , Grd., pl. xxx, figs. 6-9.....	238
Family <i>Siluridae</i>	240
NEMATOGENYS, Girard.....	240
<i>Nematogenys inermis</i> , Grd., pl. xxxii, figs. 1-3.....	240
TRICHOMYCTERUS (Humb.), Valenc.....	242
<i>Trichomycterus maculatus</i> , Cuv. et Val., pl. xxxiv, figs. 1-3.....	243
<i>Trichomycterus macreri</i> , n. s.....	245
Family <i>Chupeidae</i>	245
ALOSA, Cuv.....	245
<i>Alosa musiea</i> , Grd., pl. xxxi, figs. 1-4.....	246
ENGRAULIS, Cuv.....	247
<i>Engraulis pulchellus</i> , Grd., pl. xxxi, figs. 5-9.....	247
Family <i>Characini</i>	249
CHEIRODON, Girard.....	249
<i>Cheirodon pisciculus</i> , Grd., pl. xxxiv, figs. 4-7.....	249
Family <i>Myxinoidea</i>	251
BDELLOSTOMA, Müll.....	251
<i>Bdellostoma polytrema</i> , Grd., pl. xxxiii, figs. 1-5.....	252

79.

1855. GIRARD, CHARLES. Report to Lieut. James M. Gilliss upon the Crustacea collected during the U. S. N. Astronomical Expedition to Chile.

Report of the U. S. Naval Astronomical Expedition to the Southern Hemisphere, ii, 254-62. 1855.

CRUSTACEA.

DECAPODA ANOMOURA.....	254
CENOBTIDÆ EGLEIDÆ.....	254
EGLEA, Leach.....	254
<i>Eglea levis</i> , Leach.....	255
<i>Eglea denticulata</i> , Nic.....	255
<i>Eglea intermedia</i> , Girard.....	255
DECAPODA MACROURA.....	259
PALÆMONIDÆ ALPEINÆ.....	259
RHYNCHOCINETUS, Edw.....	259
<i>Rhynchocinetus typus</i> , Edw.....	260

80.

1855. GIRARD, CHARLES. Notes upon the viviparous Fishes inhabiting the Pacific coast of North America, with an enumeration of the species observed.

Proceedings Academy of Natural Sciences Philadelphia, vii, 318-22. 1855.

From observations traced upon the genital apparatus of the female there exists an ovarian sheath or sack, which, during the early period of pregnancy, is an elongated and subcylindrical tube, containing the ovaries proper, two in number, each of which consisting of two, three, or more vascular membranes, attached by their upper edge to the upper floor or roof of the sheath, forming either one, two, or more pouches (according to the number of these membranes) of the same length as the sheath itself, widely open beneath, though not in a direct communication with one another, since the membranes hang loosely down, resting on the lower floor of the sheath.

The eggs are formed within the texture of the ovarian membranes themselves. We have examined the ovaries of *Enaichthys Heermanni*, when the sheath, within which they were contained, was not larger than an ordinary quill. Numerous eggs could be observed in a very immature state, appearing to the naked eye like minute dots. Under the microscope, they exhibited evident traces of the germinal vesicle, surrounded as yet with a very scanty supply of vitelline substance.

The sheath and the ovaries gradually increase in bulk, as the eggs themselves first increase in size and the embryos afterwards. The sheath is a muscular membrane chiefly, whilst the ovarian membranes, we have stated, are altogether vascular.

1855. GIRARD, CHARLES—Continued.

When mature, the eggs either fall into the space between the membranes or ovarian pouches, or else remain attached to the ovaries until the embryos issue out of them. We are inclined to think that they drop into the pouches as eggs. At any rate, we found very young embryos loosely contained in the ovarian pouches, when no trace of the egg membrane could be seen within the tissues of the ovaries in the shape of corpora lutea or graafian vesicles. Whatever be the case, numerous eggs or embryos may be observed within one pouch. The young thus remain together until grown to a considerable size, when, filling up the space in a more compact manner, the ovarian membranes, in their nature very expansive, will extend a fold between each embryo. In this manner every individual young, when removed sideways from the ovary, appears to the operator as if inclosed in a separate cavity, pouch, or follicle of the ovary, whilst, in reality, the membranes may be stretched out or extended, and the entire progeny loosened from all adherence or connection with them.

The male organs of generation consist of two spermaries, a right and a left, perfectly independent of each other, each having its separate duct, discharging their contents into an elongated cloaca, into which the bladder likewise empties its contents. This cloaca communicates with the exterior by a subcircular opening, the edge of which is rather protruding. Such is that apparatus—the same in its general structure as in the other osseous fishes. There is no sheath inclosing the two spermaries, and this fact throws a considerable light upon the morphology of the ovaries, the latter being in fact two in number, but so closely connected together as to simulate a single organ. Thus the general disposition, not the plan of structure, of these organs is adapted to the mode of reproduction—a single sheath being a more simple adaptation than two, one for each ovary.

How the mechanical act of fecundation takes place we are not prepared to say from direct observations; the eggs themselves must be fecundated within the ovarian sheath; a copulation of some sort is therefore required, and it is not improbable that at this period the eggs have dropped from the ovarian membranes into the pouches or spaces between these membranes, in which they are freely floating.

The hatching of the embryos takes place at an early period. After leaving the egg shell, they have an abdominal bag containing the remaining yolk, which is to be gradually absorbed during a period when neither the mouth nor the esophagus are formed; the fins having not yet appeared. The visual organs begin with a deposition of an external layer of black pigmentum, in every respect similar to the same organs in invertebrata. The head is anteriorly rounded, and the cleft of the mouth not yet apparent at the period when the fins begin to develop. The caudal has the start over all other fins; its posterior margin is first lanceolated, then rounded, with a convexity gradually diminishing until it is perfectly straight, when a gradual emargination commences, and from a slight crescent reaches the forked shape which it assumes in the adult. The soft and articulated portion of the dorsal and anal fins next assume a development reaching extraordinary portions, which they again gradually lose as soon as free from parental sheltering. The posterior portion of these fins is especially to be noticed, being longer and deeper than the anterior portion (the reverse of what we observe in the adult,) and extending generally beyond the base of the caudal fin, a character, therefore, not exclusively proper to the genus *Rhacochelius*. The spinous portions of the same fins, on the other hand, develop slowly and gradually, reaching their full growth at a late period. The ventrals and pectorals are likewise tardy in their appearance. The scales are fully developed before the young leave the ovary.

EMBLOTICA, Agass.....	320
<i>Embiotoca Jacksoni</i> , Agass.....	320
San Francisco, Dr. A. L. Heermann.....	
<i>Embiotoca Cassidi</i> , Grd.....	320
San Diego, California, Lieut. W. P. Trowbridge, U. S. A.....	
<i>Embiotoca Webbi</i> , n. s.....	320
San Diego, California, Lieut. W. P. Trowbridge, U. S. A.....	
<i>Embiotoca Uncata</i> , Grd.....	320
San Francisco Bay, Dr. A. L. Heermann.....	
<i>Embiotoca ornata</i> , n. s.....	321
San Diego, California, Lieut. W. P. Trowbridge, U. S. A.....	
<i>Embiotoca perspicillata</i> , n. s.....	321
Puget Sound, Dr. Geo. Suckley, U. S. A.....	
DAMALICHTHYS, n. g.....	321
<i>Damalichthys caeca</i> , n. s.....	321
Puget Sound, Dr. Geo. Suckley, U. S. A.....	
PHANERODON, Girard.....	321
<i>Phanerodon furcatus</i> , Grd.....	322
San Francisco Bay, Lieut. W. P. Trowbridge, U. S. A.....	

1855. GIRARD, CHARLES—Continued.

ABEONA, n. g.	322
<i>Abeona Trowbridgei</i> , Grd.	322
Not precisely known.	
HOLCONOTUS, Agass.	323
<i>Holconotus rhodoterus</i> , Agass.	323
From California to Oregon.	
ENNICHTHYS, n. g.	323
<i>Ennichthys menadops</i> , Grd.	323
San Francisco Bay, Lieut. W. P. Trowbridge, U. S. A.	
<i>Ennichthys Heermanni</i> , Grd.	323
San Francisco, Dr. A. L. Heermann.	
AMPHISTICHUS, Agass.	323
<i>Amphistichus argenteus</i> , Agass.	323
San Francisco, Dr. A. L. Heermann.	
<i>Amphistichus similis</i> , Grd.	323
San Francisco Bay, Dr. A. L. Heermann.	

81.

1855. GIRARD, CHARLES. Life [in its] Physical Aspects. | By | Charles Girard. | From the Proceedings of the National Institute | Washington | Printed by R. A. Waters | 1855 | R. A. Waters, Washington, 1-29. 1855.
Proceedings National Institute, i. 2-22. 1855.

We read in the preface:

"Of the physical nature of animated beings alone, we propose to treat in the present memoir: the different phases through which it passes from its first manifestation up to its last stage of existence constituting what we term the physical aspects of life.

"The physical aspects of life result from a series of functions, all of which depend on one general function presiding throughout the whole range of animal existence; in other words, the law under which a physical being starts is the law under which it lives its whole life through.

"It is therefore proposed, as our chief object, to inquire into the ultimate process of organic life, that is to say, the elaboration of matter, its assimilation, and its passage into the various parts and organs which it constitutes.

"Hence the leading thought of this essay may thus be briefly expressed: The phenomena of the animal economy take place as though the living fabric were but a factory of cells.

"First. All the organs and tissues are a compound of cells, diversely modified or metamorphosed.

"Second. The first aspect under which an animal manifests itself is that of a cell.

"Third. The subsequent growth of that animal is a simple multiplication of cells.

"Fourth. The nourishing process is a mere replacing of decayed or broken-up cells by new ones.

"Such is the hypothesis, theory, or law, whichever it may be termed."

82.

1856. GIRARD, CHARLES. Contributions to the Fauna of Chile. 1856. 1. Fishes, Reptiles, and Crustacea. Reprint from the second volume of *Gillis's U. S. Naval Astronomical Expedition to the Southern Hemisphere during the years 1849, '50, '51, and '52.* (See above, Nos. 77, 78, and 79.)

83.

1856. GIRARD, CHARLES. Notice upon the species of the genus *Salmo* of authors, observed chiefly in Oregon and California.

Proceedings Academy Natural Sciences of Philadelphia, viii. 217-20. 1856.

<i>Salmo Seouleri</i> , Richards.	217
Deschutes River, Oregon, Dr. Newberry.	
<i>Salmo quinnat</i> , Richards.	217
Columbia River, Richardson.	
<i>Salmo spectabilis</i> , n. s.	218
St. Mary's Mission, Oregon, Dr. Suckley.	

1856. GIRARD, CHARLES—Continued.

<i>Fario aurora</i> , n. s.	218
Astoria, Oregon, Lieutenant Trowbridge.	
<i>Fario argyreus</i> , n. s.	218
Cape Flattery, Lieutenant Trowbridge.	
<i>Fario tsuppitch</i> , Grd.	
Columbia River, Oregon, Dr. Geo. Suckley.	
<i>Fario Gairdneri</i> , Grd.	219
Klamath River, Oregon, Dr. Newberry.	
<i>Fario Clarki</i> , Grd.	219
Columbia River, Oregon, Dr. Suckley.	
<i>Fario stellatus</i> , n. s.	219
Humboldt Bay, Lieutenant Trowbridge.	
<i>Salar Lewisii</i> , n. s.	219
Falls of Missouri River, Dr. Suckley.	
<i>Salar virginialis</i> , n. s.	220
Utah Creek, tributary of Rio Grande, Lieutenant Beckwith.	
<i>Salar iridea</i> , Grd.	220
California, Lieutenant Trowbridge and others.	

84.

1856. GIRARD, CHARLES. On a new genus and species of Urodela from the collections of the U. S. Exploring Expedition, under Commander Charles Wilkes, U. S. N.

Proceedings Academy of Natural Sciences Philadelphia, viii, 140. 1856.

HEREDIA, n. g.	140
<i>Heredia Oregonensis</i> , n. s.	
Oregon, U. S. Exploring Expedition.	

85.

1856. GIRARD, CHARLES. Contributions to the Ichthyology of the Western Coast of the United States from Specimens in the Museum of the Smithsonian Institution.

Proceedings Academy of Natural Sciences Philadelphia, viii, 131-7. 1856.

PARALABRAX, n. g.	131
<i>Paralabrax nebulifer</i> , n. s.	132
Monterey, California, Lieutenant Trowbridge.	
<i>Paralabrax clathratus</i> , n. s.	132
San Diego, California, Lieutenant Trowbridge.	
HOMALOPOMUS, n. g.	132
<i>Homalopomus Trowbridgii</i> , n. s.	132
Astoria, Oregon, Lieut. W. P. Trowbridge.	
OLIGOCOTTUS, n. g.	132
<i>Oligocottus maculosus</i> , n. s.	133
LEICOTTUS, n. g.	133
<i>Leicocottus hirundo</i> , n. s.	133
San Miguel, California, Lieut. W. P. Trowbridge, U. S. A.	
ARTEDIUS, n. g.	134
<i>Artedius lateralis</i> , n. s.	134
San Luis Obispo, California, Lieut. W. P. Trowbridge, U. S. A.	
<i>Artedius notospilotus</i> , n. s.	134
Tomales Bay, California, E. Samuels.	
OPOLOPOMA, n. g.	135
<i>Opolopoma pantherina</i> , n. s.	135
Cape Flattery, Washington, Lieut. W. P. Trowbridge, U. S. A.	
<i>Gasterosteus intermedius</i> , n. s.	135
Cape Flattery, Washington, Lieut. W. P. Trowbridge.	
<i>Gasterosteus Pucetti</i> , n. s.	135
Puget Sound, Dr. Geo. Suckley, U. S. A.	
<i>Gobius Newberryi</i> , n. s.	136
<i>Coregonus Williamsoni</i> , n. s.	136
Des Chutes River, Dr. Newbury.	

1856. GIRARD, CHARLES.—Continued.

<i>Platichthys umbrosus</i> , n. s.	136
Cape Flattery, Washington, Lieut. W. P. Trowbridge, U. S. A.	
<i>Pleuronichthys guttulatus</i> , n. s.	137
Tomales Bay, California, E. Samuels.	
<i>Annandlytes personatus</i> , n. s.	137
Cape Flattery, Washington, Lieut. W. P. Trowbridge, U. S. A.	
<i>Rhinoptera respertilio</i> , n. s.	
Tomales Bay, E. Samuels	

86.

1856. GIRARD, CHARLES. Researches upon the Cyprinoid Fishes [inhabiting the] Fresh waters of the United States, [west of the Mississippi Valley,] [from] Specimens in the Museum of the Smithsonian Institution.

Proceedings Academy of Natural Sciences Philadelphia, viii, 165-213, 1856.

[Also reprinted as a pamphlet of 48 pages. 8.]

The fishes which are the subject of the present memoir were collected at different times and periods by several naturalists and surgeons attached to the various surveys undertaken within the past five years.

And, first of all, there is the survey of the United States and Mexican boundary, from 1851 to 1855. John H. Clark, who accompanied Col. J. D. Graham in 1851, collected extensively in the rivers and creeks of Texas and New Mexico. Under Maj. W. H. Emory, now commissioner of the boundary line, numerous collections were made by Dr. C. B. Kennerly, in Texas, in the valley of the Rio Grande and provinces of Chihuahua and Sonora.

The survey of routes for a railroad to the Pacific was commenced in 1853, and continued until 1855. Lieut. A. W. Whipple, under whose command the survey near the thirty-fifth parallel of latitude was effected, in securing the services of Dr. C. B. Kennerly, contributed very largely to our collections of fishes from Texas and the numerous tributaries of the Arkansas River. H. B. Millhausen, artist to the same expedition, also showed much zeal and industry for collecting.

The survey near the thirty-second parallel of latitude, western end, under Lieut. J. G. Parke, contributed a few specimens, collected by Dr. A. L. Heermann.

The eastern end of the same thirty-second parallel was explored by Capt. John Pope, and under the direction of Dr. George G. Shumard, interesting specimens were obtained.

The survey of the partial routes on the Pacific side, under Lieut. R. S. Williamson, Dr. A. L. Heermann being surgeon and naturalist to the party, a large collection of fresh-water fishes, among which were several Cyprinoids, was made in the valley of the San Joaquin River and the Tulare Valley.

Subsequently, the same officer explored the Sacramento Valley from San Francisco, California, to Astoria, Oregon, having Dr. John S. Newberry as naturalist, who secured many interesting members of the family of fishes now under consideration.

The survey of the route near the thirty-eighth and thirty-ninth parallels, under the late Captain Gurnisson, and of the forty-first, by Lieut. E. G. Beckwith, secured many interesting specimens from the valley of the Great Salt Lake and Humboldt River.

The survey of the northern route, under Governor T. L. Stevens, was as fruitful in many respects as both the United States and Mexican boundary survey and the survey of the thirty-fifth parallel. Dr. George Suckley, Dr. J. G. Cooper, and Dr. John Evans proved indefatigable in their efforts for collecting.

The upper Missouri and Yellowstone Rivers were explored by Dr. F. V. Hayden, under the protection of Col. A. Vaughan, and thus we were made acquainted with the ichthyic fauna of those remote waters.

Lieut. D. N. Couch, U. S. A., explored in the winter of 1852-'53 the Mexican provinces of Tamaulipas, New-Leon, and Coahuila, thus adding materials towards an elucidation of the natural history of the country south of the Rio Grande del Norte (Rio Bravo), and but partially explored by the United States and Mexican Boundary Commission.

Valuable specimens from Platte or Nebraska River, the valley of the Great Salt Lake of Utah, and Humboldt River were also received from the late J. Souté Bowman.

To John Potts, esq., of Chihuahua, we owe some very interesting species from the hydrographic basin of Chihuahua River and the valley of Mexico. One species was purchased in the market of the City of Mexico by Maj. William Rich.

The species formerly described from the River Zuñi, collected by Dr. Woodhouse, under Capt. L. Sitgreaves, are likewise included.

Thus the country embraced within these surveys and fields of explorations is limited eastwardly by the valleys of the Missouri and Mississippi, and westwardly by the Pacific Ocean,

1856. GIRARD, CHARLES.—Continued.

extending from Puget Sound and the British possessions at the north to the valleys of the Rio Gila and Rio Grande del Norte (Rio Bravo) to the south, and even including the Mexican provinces of Tamaulipas, New Leon, Coahuila, Chihuahua, and Sonora.

The investigations of such an amount of material could not be extemporized. Indeed, even investigations upon these various collections could not have been traced each separately in the order in which they were collected. From a preliminary examination of the first lot received in 1851 I became very soon impressed with the difficulty of the task and foresaw the utter impossibility, at that time, to do anything like justice to the subject.

In the mean time, however, a *Notice upon a collection of fishes from the southern bend of the Tennessee River, in the State of Alabama, by Louis Agassiz*, was published, containing several members of the Cyprinoid family. And some time afterwards appeared a *Synopsis of the Ichthyological Fauna of the Pacific slope of North America, chiefly from the collections made by the U. S. Exploring Expedition 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 anyone 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, as 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 covered by Rafinesque himself during all seasons of the year, to enable us to discriminate between that which Rafinesque really observed and that which is imaginary.

That the *Ichthyologia Ohiana* 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 Professor Agassiz, may therefore not be received by all ichthyologists as the final settlement of that much controverted question. But 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 Cyprinoids: such are *Platygyrus* and *Scoutilus*. Once upon that field of inquiry I reverted to Heckel's genera *Argyreus* and *Leucosomus*, and showed 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 it thus entered into the "History of the Fishes of Massachusetts, by Dr. D. H. Storer." Professor Agassiz was led into the same error. Heckel, by inadvertence, applies the name of *Cyprinus chrysoleucus*, 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 *Cheiloneurus*, and accordingly the name is to be adopted. *Cheiloneurus* was proposed for *Leuciscus pulchellus*, and allied species, when it was supposed that *Leuciscus chrysoleucus* would constitute the type of the genus *Leucosomus*. But it is now well ascertained that *Leuciscus chrysoleucus* 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 atronotus*, Mitch., and *Cypr. rubripinnis*, Mus. Par. MS. But *Cyprinus rubripinnis* is identical with *Leuciscus corvatus*, and since *Leuciscus corvatus* is to enter the genus *Platygyrus* of Rafinesque, *Cyprinus atronotus* 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 *Platygyrus corvatus*.

[Am. Jour. of Sci., 2d ser., xvii, 1854, pp. 297, 353.]

[Am. Jour. of Sci., 2d ser., xix, 1855, pp. 71, 215.]

[Amer. Jour. of Sci., 2d ser., xix, 1855, p. 225.]

1856. GIRARD, CHARLES.—Continued.

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 everyone 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, 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 with 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 the true observer into error.

I have thus added many new genera and species to the known lists. This is not surprising; for a country so vast as North America, irrigated by so many branching streams and large bodies of water 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 our knowledge on the subject, and, furthermore, it places a cotemporary exactly in the same situation towards the next coming generations as the former generations held towards him.

Most of the new genera which I propose have been designated by words taken from the North American Indians, as being more euphonic 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.

MYLOCHEILUS, Agass.	169
<i>Mylocheilus lateralis</i> , Ag.	169
Puget Sound, Dr. Suckley.	
<i>Mylocheilus fraternulus</i> , n. s.	169
Monterey, California, Lieutenant Trowbridge.	
<i>Mylocheilus carolinus</i> , Girard.	169
Astoria, Lieutenant Trowbridge.	
MYLOPHARODON, Agass.	169
<i>Mylopharodon conocephalus</i> , Girard.	169
San Joaquin River, California, Dr. Heermann.	
<i>Mylopharodon robustus</i> , Ayers.	169
San Francisco, California, Dr. Newberry.	

CATOSTOMI.

<i>Carpodus danalis</i> , n. s.	170
Milk River (Upper Missouri), Dr. Suckley. Arkansas River near Fort Smith, Dr. Shumard.	
<i>Ictobus toanilus</i> , Girard.	170
Rio Grande del Norte.	
MOXOSTOMA, Rafin.	170
<i>Moxostoma clariformis</i> , n. s.	171
Coal Creek, off of South Fork of Canadian River, Möllhausen.	
<i>Moxostoma Kennedyi</i> , n. s.	171
Dry Creek, Texas, Dr. Kennedy.	

1856. GIRARD, CHARLES—Continued.

<i>Moxostoma victorior</i> , n. s.	171
With the preceding.	
<i>Moxostoma Campbelli</i> , n. s.	172
Live Oak Creek, Texas, Dr. Kennerly; Devil's River, Texas, J. H. Clark.	
PTYCHOSTOMUS, Agass.	172
<i>Ptychostomus congestus</i> , G.	172
Rio Salado, Texas, J. H. Clark.	
<i>Ptychostomus albidus</i> , n. s.	172
Rio San Juan (New Leon) Lieut. D. N. Conch.	
<i>Ptychostomus Haydeni</i> , n. s.	172
Yellowstone River, Dr. Hayden.	
MINOMUS, n. g.	173
<i>Minomus insignis</i> , G.	173
Rio San Pedro, tributary of the Gila.	
<i>Minomus plebeius</i> , G.	173
Rio Mimbres, Lake Guzman, Mexico.	
<i>Minomus Clarki</i> , G.	173
Rio Santa Cruz.	
ACOMUS, n. g.	
<i>Acomus forsterianus</i> , G.	173
British North America.	
<i>Acomus aurora</i> , G.	173
Lake Superior, Agassiz.	
<i>Acomus latipinnis</i>	173
Rio San Pedro, tributary of the Gila.	
<i>Acomus Guzmaniensis</i> , n. s.	174
Jamos River, emptying in Lake Guzman, Dr. Kennerly.	
<i>Acomus geocosus</i> , n. s.	174
Cottonwood Creek, an affluent of Great Salt Lake of Utah, Lieutenant Beckwith.	
<i>Acomus griseus</i> , n. s.	174
Sweetwater fork of Platte River, J. S. Bowman.	
<i>Acomus lustrarius</i> , n. s.	174
Milk River, Dr. Suckley.	
CATOSTOMUS, Linm.	174
<i>Catostomus occidentalis</i> , Ayers.	174
San Francisco, California, Dr. Newberry.	
<i>Catostomus labiatus</i> , Ayers.	175
Klamath Lake, Oregon, Dr. Newberry.	
<i>Catostomus macruchilus</i> , n. s.	175
Astoria, Lieutenant Trowbridge.	
<i>Catostomus Suckli</i> , n. s.	175
Milk River, Dr. Suckley.	
<i>Catostomus Bernardini</i> , n. s.	175
Upper waters of the Rio Huamqui, Mexico.	
CHONDROSTOMI.	175
CAMPOSTOMA, Agass.	176
<i>Campostoma anomulum</i> , Agass.	176
<i>Campostoma ornatum</i> , n. s.	176
Chimalma River, John Potts.	
<i>Campostomat formosulum</i> , n. s.	176
Rio Sabinal, Texas, Dr. Kennerly.	
<i>Campostoma nasutum</i> , n. s.	
Cadereita and Monterey (New Leon), Lieutenant Conch.	
DIONDA, n. g.	176
<i>Dionda episcopa</i> , n. s.	177
Rio Pecos, Capt. John Pope; Comanche Spring, J. H. Clark.	
<i>Dionda serena</i> , n. s.	177
Rio Sabinal, Texas, Dr. Kennerly.	
<i>Dionda Texensis</i> , n. s.	177
Rio Nueces, Texas, J. H. Clark.	
<i>Dionda pupalis</i> , n. s.	178
Delaware Creek, tributary of Rio Pecos, Texas, Captain Pope.	
<i>Dionda argentosa</i> , n. s.	178
San Felipe Creek, and Devil's River (Rio Grande), John H. Clark.	
<i>Dionda chrysitis</i> , n. s.	178
Live Oak Creek, Texas, John H. Clark.	

1856. GIRARD, CHARLES—Continued.

<i>Dionda melanops</i> , n. s.	178
Buena Vista, Coahuila, Lieutenant Couch.	
<i>Dionda Couchi</i> , n. s.	178
Guaajuco Monterey, and Cadereita, New Leon, Lieutenant Couch.	
<i>Dionda plumbea</i> , n. s.	178
Canadian River (Llano Estacado) Möllhausen.	
<i>Dionda spadicea</i> , n. s.	178
Fort Smith, Arkansas. Möllhausen.	
HYBORHYNCHUS, Agass.	179
<i>Hyborhynchus perspicuus</i> , n. s.	179
Arkansas River near Fort Smith, Dr. Shumard.	
<i>Hyborhynchus tenellus</i> , n. s.	179
West of Choctaw Agency, Möllhausen.	
<i>Hyborhynchus puniceus</i> , n. s.	179
Antelope Creek, Dr. Kemmerly, Llano Estacado, Möllhausen.	
<i>Hyborhynchus confertus</i> , n. s.	179
Hurrah Creek, tributary of Rio Pecos, Möllhausen.	
PIMEPHALES, Rafin.	180
<i>Pimephales maculosus</i> , n. s.	180
Arkansas River near Fort Makee, Lieutenant Beckwith.	
<i>Pimephales fasciatus</i> , n. s.	180
Yellowstone River, Dr. Hayden; Milk River, Upper Missouri, Dr. Suckley.	
ALGOMA, n. g.	180
<i>Algoma amara</i> , n. s.	181
Laguna, near Fort Brown, J. H. Clark.	
<i>Algoma fluvialilis</i> , n. s.	181
Monterey, New Leon, Lieutenant Couch.	
COCHLOGNATHUS, B. & G.	181
<i>Cochlognathus ornatus</i> , B. & G.	181
Brownsville, Texas, Captain Van Vliet.	
HYBOGNATHUS, Agass.	181
<i>Hybognathus argyritis</i> , n. s.	182
Milk River, Dr. Suckley; Arkansas River, near Fort Smith, Dr. Shumard.	
<i>Hybognathus Evansi</i> , n. s.	182
Fort Pierre, Nebraska, D. J. Evans.	
<i>Hybognathus placitus</i> , n. s.	182
Arkansas River, near Fort Makee, Lieutenant Beckwith.	
ORTHODON, n. g.	
<i>Orthodon microlepidotus</i> , G.	182
San Francisco, California, Dr. Newberry.	
ALGANSEA, n. g.	182
<i>Algansea tinella</i> , G.	183
City of Mexico, Major Rich.	
<i>Algansea bicolor</i> , n. s.	183
Klamath Lake, Oregon, Dr. John S. Newberry.	
<i>Algansea obesa</i> , n. s.	183
Humboldt River, J. S. Bowman, Lieutenant Beckwith.	
<i>Algansea formosa</i> , n. s.	183
Merced and Mohave Rivers, Dr. Heermann.	
LAVINIA, B. & G.	184
<i>Lavinia exilicauda</i> , B. & G.	184
Sacramento River, Dr. Heermann.	
<i>Lavinia albatuca</i> , G.	184
Willamette Falls and Walla Walla Rivers, Dr. Ch. Pickering.	
<i>Lavinia heterogus</i> , n. s.	184
Monterey, California, A. S. Taylor.	
POGONICHTHUS	184
ARGYREUS, Heck.	185
<i>Argyreus atronotus</i> , Heck.	185
<i>Argyreus nasutus</i> , Grd.	185
<i>Argyreus marmoratus</i> , G.	185
Sault Ste. Mary, Agassiz.	
<i>Argyreus obtusus</i> , G.	185
Tennessee River.	
<i>Argyreus melanargis</i> , G.	185
Iowa.	

1856. GIRARD, CHARLES—Continued.

<i>Argyreus dulcis</i> , n. s.	185
Sweetwater, a tributary of Platte River, J. S. Bowman.	
<i>Argyreus nitbilis</i> , n. s.	186
Fort Steilacoom, Puget Sound, Dr. Suckley.	
<i>Argyreus osculus</i> , n. s.	186
Tabocomori, tributary of Rio San Pedro (Gila basin) J. H. Clark.	
<i>Argyreus notabilis</i> , n. s.	186
Rio Santa Cruz, Sonora, John H. Clark.	
AGOSTIA, n. g.	186
<i>Agostia chrysoaster</i> , n. s.	187
Rio Santa Cruz, Sonora, John H. Clark.	
<i>Agostia metallica</i> , n. s.	187
Rio San Pedro, affluent of the Gila, John H. Clark.	
POGONICHTHYS, B. & G.	187
<i>Pogonichthys inequilobus</i> , B. & G.	188
San Joaquin River, California, Dr. Heermann; Petaluma, California, E. Samuels.	
<i>Pogonichthys symmetricus</i> , B. & G.	188
Fort Miller, San Joaquin Valley, Dr. Heermann.	
<i>Pogonichthys argyreusius</i> , G.	188
Presidio, near San Francisco, California, Lieutenant Trowbridge.	
<i>Pogonichthys communis</i> , n. s.	188
Fort Pierre, Nebraska, Dr. John Evans, F. V. Hayden, and others.	
GOBIO, CIV.	188
<i>Gobio gelidus</i> , n. s.	188
Milk River, Upper Missouri, Dr. Suckley.	
<i>Gobio astivalis</i> , n. s.	189
Rio San Juan, near Cadecirta, New Leon, Lieutenant Couch.	
<i>Gobio vernalis</i> , n. s.	189
Arkansas River, near Fort Smith, Dr. Shumard.	
LEUCOSOMUS, Heck.	189
<i>Leucosomus pulchellus</i> , G.	189
New England.	
<i>Leucosomus plumbeus</i> , G.	189
Lake Huron and Lake Superior, L. Agassiz.	
<i>Leucosomus dissimilis</i> , n. s.	189
Milk and Little Muddy Rivers, Upper Missouri, Dr. Suckley.	
<i>Leucosomus incrassatus</i> , n. s.	190
West of Choctaw Agency, Möllhausen.	
<i>Leucosomus pallidus</i> , n. s.	190
Antelope Creek, Arkansas, Dr. Kennerly.	
NOCOMIS, n. g.	190
<i>Nocomis Nebraskaensis</i> , n. s.	190
Sweetwater, a tributary of Platte or Nebraska River, J. S. Bowman.	
ALBURNI.	190
EXOGLOSSUM, Rafin.	191
<i>Exoglossum maxilligua</i> , Hald.	191
<i>Exoglossum micabile</i> , n. s.	191
Arkansas River, near Fort Smith, Dr. Shumard.	
MEDA, n. g.	191
<i>Meda fulgida</i> , n. s.	192
Rio San Pedro, tributary of the Gila, John H. Clark.	
OLIOLA, n. g.	192
<i>Oliola vigilax</i> , G.	192
Otter Creek, Red River, Arkansas.	
<i>Oliola rebor</i> , n. s.	192
San Pedro Creek, a tributary of Rio San Antonio, Texas, Dr. Kennerly.	
<i>Oliola rivax</i> , n. s.	192
Leon River, tributary of Rio San Antonio, Texas, Dr. Kennerly.	
ABURANUS, Rond.	193
<i>Aburanus directus</i> , n. s.	193
Arkansas River, near Fort Smith, Dr. Shumard.	
<i>Aburanus umbratilis</i> , n. s.	193
Sugarloaf Creek, a tributary of Potomac River, Arkansas, Möllhausen.	
<i>Aburanus amabilis</i> , n. s.	193
Rio Leon, affluent of Rio Nueces, John H. Clark.	

1856. GIRARD, CHARLES—Continued.

<i>Alburnus megalops</i> , n. s.	193
San Felipe Creek, Texas, John H. Clark.	
<i>Alburnus socius</i> , n. s.	193
Live Oak Creek, Texas, J. H. Clark.	
ALBURNOPS, n. g.	194
<i>Alburnops bleunius</i> , n. s.	194
Arkansas, near Fort Smith, Dr. Shumard.	
<i>Alburnops Shumardi</i> , n. s.	194
Arkansas, near Fort Smith, Dr. Shumard.	
<i>Alburnops illeubrosus</i> , n. s.	194
Arkansas, near Fort Smith, Dr. Shumard.	
CODOMA, n. g.	194
<i>Codoma ornata</i> , n. s.	195
Chihuahua River and its tributaries, John Potts.	
<i>Codoma vittata</i> , n. s.	195
Valley of Mexico, John Potts.	
PLARGYRUS, Rafin.	195
<i>Plargyrus cornutus</i> , G.	196
<i>Plargyrus tipicus</i> , G.	196
<i>Plargyrus gibbosus</i> , G.	196
Alabama, Dr. Storer.	
<i>Plargyrus frontalis</i> , G.	196
Lake Superior, Agassiz.	
<i>Plargyrus gracilis</i> , G.	196
Lake Huron, Agassiz.	
<i>Plargyrus Bowmani</i> , n. s.	196
Sweetwater, tributary of Platte or Nebraska River, J. S. Bowman.	
CYPRINELLA, n. g.	
<i>Cyprinella bubalina</i> , G.	197
Otter Creek, Arkansas.	
<i>Cyprinella umbrosa</i> , n. s.	197
In a tributary of South Fork of Canadian River and west of Choctaw Agency, Möllhausen.	
<i>Cyprinella Gunnisoni</i> , n. s.	197
Cotton Creek, a tributary of Great Salt Lake of Utah, Lieutenant Beckwith.	
<i>Cyprinella Beckwithi</i>	197
Sluices of Arkansas River, near Fort Makee, Lieut. E. G. Beckwith.	
<i>Cyprinella suavis</i> , n. s.	197
San Antonio, Texas, Dr. Kennerly.	
<i>Cyprinella lepida</i> , n. s.	197
Río Frio, a tributary of Río Nueces, Texas, Dr. Kennerly.	
<i>Cyprinella notata</i> , n. s.	198
Río Seco, a tributary of Río Nueces, Texas, Dr. Kennerly.	
<i>Cyprinella Whipplei</i> , n. s.	198
Sugarloaf Creek, a tributary of Poteau River, Arkansas, Möllhausen.	
<i>Cyprinella macrostoma</i> , n. s.	198
Devil's River, Texas, J. H. Clark; China, New Leon, Lieutenant Couch.	
<i>Cyprinella venusta</i> , n. s.	198
Río Sabinal, Texas, Dr. Kennerly.	
<i>Cyprinella Texana</i> , n. s.	198
Río Salado and Turkey Creek, Texas, John H. Clark.	
<i>Cyprinella luxitoides</i> , n. s.	198
San Pedro Creek, Texas, Dr. Kennerly.	
<i>Cyprinella lunubris</i> , n. s.	199
Lieutenant Beckwith.	
<i>Cyprinella ludibunda</i> , n. s.	199
Lieutenant Beckwith.	
MONIANA, n. g.	199
<i>Moniana luteensis</i> , G.	199
Otter Creek, Arkansas.	
<i>Moniana Leonina</i> , n. s.	199
Leon River, tributary of Río San Antonio, Dr. Kennerly.	
<i>Moniana deliciosa</i> , n. s.	199
Leon River, a tributary of Río San Antonio, Dr. Kennerly.	

1856. GERRARD, CHARLES. Continued.

<i>Moniana proserpina</i> , n. s.	200
Devils River, Texas, John H. Clark.	
<i>Moniana aurata</i> , n. s.	200
Piedra Pointe, New Mexico, John H. Clark.	
<i>Moniana complanata</i> , n. s.	200
Brownsville, Texas, Capt. Van Vliet.	
<i>Moniana lactabilis</i> , n. s.	200
Hurrah Creek, tributary of Rio Pecos, Möllhausen.	
<i>Moniana pulchella</i> , n. s.	200
Sugar Loaf Creek, tributary of Poteau River, Möllhausen.	
<i>Moniana frigida</i> , n. s.	200
Rio Salado, Rio Sabinal, and Rio Medina, tributaries of Rio San Antonio, Texas, John H. Clark; also in Rio Frio, tributaries of Rio Nueces, Dr. Kennerly.	
<i>Moniana Couchi</i> , n. s.	201
Vicinity of China, New Leon, Mexico, Lieutenant Couch.	
<i>Moniana rutila</i> , n. s.	201
Cadereita, New Leon, Mexico, Lieutenant Couch.	
<i>Moniana nitida</i> , n. s.	201
Cadereita, New Leon, Mexico, Lieutenant Couch.	
<i>Moniana formosa</i> , n. s.	201
Rio Mimbres, Mexico.	
<i>Moniana gracilis</i> , n. s.	201
Near Monterey, New Leon, Lieutenant Couch.	
<i>Moniana gibbosa</i> , n. s.	201
Brownsville, Texas, Capt. Van Vliet.	
<i>Moniana tristis</i> , n. s.	201
Lieutenant Beckwith.	
RICHARDSONIUS, n. g.	201
<i>Richardsonius balteatus</i> , G.	202
Fort Vancouver and Fort Dalles, Columbia River, Dr. Suckley.	
<i>Richardsonius lateralis</i> , n. s.	202
Fort Steilacoom, Puget Sound, Dr. Suckley.	
LUXILUS, Rafin.	202
<i>Luxilus Americanus</i> , G.	202
<i>Luxilus compressus</i> , G.	203
<i>Luxilus obsesus</i> , G.	203
<i>Luxilus occidentalis</i> , G.	203
<i>Luxilus leptosomus</i> , n. s.	203
Dry Creek, Texas, Dr. Kennerly.	
<i>Luxilus Seco</i> , n. s.	203
Rio Seco, tributary of Rio Nueces, Dr. Kennerly.	
<i>Luxilus lucidus</i> , n. s.	203
Coal Creek, tributary of South Fork of Canadian River, Möllhausen.	
SEMOTILUS, Rafin.	203
<i>Semotilus atromaculatus</i> , G.	204
<i>Semotilus macrocephalus</i> , n. s.	204
Fort Platte, Nebraska, Dr. Evans.	
<i>Semotilus speciosus</i> , n. s.	204
Sweetwater, a tributary of Platte River, J. S. Bowman.	
TIAROGA, n. g.	204
<i>Tiaroga cobitis</i> , n. s.	204
Rio San Pedro, a tributary of Rio Gila, John H. Clark.	
GILA, B. & G.	205
<i>Gila robusta</i> , B. & G.	205
Zuñi River, Dr. Woodhouse.	
<i>Gila elegans</i> , B. & G.	205
Zuñi River, Dr. Woodhouse; Colorado River, A. Schott; Gila River, Dr. Her- mann.	
<i>Gila gracilis</i> , B. & G.	205
Zuñi River, Dr. Woodhouse.	
<i>Gila Grahami</i> , B. & G.	205
Rio San Pedro, tributary of Gila River, John H. Clark.	
<i>Gila Emori</i> , B. & G.	205
River Gila, Dr. J. L. Leconte.	

1856. GIRARD, CHARLES—Continued.

TIGOMA, n. g.	205
<i>Tigoma pulchella</i> , G.	206
Rio Mimbres, tributary of Guzman Lake, Mexico, John H. Clark.	
<i>Tigoma conformis</i> , G.	206
Posa Creek, San Joaquin Valley, California, Dr. Heermann.	
<i>Tigoma bicolor</i> , n. s.	206
Klamath Lake, Oregon, John S. Newberry.	
<i>Tigoma purpurea</i> , n. s.	206
San Bernardino, Dr. Kennerly.	
<i>Tigoma intermedia</i> , n. s.	206
Rio San Pedro of the Gila, John H. Clark.	
<i>Tigoma obesa</i> , n. s.	206
Salt Lake Valley, J. S. Bowman.	
<i>Tigoma Humboldti</i> , n. s.	206
Humboldt River, J. S. Bowman and Lieutenant Beckwith.	
<i>Tigoma lineata</i> , n. s.	206
Lieut. E. G. Beckwith.	
<i>Tigoma gracilis</i> , n. s.	206
Lieut. E. G. Beckwith.	
<i>Tigoma gibbosa</i> , G.	207
Santa Cruz, John H. Clark, Tucson, Sonora, Dr. Heermann.	
<i>Tigoma nigrescens</i> , n. s.	207
Boca Grande and Janos Rivers, Dr. Kennerly.	
<i>Tigoma pulchra</i> , n. s.	207
Chilmahua River and tributaries, John Potts.	
<i>Tigoma crassa</i> , n. s.	207
Sacramento River, Dr. Newberry.	
CHEONDA, n. g.	207
<i>Cheonda Cooperi</i> , n. s.	207
Fort Vancouver, Columbia River, Dr. John G. Cooper.	
<i>Cheonda carulea</i> , n. s.	207
Lost River, Oregon, Dr. Newberry.	
SIBOMA, n. g.	208
<i>Siboma crassicauda</i> , G.	208
San Joaquin, Mercede, and Mohave Rivers, California, Dr. Heermann.	
<i>Siboma atraria</i> , n. s.	208
Spring in Utah District, near the Desert, Lieutenant Beckwith.	
PTYCHOCEILUS, Agass.	209
<i>Ptychoceilus grandis</i> , G.	209
San Francisco, California, Dr. Newberry.	
<i>Ptychoceilus Oregonensis</i> , G.	209
Fort Vancouver and Fort Steilacoom, Dr. Suckley; Astoria, Lieutenant Trowbridge; Willamette River, Dr. Newberry.	
<i>Ptychoceilus rapax</i> , n. s.	209
Monterey, California, Lieutenant Trowbridge.	
<i>Ptychoceilus lucius</i> , n. s.	209
Rio Colorado, A. Schott.	
<i>Ptychoceilus vorax</i> , n. s.	209
Lieut. E. G. Beckwith.	
APPENDIX.	
<i>Hybognathus regius</i> , n. s.	209
Potomac River, Dr. Girard.	
<i>Hybognathus nitidus</i> , G.	210
Lake Champlain, S. F. Baird.	
HUDSONIUS, n. g.	210
<i>Hudsonius fluvialilis</i> , G.	210
Chicago Harbor, Lake Michigan, and Root River, Wisconsin, S. F. Baird.	
<i>Hudsonius amarus</i> , n. s.	210
Chesapeake Bay and up the Potomac River.	
HYBOPSIS, Agass.	210
<i>Hybopsis Storerianus</i> , G.	211
Marietta, Ohio, Professor Andrews; Russellville, Kentucky, Dr. Shumard.	
<i>Hybopsis Winchelli</i> , n. s.	211
Black Warrior River, Alabama, Professor Winchell.	

1856. GIRARD, CHARLES—Continued.

CLINOSTOMUS, n. g.	211
<i>Clinostomus elongatus</i> , G.	212
Ohio River and tributaries.	
<i>Clinostomus funduloides</i> , n. s.	212
Creek and inlets of Potomac River, Dr. Girard.	
<i>Clinostomus affinis</i> , n. s.	212
James River, S. F. Baird.	
<i>Clinostomus Carolinus</i> , n. s.	212
Salem, North Carolina, J. T. Lineback.	
<i>Athorans lepidulus</i> , n. s.	212
Black Warrior River, Alabama, Professor Winchell.	
<i>Plargyrus argentatus</i> , n. s.	212
James River, S. F. Baird.	
CERATICHTHYS, Baird.	212
<i>Ceraticthys biguttatus</i> , G.	213
Yellow Creek, a tributary of Mahoning, J. P. Kirtland.	
<i>Ceraticthys amblops</i> , G.	213
Ohio, Rafinesque.	
<i>Ceraticthys leptocephalus</i> , n. s.	313
Salem, North Carolina, J. T. Lineback.	
<i>Xocomis bellicus</i> , n. s.	213
Black Warrior River, Alabama, Professor Winchell.	

87.

1857. GIRARD, CHARLES. Descriptions of New Species of Reptiles collected by the U. S. Exploring Expedition under the command of Capt. Charles Wilkes, U. S. N. Third Part. Including the species of Ophidians exotic to North America. *Proceedings Academy Natural Sciences Philadelphia*, ix, 1857, 181-2.

SABRINA, n. g.	
<i>Sabrina tessellata</i> , Grd.	181
Coast of Peru.	
<i>Rabdion occipitale</i> , n. s.	181
New Holland.	
<i>Dendrophis prasinus</i> , n. s.	181
New Holland.	
CALLIBRHINUS, n. g.	182
<i>Callirhinus Patagoniensis</i> , n. s.	182
Coast of Patagonia.	
CANTORIA, n. g.	182
<i>Cantoria violacea</i> , Grd.	182
Singapore.	
<i>Xenodon ancorus</i> , n. s.	182
DOLIOPHIS, n. g.	
<i>Doliophis flaviceps</i> , Grd.	182
Singapore.	

88.

1857. GIRARD, CHARLES. A list of the Fishes collected in California by Mr. E. Samuels, with descriptions of the New Species.

Boston Journal of Natural Sciences, vi, 533-4. 1857.

<i>Oligocottus maculosus</i> , Grd., pl. xxiv, fig. 7.	533
Tomales Bay, California.	
<i>Arctedius notospilotus</i> , Grd., pl. xxiv, figs. 5-6.	535
Tomales Bay, California.	
<i>Atherinopsis Californiensis</i> , Grd., pl. xxiv, figs. 1-4.	537
Tomales Bay, California.	
<i>Gobius Neobergii</i> , Grd., pl. xxvi, figs. 5-8.	539
Tomales Bay, California.	
<i>Pleuronichthys guttulatus</i> , Grd., pl. xxv, 1-4.	542
Tomales Bay, California.	
<i>Rhinoptera respertilio</i> , Grd., pl. xxvi, figs. 1-3.	544
Tomales Bay, California.	

1857. GIRARD, CHARLES. Descriptions of New Species of Reptiles collected by the U. S. Exploring Expedition under command of Capt. Charles Wilkes, U. S. N. Fourth part. Including the species of Saurians exotic to North America. *Proceedings Academy Natural Sciences Philadelphia*, ix, 1857, 195-99.

SCINCIDÆ.

Cryptoblepharus eximius, n. s. 195
Fecjee Islands.

Euprepis caustus, n. s. 195
Cape de Verde Islands.

CYCLODINA, n. g. 195

Cyclodina arca, n. s. 196
New Zealand.

HOMBRODIA, n. g. 196

Hombrodia undosa, n. s. 196
New Zealand.

Hombrodia fasciolaris, n. s. 196
New Zealand.

OLIGOSOMA, n. g. 196

Oligosoma Zealandica, Gir. 196
New Zealand.

Lipinia ruleana, n. s. 196
Caldeya on Mindanoo.

LYGOSOMELLA, n. g. 196

Lygosomella astuosa, n. s. 196
New Zealand.

EMOA, n. g. 197

Ema nigrita, n. s. 197
Navigator Islands.

GEKKOTIDÆ. 197

Gehyra varax, n. s. 197
Fecjee Islands.

Peropus neglectus, n. s. 197
Rio de Janeiro.

Dactyloperus insulensis, n. s. 197
Sandwich Islands.

Doryca vulpecula, n. s. 197
Sandwich Islands.

Hoplodactylus pomari, n. s. 197
New Zealand.

Heteronota pelagica, n. s. 197
Fecjee and Navigator Islands.

IGUANIDÆ. 197

SACCODEIRA, n. g. 197

Saccodeira ornatifissima, n. s. 198
Obrajillo and Yanga, Peru.

Proctotretus splendidus, n. s. 198
Patagonia.

RHYTIDODEIRA, n. g. 198

Rhytidodeira Kingi, Gir. 198

Rhytidodeira magellanicus, Gir. 198

Rhytidodeira bilroni, Gir. 198

Rhytidodeira Wiegmanni, Gir. 198

Rhytidodeira nigromaculata, Gir. 198

Rhytidodeira oxycephala, Gir. 198

EULEMUS, n. g. 198

Eulemus tenax, Gir. 198

Eulemus Darwini, Gir. 198

Eulemus pictus, Gir. 198

Eulemus fitzingeri, Gir. 198

Eulemus signifer, Gir. 198

Eulemus affinis, Gir. 198

Eulemus maculatus, Gir. 190

ORTHOLEMUS, n. g. 198

1857. GIRARD, CHARLES—Continued.

<i>Ortholemus multimaculatus</i> , Grd.	199
<i>Ortholemus Fitzroi</i> , Grd.	199
<i>Ortholemus Beaghi</i> , n. s.	199
<i>Amphibolurus maculiferus</i> , n. s.	199
New South Wales.	
OREODEIRA, n. g.	199
<i>Oreodeira gracilipes</i> , n. s.	199
New South Wales.	

90.

1857. GIRARD, CHARLES. Notes upon New Genera and New Species of Marine and Freshwater Fishes from western North America.

Proceedings Academy Natural Sciences of Philadelphia, ix, 1857, 200-202.

<i>Pomoxis nitidus</i> , n. s.	200
Houston River, Kentucky.	
<i>Callinurus melanops</i> , n. s.	200
Texas.	
<i>Callinurus diaphanus</i> , n. s.	200
Rio Blanco, Texas.	
<i>Callinurus formosus</i> , n. s.	200
Arkansas.	
<i>Callinurus microps</i> , n. s.	200
Rio Brazos, Texas.	
<i>Callinurus murinus</i> , n. s.	200
Texas.	
<i>Beyttus albidus</i> , n. s.	200
Rio Blanco, Texas.	
<i>Beyttus signifer</i> , n. s.	201
Rio Medina, Texas.	
<i>Beyttus numilis</i> , n. s.	201
Arkansas.	
<i>Pomotis bina</i> , n. s.	201
Fort Snelling, Minnesota.	
<i>Lucioperca borea</i> , n. s.	201
Fort Sarpi, Nebraska.	
CHIROPSIS, n. g.	201
<i>Chiropsis pictus</i> , Grd.	201
<i>Chiropsis guttatus</i> , Grd.	201
<i>Chiropsis constellatus</i> , Grd.	201
<i>Oligocottus analis</i> , n. s.	201
Monterey, California.	
<i>Oligocottus globiceps</i> , n. s.	202
South Farallones, California.	
ZANOLEPIS, n. g.	202
<i>Zanolepis latipinnis</i> , n. s.	202
Fort Steilacoom, Puget Sound.	
<i>Blepsias oculo fasciatus</i> , n. s.	202
Fort Steilacoom, Puget Sound.	

91.

1858. GIRARD, CHARLES. Notes upon various New Genera and New Species of Fishes in the Museum of the Smithsonian Institution, and collected in connection with the United States and Mexican Boundary Survey, Maj. William Emory, Commissioner.

Proceedings Academy Natural Sciences of Philadelphia, x, 1858, p. 167-171.

<i>Ambiodon neglectus</i> , n. s.	167
Tamaulipas.	
<i>Umbraa phalena</i> , n. s.	167
Indianola, Brazos, Texas.	
ORTHOPISTIS, n. g.	167
<i>Orthopristis duplex</i> , n. s.	167
Indianola, Brazos, Texas.	

1858. GIRARD, CHARLES—Continued.

NEOMENIS, n. g.	167
<i>Neomenis emarginatus</i> , Grd.	167
<i>Polyneenus octonemus</i> , n. s.	167
Brazos, Texas.	
<i>Mugil Bertholieri</i> , n. s.	167
Indianola, Brazos, Texas.	
<i>Chorinemus laucolatus</i> , n. s.	168
St. Joseph's Island.	
CHLOROSCOMBERUS, n. g.	168
<i>Chloroscomberus Caribbeus</i> , n. s.	168
St. Joseph's Island.	
DOLIODON, n. g.	168
<i>Doliodon Carolinus</i> , Grd.	168
<i>Doliodon spinosus</i> , Grd.	168
CARANGUS, n. g.	168
<i>Carangus esculentus</i> , Grd.	168
<i>Carangus chrysus</i> , Grd.	168
<i>Carangus fullox</i> , Grd.	168
<i>Carangus pisquetus</i> , Grd.	168
<i>Carangus Bartholamri</i> , Grd.	168
<i>Carangus defensor</i> , Grd.	168
<i>Carangus falcatus</i> , Grd.	168
<i>Carangus Richardi</i> , Grd.	168
GOBIONELLUS, n. g.	168
<i>Gobionellus lanceolatus</i> , Grd.	168
<i>Gobionellus baculatus</i> , Grd.	168
<i>Gobionellus saurogoides</i> , Grd.	168
<i>Gobionellus brasiliensis</i> , Grd.	168
<i>Gobionellus hastatus</i> , n. s.	168
St. Joseph's Island.	
<i>Gobius lyrius</i> , n. s.	169
Brazos Santiago, Texas.	
<i>Gobius Wordenianai</i> , n. s.	169
Brazos Santiago, Texas.	
<i>Gobius catulus</i> , n. s.	169
St. Joseph's Island.	
<i>Gobius gulosus</i> , n. s.	169
Indianola, Texas.	
GOBIOSOMA, n. g.	169
<i>Gobiosoma alpeidata</i> , Grd.	169
<i>Gobiosoma virideopallidus</i> , Grd.	169
<i>Gobiosoma boscii</i> , Grd.	169
<i>Gobiosoma molestum</i> , n. s.	169
Indianola, Texas.	
<i>Blennius multifilis</i> , n. s.	169
St. Joseph's Island.	
<i>Eleotris sumulutus</i> , n. s.	169
Mouth of Rio Grande del Norte.	
<i>Ophidius Josephi</i> , n. s.	170
St. Joseph's Island.	
<i>Belone scrutator</i> , n. s.	170
Brazos, Texas.	
<i>Pimelodus vulpes</i> , n. s.	170
Texas.	
<i>Poreilia lincolata</i> , n. s.	170
Brownsville, Texas.	
<i>Limia poeciloides</i> , n. s.	170
Indianola, Texas.	
<i>Limia venusta</i> , n. s.	170
Indianola, Texas.	
<i>Anguilla tyrannus</i> , n. s.	171
Mouth of Rio Grande del Norte.	
NEOMURENA, n. g.	171
<i>Neomura nigroradiata</i> , n. s.	171
NEOCOMER, n. g.	171
<i>Neocomer mucronatus</i> , n. s.	171

1858. GIRARD, CHARLES, with SPENCER F. BAIRD. United States | Exploring Expedition. | During the years | 1838, 1839, 1840, 1841, 1842. | Under the command of Charles Wilkes, U. S. N. Vol. XX. | — | Herpetology. | Prepared under the superintendency of | S. F. Baird. | With a folio Atlas. | — | Philadelphia: | Printed by C. Sherman & Son. | 1858. 4to. pp. (1), v-ix, 492.

This book was not written by Professor Baird, who assures me that he did not touch pen to it. The book was done entirely by Dr. Charles Girard, but through some technicality his name was not allowed to appear on the title page by the naval authorities having the matter in charge, who insisted in publishing the book under the name of Professor Baird, to whom the original contract was given out. The matter is explained fully in the introduction, which is quoted entire:

"INTRODUCTION.—The Joint Committee of the Library of Congress entered into an engagement with the undersigned, in 1857, to prepare the Report upon the Herpetological collections made by the United States Exploring Expedition. Finding that other duties would interfere with the proper performance of the work, he was permitted to associate Dr. Girard with him in its execution, by whom the determinations and descriptions have been made, the drawings overlooked, and the work carried through the press. S. F. BAIRD. Washington, May, 1858. (p. vii.)"

As is well known, only 100 copies of these reports were published by the Government, while the authors of the separate volumes were allowed to have 150 more printed at their own individual expense. In accordance with this ruling a special edition of this report was published by Girard with the following title:

1858. GIRARD, CHARLES. United States | Exploring Expedition. | During the years | 1838, 1839, 1840, 1841, 1842. | Under the command of | Charles Wilkes, U. S. N. | Vol. XX. | Herpetology. | By Charles Girard, | Doctor in Medicine and Surgery, | Corresponding Member of the Boston | Society of Natural History; the Academy of Natural Sciences of Philadelphia; | the Lyceum of Natural History of New York; the Elliot Society of | Natural History of Charleston, South Carolina; | the California Academy | of Natural Sciences, San Francisco; the "Société Helvétique | des Sciences Naturelles;" the "Naturforschende Gesell- | schaft in Zurich; and the "Société des Sciences | Naturelles de Neuchâtel (Switzerland)," etc., | with a folio atlas. | Philadelphia: | J. B. Lippincott & Co. | 1858. | 4to. pp. i-xvii, 1-496. pll. i-xxxii.

Several additional plates were included in the atlas to this edition.

Order I. BATRACHIA.

Tribus I. BATRACHIA URODELA.....	2
a. Trematodeira	3
b. Atretodeira	3
Family SALAMANDRIDÆ.....	4
TARICHA, Gray.	
<i>Taricha torosa</i> , Gray, pl. i, figs. 1-8.....	5
Puget Sound, Oregon; San Francisco, California.	
Family PLETHODONTIDÆ.....	7
ANAIDES, Baird.	
<i>Anaides, Lugubris</i> , Baird, pl. i, figs. 26-33.....	8
San Francisco, California.	
HEREDIA, Girard.....	10
<i>Heredia oregonensis</i> , Girard, pl. i, figs. 18-28	11
Discovery Harbor, Puget Sound (Oregon).	
XIPHONURA, Tsch.....	13
<i>Xiphonura tenebrosa</i> , Grd., pl. i, figs. 9-17.....	14
Oregon.	
Tribus II. BATRACHIA ANURA	16
Family RANIDÆ.	
Australia.	
RANA, Linn.....	17
<i>Rana aurora</i> , B. & G., pl. ii, figs. 1-6.....	18
Columbia River, Oregon.	
<i>Rana pretiosa</i> , B. & G., pl. ii, figs. 13-18	20
Puget Sound, Oregon.	
<i>Rana Draytoni</i> , B. & G., pl. ii, figs. 19-24.....	23
California.	
<i>Rana maculifera</i> , Risso, pl. ii, figs. 7-12.....	25
Island of Madeira.	

1858. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

LEPTODACTYLUS, Fitz.	28
<i>Leptodactylus ocellatus</i> , Grd., pl. iii, figs. 1-6.	29
Rio de Janeiro, Brazil.	
<i>Leptodactylus caliginosus</i> , Grd.	31
CYSTIGNATHUS, Wagl.	33
<i>Cystignathus nebulosus</i> , Grd., pl. iii, figs. 19-23.	
Valparaiso, Chile.	
<i>Cystignathus parvulus</i> , Grd., pl. iii, figs. 34-38.	35
Rio de Janeiro, Brazil.	
PLEURODEMA, Tsch.	37
<i>Pleurodema bibroni</i> , Tsch., pl. iv, figs. 33-38.	38
Valparaiso, Chile.	
<i>Pleurodema elegans</i> , Bell, pl. iv, fig. 28-32.	40
Valparaiso, Chile.	
WAGLERIA, Girard.	42
<i>Wagleria peroni</i> , Grd., pl. iii, figs. 29-33.	
Southeastern Australia.	
RANIDELLA, Girard.	44
<i>Ranidella signifera</i> , Grd., pl. iii, figs. 39-43.	
Australia.	
Family HYLIDE.	47
RANOIDEA, Tsch.	
<i>Ranoidea resplendens</i> , Grd., pl. iii, figs. 7-12.	48
Woollongong, Illawara, New South Wales.	
<i>Ranoidea flavo-viridis</i> , Grd.	50
Woollongong, Illawara, New South Wales.	
HYLARANA, Tsch.	52
<i>Hylarana mindanensis</i> , Grd.	
Caldera, Mindanao.	
HALOPHILA, Girard.	54
<i>Halophila heros</i> , Grd., pl. iv, figs. 1-6.	55
Feejee Islands.	
<i>Halophila ritiensis</i> , Grd., pl. iv, figs. 7-11.	57
Sebuken, Feejee Islands.	
<i>Halophila dorsualis</i> , Grd., pl. iv, figs. 12-16.	58
Feejee Islands.	
HYLA, Laur.	59
<i>Hyla regilla</i> , B. & G., pl. iii, figs. 13-18.	60
Puget Sound.	
<i>Hyla cyanura</i> , Schleg.	62
HYLODES, Fitz.	
<i>Hylodes parvus</i> , Grd., pl. iii, figs. 24-28.	63
Rio de Janeiro, Brazil.	
ELOSIA, Tsch.	64
<i>Elosia nasuta</i> , Tsch., pl. iv, figs. 39-43.	65
Rio de Janeiro, Brazil.	
<i>Elosia bufoniana</i> , Grd., pl. iv, figs. 23-27.	66
Rio de Janeiro, Brazil.	
<i>Elosia rouleiata</i> , Grd., pl. iv, figs. 17-22.	69
Rio de Janeiro, Brazil.	
Family BUFONIDE.	71
RHINODERMA, Dnn. & Bibr.	
<i>Rhinoderma signifera</i> , Grd.	72
Rio de Janeiro, Brazil.	
BUFO, Laur.	74
<i>Bufo boreas</i> , B. & G., pl. vi, figs. 4-9.	
Puget Sound, Oregon.	
<i>Bufo Columbiensis</i> , B. & G., pl. v, figs. 4-9.	77
Columbia River, Oregon.	
<i>Bufo marinus</i> , Schu., pl. vi, figs. 1-3.	80
Rio de Janeiro, Brazil.	
<i>Bufo gracilis</i> , Grd., pl. vi, figs. 16-21.	83
Rio de Janeiro, Brazil.	
<i>Bufo luyahueus</i> , Grd., pl. vi, figs. 19-15.	85
Valparaiso, Chile.	

1858. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

<i>Bufo thaul</i> , Less., pl. v. figs. 15-19.....	88
Valparaiso, Chile.	
<i>Bufo poppii</i> Tsch.....	90
Coast of Peru.	
<i>Bufo melanostictus</i> , Schu., pl. v. figs. 10-14.....	92
Singapore.	
BUFONELLA, GIRARD.....	94
<i>Bufoella crucifera</i> , Grd.....	95
Australia.	
METEUS, GIRARD.....	96
<i>Meteus timidus</i> , Grd.....	97
Valparaiso, Chile.	
BRACHYCEPHALUS, FITZ.....	99
<i>Brachycephalus aurantiacus</i> , Grd., pl. v. figs. 20-24.....	100
Rio de Janeiro, Brazil.	
Order II, OPHIDIA.....	105
SABRINA, GIRARD.....	106
<i>Sabrina tessellata</i> , Grd., pl. xv. figs. 7-9.....	
Coast of Peru.	
CYLINDROPHIS, WAGL.....	108
<i>Cylindrophis rufa</i> , Gray.....	109
Singapore.	
WENONA, B. & G.....	111
<i>Wenona plumbea</i> , B. & G., pl. vii. figs. 1-7.....	112
Puget Sound, Washington.	
<i>Wenona Isabella</i> , B. & G., pl. vii. figs. 8-14.....	113
Puget Sound, Washington.	
MORELIA, GRAY.....	115
<i>Morelia argus</i> , Dum. & Bibr.....	
Near Sydney, Australia.	
ENYGRUS, WAGL.....	117
<i>Enygrus bibroni</i> , Dum. & Bibr., pl. viii. figs. 8-11.....	
Navigator and Feejee Islands.	
RABBITON, DUM.....	119
<i>Rabditon occipitale</i> , Grd.....	120
Upper Hunter, near Sydney, Australia.	
LODIA, B. & G.....	122
<i>Lodia tenuis</i> , B. & G., pl. ix. figs. 8-11.....	
Puget Sound, Washington.	
CONTIA, B. & G.....	124
<i>Contia mitis</i> , B. & G., pl. x. figs. 6-12.....	125
California and Oregon.	
BASCANION, B. & G.....	126
<i>Bascanion vetustus</i> , B. & G., pl. viii. figs. 12-19.....	127
Puget Sound, Washington.	
DENDROPHIS, BOIE.....	129
<i>Dendrophis picta</i> , Boie.....	
Singapore.	
<i>Dendrophis prasinus</i> , Grd., pl. xii. figs. 7-10.....	131
Sydney, Australia.	
PITUOPHIS, HOLBR.....	133
<i>Pituophis catenifer</i> , B. & G., pl. viii. figs. 1-7.....	135
San Francisco, California.	
<i>Pituophis Wilkesi</i> , B. & G., pl. ix. figs. 1-7.....	13
Washington.	
CALLIRHINUS, GIRARD.....	139
<i>Callirhinus Patagoniensis</i> , Grd., pl. xii. figs. 1-6.....	
Patagonia, near mouth of Rio Negro.	
SHYNON, FITZ.....	142
<i>Sibynon aculatus</i> , Fitz., pl. xi. figs. 11-16.....	
Amancaes Valley, near Lima, Peru.	
<i>Tropidonotus puceus</i> , Cantor, pl. xiii. figs. 1-6.....	145
Singapore.	

1858. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

EUTENIA, B. & G.	147
<i>Eutenia infernalis</i> , B. & G., pl. xiv, figs. 11-16.	148
Sacramento River, California.	
<i>Eutenia Pickeringi</i> , B. & G., pl. xiii, figs. 14-20.	150
Puget Sound, Oregon.	
<i>Eutenia leptocephala</i> , B. & G., pl. xiii, figs. 7-13.	151
Puget Sound, Oregon.	
<i>Eutenia ordiaoides</i> , B. & G., pl. xiv, figs. 1-4.	153
California.	
<i>Eutenia vagrans</i> , B. & G., pl. xiv, figs. 5-10.	154
Puget Sound, Oregon.	
CANTORIA, Girard	156
<i>Cantoria violacea</i> , Grd., pl. xi, figs. 7-10.	
Singapore.	
<i>Lygophis werreui</i> , Wagl., pl. xi, figs. 1-6.	159
Rio de Janeiro, Brazil.	
<i>Dromicus Temminckii</i> , Dum. & Bibr.	161
Valparaiso, Chile.	
<i>Lygophis elegans</i> , Tsch.	163
San Lorenzo, Peru.	
<i>Amphisnat rhodonelas</i> , Dum. & Bibr.	165
Singapore.	
<i>Henodon uncorus</i> , Grd.	167
Manilla.	
<i>Erythrolampeus constrictissimus</i> , Boie.	169
Rio de Janeiro—Brazil.	
CERBERUS, Cuv.	170
<i>Cerberus barformis</i> , Dum. & Bibr., pl. viii, figs. 8-11.	
Ryan's Hill, near Singapore.	
TACHYMENIS, Wiegm.	173
<i>Tachymenis chilensis</i> , Grd.	
Valparaiso, Chili.	
DOLIOPHIS, Girard	175
<i>Doliophis fusiceps</i> , Grd., pl. x, figs. 1-5.	176
Singapore.	
<i>Pseudelaps psammophis</i> , Grd.	178
Sydney, Australia.	
PLATURUS, Latr.	180
<i>Platurus laticaudatus</i> , Wagl.	
Fiji Islands.	
<i>Platurus colubrinus</i> , Wagl.	183
Feejee and Tonga Islands.	
PELAMYS, Daud.	184
<i>Pelamys bicolor</i> , Daud.	185
Pomotu or Society Islands.	
CROTALUS, Linn.	187
<i>Crotalus lucifer</i> , B. & G., pl. xv, figs. 1-6.	
Western coast of United States.	
Order III. SAURIA	193
Family VARANIDÆ	194
HYDROSAURUS, Wagl.	195
<i>Hydrosaurus varius</i> , Gray	196
Near Sydney, Australia.	
Family LACERTIDÆ	197
Subfamily CELODONTES	199
LACERTA, Linn.	
<i>Lacerta maderensis</i> , Fitz., pl. xxiv, figs. 1-8.	200
Island of Madeira.	
Subfamily PLEODONTES	201
TEIUS, Merr.	
<i>Teius teguixin</i> , Schinz., pl. xviii, figs. 1-7.	202
Rio de Janeiro, Brazil.	
Family ZONURIDÆ	204
ELGARIA, Gray	205
<i>Elgaria formosa</i> , B. & G., pl. xviii, figs. 10-17.	206
Upper California.	

1858. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

<i>Elgaria scincicauda</i> , B. & G., pl. xxiii, figs. 1-9	210
Upper California.	
<i>Elgaria grandis</i> , B. & G., pl. xxii, figs. 1-9	212
Oregon.	
<i>Elgaria principis</i> , B. & G., pl. xxii, figs. 9-16	214
Puget Sound, Washington.	
Family AMPHISBENIDÆ	215
CEPHALOPELTIS, Müll.	216
<i>Cephalopeltis scutigera</i> Gray	217
Rio de Janeiro, Brazil.	
Family SCINCIDÆ	218
Subfamily OPHIOPHTHALM	219
CRYPTOBLEPHARUS, Wieg.	
<i>Cryptoblepharus plagiocephalus</i> , Grd., pl. xxvi, figs. 17-24	220
Otaheiti and Sandwich Islands.	
<i>Cryptoblepharus eximius</i> , Grd., pl. xxvi, figs. 25-32	222
Feejee Archipelago.	
Subfamily SAUROPHTHALM	223
OPHIODES, Wagl	224
<i>Ophiodes striatus</i> , Wagl	225
Rio de Janeiro, Brazil.	
TILIQUA, Gray	227
<i>Tiliqua rufescens</i> , Gray.	
Mangsi Island, Philippine group.	
EUPREPIS, Wagl	229
<i>Euprepis venustus</i> , Grd., pl. xxvi, figs. 1-8.	
San Jago, Cape de Verde Islands.	
CYCLODUS, Wagl	232
<i>Cyclodus gigas</i> , Gray	233
Sydney, Australia.	
CYCLODINA, Girard	235
<i>Cyclodina aenea</i> , Grd., pl. xxvi, figs. 9-16	236
Bay of Islands, New Zealand.	
HOMBRONIA, Girard	239
<i>Hombromia undosa</i> , Grd., pl. xxvii, figs. 17-24	240
Bay of Islands, New Zealand.	
<i>Hombromia fasciolaris</i> , Grd., pl. xxvii, figs. 25-32	243
Bay of Islands, New Zealand.	
OLIGOSOMA, Girard	245
<i>Oligosoma Zelandicum</i> , Grd., pl. xxvii, figs. 9-16	246
Bay of Islands, New Zealand.	
<i>Oligosoma noctuum</i> , Grd	249
Coral Islands.	
LYGOSOMELLA, Girard	251
<i>Lygosomella arstuousa</i> , Grd., pl. xxvii, figs. 1-8.	
Bay of Islands, New Zealand.	
LIPINIA, Gray	254
<i>Lipinia vulcania</i> , Grd.	
Caldera, on Mindanao, Philippine Archipelago.	
HINULIA, Gray	257
<i>Hinulia tenuolata</i> , Gray	258
Pewen Bowen, Southeast Australia.	
MABUYA, Fitz	260
<i>Mabuya agilis</i> , Fitz	261
Rio de Janeiro, Brazil.	
EMOA, Girard	262
<i>Emoa atrocostata</i> , Grd	264
Feejee Archipelago.	
<i>Emoa Samoensis</i> , Grd.	265
Navigator and Fiji groups of islands.	
<i>Emoa nigrita</i> , Grd	268
Samoa, Navigator group.	
<i>Emoa cyanura</i> , Grd.	270
Coral Islands.	

1858. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

Family GEKKOIDE.....	272
Family GEBYRA, Gray.....	272
<i>Gebyra Oceanica</i> , Gray.....	273
Navigator Islands and Tabeiti.	
<i>Gebyra varax</i> , Grd.....	274
Feejee and Raruka.	
Family PEROPUS, Wiegmann.....	277
<i>Pecopus mutilatus</i> , Wiegmann.	
Balabae Passage, Philippine Archipelago.	
<i>Peropus neglectus</i> , Grd.....	278
Rio de Janeiro, Brazil.	
Family DACTYLOPERUS, Fitzinger.....	279
<i>Dactyloperus insulensis</i> , Grd.....	280
Oahu and Kanai, Sandwich Islands.	
Family CROSSURUS, Wagler.....	281
<i>Crossurus platyurus</i> , Grd.	
East Indies.	
Family HEMIDACTYLUS, Cuvier.....	282
<i>Hemidactylus uabania</i> , Cuv., pl. xxv, figs. 9-16.....	283
Rio de Janeiro, Brazil.	
<i>Hemidactylus eganodaetylus</i> , Grd., pl. xxv, figs. 17-24.....	284
Port Praya, San Jago, Cape Verde Islands.	
Family DORYCRA, Gray.....	285
<i>Dorycra vulpeola</i> , Grd., pl. xxiv, figs. 17-24.....	286
Sandwich Islands.	
Family ASCALABOTES, Cuvier.....	288
<i>Ascalabotes Delalandii</i> , Fitz., pl. xxv, figs. 1-8.....	289
San Jago, Cape de Verde Islands	
Family GEKKO, Laurillard.....	290
<i>Gekko Indicus</i> , Grd., pl. xvi, figs. 9-16.	
Island in Balabae Strait, near China Seas.	
<i>Gekko monarchus</i> , Gray.....	292
Singapore.	
Family HOPILODACTYLUS, Fitzinger.....	293
<i>Hopiodactylus pomarii</i> , Grd., pl. xviii, figs. 10-16.....	294
Bay of Islands, Brazil.	
Family DIPLODACTYLUS, Gray.....	296
<i>Diplodactylus vittatus</i> , Gray, pl. xxiv, figs. 9-16.....	297
Southeastern Australia.	
Family DIPLODACTYLUS, Fitzinger.....	299
<i>Diplodactylus phacophorus</i> , Tsch., pl. xxv, figs. 25-32.....	300
Amancas Mountains, Peru.	
Family PHYLLURUS, Cuvier.....	302
<i>Phyllurus platurus</i> , Cuvier.....	303
Southeast Australia.	
Family GONIODACTYLUS, Kuhl.....	304
<i>Goniodactylus marmoratus</i> , Kuhl.	
Mangsi Island, Philippine group.	
Family HETERONOTA, Gray.....	305
<i>Heteronota pelagica</i> , Grd., pl. xxiv, figs. 25-32.....	306
Feejee and Navigator Islands.	
Family NAULTINUS, Gray.....	308
<i>Naultinus punctatus</i> , Gray, pl. xvi, figs. 17-26.....	309
Bay of Islands, New Zealand.	
Family IGUANIDÆ.....	312
Subfamily PLEURODONTES.....	313
Family MICROLOPHUS, Duméril & Bibron.....	
<i>Microlophus Peruvianus</i> , Gray.....	314
Peru.	
Family TARAGUIRA, Gray.....	317
<i>Taraguira torquata</i> , Gray.....	318
Rio de Janeiro, Brazil.	
Family SACCODEIRA, Girard.....	322
<i>Saccodeira ornatissima</i> , Girard, pl. xxviii, figs. 1-8.....	323
Lower Cordilleras, below Obrajillo, near Yanga, Republic of Peru.	

1858. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

PROCTOTRETUS, Dum. & Bibr.	326
PROCTOTRETUS (Dum. & Bibr.), Grd.	329
<i>Proctotretus splendidus</i> , Grd., pl. xvii, figs. 1-7.	
Banks of Río Negro, in Patagonia.	
<i>Proctotretus pectinatus</i> , Dum. & Bibr.	333
Chile.	
LIOLÆMUS, Wiegmann.	334
<i>Liolaemus atidus</i> , Gravenh., pl. xxvii, figs. 17-24.	
Valparaiso, Chile	
LIODEIRA (Dum. & Bibr.), Fitz.	339
<i>Liodeira chilensis</i> (Dum. & Bibr.), Grd.	340
Chile.	
PTYCHODEIRA (Dum. & Bibr.), Fitz.	
<i>Ptychodeira gracilis</i> , Grd., pl. xvii, figs. 22-28.	341
Coast of Patagonia.	
<i>Ptychodeira femorata</i> , Grd.	344
Valparaiso, Chile.	
<i>Ptychodeira Stantoni</i> , Grd.	347
Santiago, Chile.	
<i>Ptychodeira epinogaster</i> , Grd.	
Chile.	
<i>Ptychodeira intermedia</i> , Grd.	348
Republic of Chile.	
<i>Ptychodeira mosaica</i> , Grd.	349
Republic of Chile.	
RHYTIDODEIRA, Girard.	
<i>Rhytidodeira Kingi</i> , Grd.	350
Port Desiré, Patagonia.	
<i>Rhytidodeira Magellanica</i> , Grd.	351
Port Desiré, Patagonia; Pecket Harbor, Strait of Magellan.	
<i>Rhytidodeira bibroni</i> , Grd.	352
Port Desiré, Patagonia.	
<i>Rhytidodeira Wiegmanni</i> , Grd.	352
Republic of Chile.	
<i>Rhytidodeira nigromaculata</i> , Grd.	353
Republic of Chile.	
<i>Rhytidodeira oxycephala</i> , Grd., pl. xxviii, figs. 26-33.	
Cordilleras, altitude of 8,000 feet.	
EULÆMUS, Girard.	357
<i>Eulæmus tenuis</i> , Grd., pl. xxviii, figs. 9-16.	358
Valparaiso, Chile.	
<i>Eulæmus Darwini</i> , Grd., pl. xvii, figs. 8-14.	361
Coast of Patagonia.	
<i>Eulæmus piectus</i> , Grd.	364
Republic of Chile.	
<i>Eulæmus fitzingeri</i> , Grd.	365
Republic of Chile.	
<i>Eulæmus affinis</i> , Grd.	366
Port Desiré and Santa Cruz, Patagonia.	
<i>Eulæmus signifer</i> , Grd.	366
Republic of Chile.	
<i>Eulæmus maculatus</i> , Grd.	367
Republic of Peru.	
ORTHOLEMUS, Girard.	368
<i>Ortholaemus Beaghi</i> , Grd., pl. xvii, figs. 15-21.	369
On coast of Patagonia.	
<i>Ortholaemus multinaculatus</i> , Grd.	372
Republic of Chile.	
<i>Ortholaemus Fitzroyi</i> , Grd.	373
Bahia Blanca and Río Negro, Patagonia; Maldonado, near mouth of Río La Plata.	
BRACHYLOPHUS, Cuv.	
<i>Brachylophus fasciatus</i> , Cuv., pl. xviii, figs. 8-9.	374
Fongataboo and Frejee Islands.	

1858. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

SCOLOPORUS, Wieg.	377
<i>Sceloporus undulatus</i> , Wieg., pl. xix, figs. 15-21	379
Between Mississippi Valley and Atlantic Ocean, New Jersey, and Gulf of Mexico.	
<i>Sceloporus occidentalis</i> , B. & G., pl. xix, figs. 8-14	383
California and Oregon, west of Rocky Mountains.	
<i>Sceloporus frontalis</i> , B. & G., pl. xix, figs. 1-7	384
Puget Sound, Oregon.	
<i>Sceloporus gravis</i> , B. & G., pl. xx, figs. 1-9	386
Oregon.	
PHRYNOSOMA, Wieg.	389
TAPAYA, Cuv.	394
<i>Tapaya orbicularis</i> , Cuv.	
Valley of Mexico.	
<i>Tapaya Hernandezi</i> , Grd.	395
New Mexico.	
<i>Tapaya ornatissima</i> , Grd.	396
Mountain region of New Mexico.	
<i>Tapaya brevirostris</i> , Grd.	397
Plains of Kansas and Nebraska.	
<i>Tapaya Douglassi</i> , Grd., pl. xxi, figs. 1-5.	
Mountain region of Oregon.	
BATRACHOSOMA, Fitz.	400
<i>Batrachosoma coronatum</i> , Fitz., pl. xx, figs. 10-13.	
Upper California.	
PHRYNOSOMA (Wieg.), Grd.	402
<i>Phrynosoma coronatum</i> , Gray, pl. xxi, figs. 6-9	403
Southwestern States of the Union.	
<i>Phrynosoma regale</i> , Grd.	406
Valleys of Zuni and Colorado Rivers.	
DOLIOSAURUS, Grd.	407
<i>Doliosaurus McCalli</i> , Grd.	408
Deserts of Gila and Colorado Rivers.	
<i>Doliosaurus platyrhinus</i> , Grd.	409
Valley of Great Salt Lake of Utah.	
<i>Doliosaurus modestus</i> , Grd.	409
Valley of Rio Grande del Norte.	
Subfamily ACRODONTES	410
BROCHOCELA, Kaup	411
<i>Brochocele cristatella</i> , Kaup.	
Singapore.	
AMPHIBOLURUS, Wagl.	413
<i>Amphibolurus muricatus</i> , Wagl.	414
New South Wales, Australia.	
<i>Amphibolurus maculiferus</i> , Grd.	417
New South Wales, Australia.	
OREODIRA, Girard.	419
<i>Oreodira gracillipes</i> , Grd.	420
New South Wales, Australia.	
Order IV. CHELONIA	425
Suborder I. CHELONII	427
Family CHELONIDÆ, Bonap.	429
THALASSCHELYS, Fitz.	
<i>Thalassochelys corticea</i> , Grd., pl. xxix.	431
Madeira.	
LEPIDOCHELYS, Fitz.	434
<i>Lepidochelys olivacea</i> , Fitz.	435
Chinese Seas.	
<i>Lepidochelys Dussumieri</i> , Grd.	437
Coast of Malabar.	
Remarks on <i>Chelonia vergata</i> , Schn.	
CARETTA, Mott.	438
<i>Caretta imbricata</i> , Merr.	440
Atlantic Ocean, West Indies especially.	
<i>Caretta squamosa</i> , Grd., pl. xxx, figs. 1-7	442
Sooloo Seas and Indian Ocean.	

1858. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

<i>Caretta rostrata</i> , Grd., pl. xxx, figs. 8-13	446
Foejee Islands.	
EUCHELYS, Girard.	447
<i>Euchelys nurocopus</i> , Grd., pl. xxxi, figs. 9-11	448
Mangsi Islands, Philippine Archipelago.	
Remarks on the genus <i>Halichelys</i> of Fitzinger.	
CHELONIA, Brongn.	452
<i>Chelonia viridis</i> , Temm. & Schleg.	453
West Indies.	
<i>Chelonia nucealosa</i> , Cuv.	454
Coast of Malabar.	
<i>Chelonia marmorata</i> , Dum. & Bibr., pl. xxxi, figs. 5-7	455
Atlantic Ocean.	
<i>Chelonia formosa</i> , Grd., pl. xxxi, figs. 1-4	456
Foejee Islands.	
<i>Chelonia tenuis</i> , Grd., pl. xxxi, fig. 8	459
Honden Island, Paumotu Group; Tahiti and Eimeo; Rosa Island.	
Suborder II, TESTUDINATA	461
Family HYDRASPIDES	462
Family EMYDIDÆ	463
Subfamily CLEMMYDIDÆ	464
ACTINEMYS, Agass.	
<i>Actinemys marmorata</i> (Ag.), Grd., pl. xxxii	465
Puget Sound (Oregon); Sacramento River (California).	
Family TESTUDINIDÆ	470
TESTUDO, Linn.	
<i>Testudo Australis</i> , Grd.	
Bay of Islands, New Zealand.	

94.

1858. GIRARD, CHARLES. United States and Mexican | Boundary Survey | under the order of | Lieut. Col. W. H. Emory, | Major First Cavalry, and United States Commissioner. | Ichthyology | of the Boundary. | By | Charles Girard, M. D. *Report of the United States and Mexican Boundary Survey*, ii, 1-77. 1858.

ICHTHYOLOGY.

PERCIDÆ.	
<i>Diaplites nurensis</i> , Grd., pl. i.	1
<i>Callinurus longipilus</i> , Grd., pl. iv, figs. 1-4	5
<i>Pomotis speciosus</i> , B. & G., pl. iv, figs. 5-8	5
<i>Pomotis heros</i> , B. & G., pl. ii, figs. 1-4	6
<i>Pomotis aquileusis</i> , B. & G., pl. iii, figs. 1-8	7
<i>Pomotis fallax</i> , B. & G., pl. ii, figs. 5-8; pl. iii, figs. 9-12	8
ETHEOSTOMIDÆ	10
<i>Pileoma carbonaria</i> , B. & G., pl. viii, figs. 10-13	10
<i>Perciliichthys lepidus</i> , Grd., pl. viii, figs. 14-17	11
BATRACHIDÆ.	
<i>Batrachus tau</i> , Cuv. & Val.	11
SCLENIDÆ.	
<i>Otolithus Drummondii</i> , Richards, pl. vi.	12
<i>Otolithus nothos</i> , Holbr.	11
<i>Leiotomus obliquus</i> , DeKay.	11
<i>Homoprion lanceolatus</i> , Holbr.	11
<i>Homoprion zanthurus</i> , Holbr.	11
<i>Conodon autillanus</i> , Cuv. & Val.	11
<i>Pogonius fasciatus</i> , Lacép.	11
<i>Sargus oris</i> , Cuv. & Val.	11
<i>Ambloidon neglectus</i> , Grd., pl. v, figs. 6-10	12
<i>Micropogon undulatus</i> , Cuv. & Val., pl. vii	13
<i>Johnius ocellatus</i> , Grd., pl. viii, figs. 1-4	14
ORTHOPRISTIS, Girard	15
<i>Orthopristis duplex</i> , Grd., pl. ix, figs. 1-4	15
SPARIDÆ	15
<i>Latodon rhomboides</i> , Holbr., pl. ix, figs. 15-16	16

1858. GIRARD, CHARLES—Continued.

MENIDÆ.....	17
EUCINOSTOMUS, B. & G.....	17
<i>Eucinostomus argenteus</i> , B. & G., pl. ix, figs. 9-12.....	17
NEOMENIS, Girard.....	18
<i>Neomenis emarginatus</i> , Grd., pl. ix, figs. 5-8.....	18
POLYNEMIDÆ.....	19
<i>Polynemus octonemus</i> , Grd., pl. x, figs. 5-9.....	19
ATHERINIDÆ.....	19
<i>Atherinopsis</i> , sp.....	19
Indianola, Texas.....	
<i>Atherinopsis</i> , sp.....	19
Mexico.....	
MUGILIDÆ.....	19
<i>Mugil Berlandieri</i> , Grd., pl. x, figs. 1-4.....	20
SCOMBRIDÆ.....	20
CHORINEMUS, Cuv. & Val.....	20
<i>Chorinemus lanceolatus</i> , Grd., pl. xi, fig. 5.....	21
CHLOROSCOMBRUS, Grd.....	21
<i>Chloroscombrus Caribbeus</i> , Grd., pl. xi, fig. 6.....	21
DOLIODON, Girard.....	22
<i>Doliodon Carolinus</i> , Grd., pl. xi, fig. 4.....	22
<i>Doliodon spinosus</i> , Grd.....	22
CARANGUS, Girard.....	23
<i>Carangus esculentus</i> , Grd., pl. xi, figs. 1-3.....	23
<i>Carangus chrysos</i> , Grd.....	23
<i>Carangus fallax</i> , Grd.....	23
<i>Carangus pisquetus</i> , Grd.....	23
<i>Carangus Bartholomæi</i> , Grd.....	23
<i>Carangus defensor</i> , Grd.....	23
<i>Carangus falcatus</i> , Grd.....	23
<i>Carangus Richardi</i> , Grd.....	23
<i>Argyreiosus capillaris</i> , DeKay, pl. xi, fig. 7.....	23
<i>Vomer setipinnis</i> , n. s., pl. xi, fig. 8.....	24
TÆNIODÆ.....	24
<i>Trichurus lepturus</i> , Linn.....	24
GOBIDÆ.....	24
GOBIONELLUS, Grd.....	24
<i>Gobionellus hastatus</i> , Grd., pl. xii, fig. 7-8.....	25
<i>Gobionellus lanceolatus</i> , Grd.....	24
<i>Gobionellus baccatus</i> , Grd.....	24
<i>Gobionellus smaragdus</i> , Grd.....	24
<i>Gobionellus brasiliensis</i> , Grd.....	24
<i>Gobius lyricus</i> , Grd., pl. xii, figs. 4-5.....	25
<i>Gobius Würdemanni</i> , Grd.....	25
<i>Gobius catulus</i> , Grd., pl. xii, figs. 9-10.....	26
<i>Gobius gulosus</i> , Grd.....	26
GOBIOSOMA, Girard.....	27
<i>Gobiosoma molestum</i> , Grd., pl. xii, fig. 14.....	27
<i>Gobiosoma alpeolata</i> , Grd.....	27
BLENNIDÆ.....	27
<i>Blennius multifiliis</i> , Grd., pl. xii, fig. 6.....	27
<i>Eleotris sumulentes</i> , Grd., pl. xii, figs. 1-3.....	28
<i>Eleotris gyrinus</i> , Cuv. & Val., pl. xii, figs. 11-12.....	28
<i>Philipinus dormitator</i> , Cuv. & Val., pl. xii, fig. 13.....	29
PLEURONECTIDÆ.....	29
Four species belonging to several genera.....	29
ECHENEIDÆ.....	29
<i>Echeneis</i> , sp.....	29
St. Joseph's Island.....	
OPHIDIIDÆ.....	29
<i>Ophidion Josephi</i> , Grd.....	29
SCOMBERESCIDÆ.....	30
<i>Belone scrutator</i> , Grd., pl. xiii.....	30
LABRIDÆ.....	30
HERICHTHYS, B. & G.....	30
<i>Hericthys cyano-guttatus</i> , B. & G., pl. iv, figs. 9-12.....	30

1858. GIRARD, CHAELES.—Continued.

SILURIDÆ	31
<i>Ailurichthys</i> , B. & G.	31
<i>Ailurichthys marinus</i> , B. & G., pl. xiv.	31
<i>Ailurichthys grouari</i> , Grd.	31
<i>Ailurichthys eydouxi</i> , Grd.	31
<i>Ailurichthys blochi</i> , Grd.	31
<i>Arius equestris</i> , n. s., pl. xv.	32
<i>Pimelodus affinis</i> , B. & G., pls. xvi, xvii.	32
<i>Pimelodus vulpes</i> , Grd., pl. xviii.	32
CYPRINIDÆ	34
<i>Letiobius tumidus</i> , Grd., pl. xiv, figs. 1-4.	34
<i>Moxostoma Keeneri</i> , Grd., pl. xx, figs. 7-9.	34
<i>Moxostoma Victorie</i> , Grd., pl. xx, figs. 1-3.	35
<i>Moxostoma Campbellei</i> , Grd., pl. xx, figs. 4-6.	35
<i>Ptychostomus congestus</i> , Grd., pl. xxi, figs. 5-8.	36
<i>Ptychostomus albidus</i> , Grd., pl. xix, figs. 5-8.	36
MINOMUS, Girard	37
<i>Minomus insignis</i> , Grd., pl. xxi, figs. 1-4.	37
<i>Minomus plebeius</i> , Grd., pl. xxii, figs. 1-4.	38
<i>Minomus Clarki</i> , Grd., pl. xxii, figs. 5-8.	38
<i>Acomus latipinnis</i> , Grd., pl. xxii, figs. 1-6.	39
<i>Acomus Guzmaniensis</i> , Grd., pl. xxiii, figs. 6-10.	39
<i>Catostomus Bernierini</i> , Grd., pl. xxiii, figs. 1-5.	40
CAMPOSTOMA, Agass.	40
<i>Campostoma ornatum</i> , Grd., pl. xxv, figs. 1-4.	41
<i>Campostoma formosulum</i> , Grd., pl. xxv, figs. 5-8.	41
<i>Campostoma natusum</i> , Grd., pl. xxv, figs. 9-12.	42
<i>Dionda serena</i> , Grd., pl. xxvi, figs. 9-12.	42
<i>Dionda Texensis</i> , Grd., pl. xxvi, figs. 21-24.	42
<i>Dionda argentosa</i> , Grd., pl. xxvi, figs. 5-8.	43
<i>Dionda chrysitis</i> , Grd., pl. xxvi, figs. 13-16.	43
<i>Dionda melanops</i> , Grd., pl. xxvi, figs. 17-20.	44
<i>Dionda Couchi</i> , Grd., pl. xxvi, fig. 1-4.	44
ALGOMA, Girard	44
<i>Algoma amara</i> , Grd., pl. xxvii, fig. 17-20.	45
<i>Algoma flurialis</i> , Grd., pl. xxvii, figs. 13-16.	45
COCHLOGNATHUS, B. & G.	4
<i>Cochlognathus ornatus</i> , B. & G., pl. xxxv, figs. 12-17.	46
<i>Algansea tinella</i> , Grd., pl. xxvii, figs. 1-4.	46
<i>Argyreus osenbus</i> , Grd., pl. xxvii, figs. 9-12.	47
<i>Argyreus notabilis</i> , Grd., pl. xxvii, figs. 5-8.	47
AGOSTIA, Girard.	
<i>Agostia chrysanter</i> , Grd., pl. xxviii, figs. 5-8.	48
<i>Agostia metallica</i> , Grd., pl. xxviii, figs. 1-4.	49
<i>Gobio ostrivialis</i> , Grd., pl. lvii, figs. 17-29.	49
MEDA, Girard	50
<i>Meda fulgida</i> , Grd., pl. xxviii, figs. 9, 10.	50
<i>Chiola velox</i> , Grd., pl. xxxi, figs. 21-24.	51
<i>Alburnellus amabilis</i> , Grd., pl. xxix, figs. 10-13.	51
<i>Alburnellus megalops</i> , Grd., pl. xxix, figs. 1-4.	52
<i>Alburnellus socius</i> , pl. xxix, figs. 14-17.	52
CODOMA, Girard	53
<i>Codoma ornata</i> , Grd., pl. xxix, figs. 22-25.	53
<i>Codoma vittata</i> , Grd., pl. xxix, figs. 18-21.	53
<i>Cyprinella macrostoma</i> , Grd., pl. xxxi, figs. 5-8.	54
<i>Cyprinella reauata</i> , Grd., pl. xxxi, figs. 1-4.	54
<i>Cyprinella Texana</i> , Grd., pl. xxxi, figs. 9-12.	55
<i>Cyprinella luciloides</i> , Grd., pl. xxxi, figs. 13-16.	55
<i>Moniana aurata</i> , Grd., pl. xxx, figs. 13-16.	56
<i>Moniana complanata</i> , Grd., pl. xxxi, figs. 17-20.	56
<i>Moniana frigida</i> , Grd., pl. xxx, figs. 17-20.	56
<i>Moniana Couchi</i> , Grd., pl. xxx, figs. 21-24.	57
<i>Moniana rotula</i> , Grd., pl. xxx, figs. 1-4.	57
<i>Moniana nitida</i> , Grd.	58
<i>Moniana formosa</i> , Grd., pl. xxx, figs. 5-8.	58
<i>Moniana gracilis</i> , Grd.	59

1858. GIRARD, CHARLES—Continued.

<i>Moniana gibbosa</i> , Grd., pl. xxx, figs. 9-12	59
<i>Moniana proserpina</i> , Grd.	59
<i>Luxilus leptosomus</i> , Grd., pl. xix, figs. 9-12	60
TIAROGA, Girard	60
<i>Tiaroga cobitis</i> , Grd., pl. xxvii, figs. 11-14	60
<i>Gila elegans</i> , B. & G.	61
<i>Gila Grahami</i> , B. & G., pl. xxiv, figs. 7-12	61
<i>Gila Emori</i> , B. & G., pl. xxxiii, figs. 5-10	62
<i>Tigoma pulchella</i> , Grd., pl. xxxiv, figs. 5-8	62
<i>Tigoma purpurea</i> , Grd.	63
<i>Tigoma intermedia</i> , Grd.	63
<i>Tigoma gibbosa</i> , Grd., pl. xxxiii, figs. 1-4	64
<i>Tigoma nigrescens</i> , Grd., pl. xxxvii, figs. 1-4	64
<i>Tigoma pulchra</i> , Grd., pl. xxxii, figs. 5-8	65
<i>Ptychocheilus lucius</i> , Grd., pl. xxxiv, figs. 1-4	65
CYPRINODONTIDÆ	66
CYPRINODON, Lacép.	66
<i>Cyprinodon elegans</i> , B. & G., pl. xxxvii, figs. 1-7	66
<i>Cyprinodon gibbosus</i> , B. & G., pl. xxxviii, figs. 1-7	67
<i>Cyprinodon bovinus</i> , B. & G., pl. xxxvii, figs. 12-18	67
<i>Cyprinodon macularius</i> , B. & G., pl. xxxvii, figs. 8-11	68
<i>Hyporhamphus similis</i> , B. & G., pl. xxxv, figs. 1-8	68
<i>Fundulus grandis</i> , B. & G., pl. xxxvi	69
PÆCILIA, Schu.	69
<i>Pæcilia lineolata</i> , Grd., pl. xxxv, figs. 9-11	70
LIMIA, Poey	70
<i>Limia porcilloides</i> , Grd., pl. xxxviii, figs. 8-11	70
<i>Limia venusta</i> , Grd., pl. xxxiv, figs. 20-23	71
<i>Gambusia nobilis</i> , Grd., pl. xxxix, figs. 8-11	71
<i>Gambusia affinis</i> , Grd., pl. xxxix, figs. 12-15	72
<i>Gambusia patruelis</i> , Grd., pl. xxxix, figs. 1-7	72
<i>Girardinus occidentalis</i> , Grd., pl. xxxix, figs. 16-19	73
CHARACINIDÆ	73
ASTYANAX, B. & G.	74
<i>Astyanax argentatus</i> , B. & G., pl. viii, figs. 5-9	74
SCOPELIDÆ	75
<i>Scomus Mexicanus</i>	75
CLUPEIDÆ	75
<i>Engraulis</i> sp.	75
Gulf of Mexico.	
<i>Melletta</i> , spec.	75
Gulf of Mexico.	
<i>Chatoxus</i> , sp.	75
Gulf of Mexico.	
<i>Clupeonia</i> , sp.	75
Gulf of Mexico.	
MURENIDÆ	
<i>Anguilla tyrannus</i> , Grd., pl. xl	75
NEOMURENA, Girard.	76
<i>Neomurena nigromarginata</i> , Grd., pl. xli	76
NEOCONGER, Girard	77
<i>Neoconger mucronatus</i> , Grd.	77

95.

1859. GIRARD, CHARLES. Reports of Explorations and Surveys to ascertain the Most Practical and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean. Made under the direction of the Secretary of War in 1853-56, according to acts of Congress of March 3, 1853, May 31, 1851, and August 5, 1851. Vol. x, FISHES, 1858. By Charles Girard, M. D., Washington, 1859. With 76 plates. 1.

The fishes of western North America are as yet too little known, and the amount of new materials for further investigations too great, also, to warrant anything like an attempt on the present occasion to establish a natural series. After treating of the various groups in a

1859. GIRARD, CHARLES—Continued.

series of monographs, as already begun (see No. 26), we shall be better prepared to do justice to that part of this subject.

We have dwelt at some length upon two groups—the Cataphræti, or mailed checks, and the Embiotocoids, or viviparous family, both of them having numerous representatives along the Pacific coast. They constitute the most prominent feature of the ichthyic fauna of that region of the North American continent, together with the Trachinids and the Heterolepids, which seemingly bring into closer relationships the Percoids and the Cottoids, properly so called. The true Percoids themselves appear isolated west of the Rocky Mountain range.

The Sphyrænid family is represented by one species of the genus *Sphyræna*.

The Scienoids, so far as observed, are few in numbers, and remind us of the Atlantic types.

Not a single species of Sparoids has, as yet, come to our knowledge from the coasts of Oregon and California.

As to the Atherinoid family, we find in California a rather large species designated by the settlers under the name of "Smelt," possibly on account of its delicacy, and which is, truly speaking, an ally of the "Silver-side" or "Silver-fish" of our Atlantic coast, and the "Pescé del Rey" or "Pescadilla del Rey" of Central and South America. The "Silver-fish" being of a diminutive size, even when full grown, its excellent qualities have remained unnoticed by either fishermen or gastronomers. The "Pescé del Rey" tells its own story.

The scarcity of Scomberoids is a curious feature in the fauna of our western coast; a Mackerel (*Scomber*), a Bonito (*Polunus*) and two (*Caraux*), constitute thus far the entire known list. But we venture to say that further researches will bring to light many more of them.

The only species of Chetodonts we are acquainted with from the western coast was obtained in the southern part of the State of California.

The Blennioid family is seemingly more numerous than the preceding ones, new generic types (*Neoclinus*, *Xiphidion*, *Apodichthys*, *Cobidichthys*, and *Anarrichthys*) having been found, along with species of known genera (*Blennius*, *Grunellus*, and *Lumpenus*).

The Gobioids, properly so called, are comparatively scarce, two species of the genus *Gobius* constituting the entire known list.

The Cyclopterids, or Discoboli, are represented by two species also, one of which is a *Lepadogaster*, the other a *Cyclogaster*.

The Batrachoid or toad fish family has furnished one species to the fauna, exhibiting the characters of a new genus, which we have called *Porichthys*.

The Labroids proper are anything but numerous, the Embiotocoids being considered as a separate family. We believe, nevertheless, that many more will be discovered along the southern coast of California.

The Pomacentrid family, or marine Labroids, with pectinated scales, has yielded one species, which we place in the genus *Glyphisodon*, not having the means of determining more accurately its generic position.

The Chromids, or fresh-water Labroids with pectinated scales also, have not yet been met with along the Pacific range of North America. We have evidences of their presence in the basin of the Río Grande del Norte (Río Bravo), one species being figured and described in the "Ichthyology" of the *United States and Mexican Boundary Survey*.

The Scomberosoids, or "gartfishes," on the other hand, are represented, thus far, by a species of billfish (*Belone*).

The Gadoid family has given us a Cod, a Whiting (*Merlangus*), and a Cusk (*Brosmeus*); the latter we have not examined.

The Pleuronectids, or flatfishes, are tolerably well represented, though we observe, as yet, no turbot (*Rhombus*) proper. The halibut (*Hippoglossus*) is spoken of as occurring along the coast, but we have not had it in our hands.

The Ophidioid family is represented by two known genera, *Ophidion* and *Ammodytes*, whilst the true eels have not yet been heard of.

The Salmonoids are abundant, especially in species of the Linnæan genus *Salmo*, to which may be added a white fish (*Coregonus*) and two smelts, one belonging to the genus *Osmerus*, the other to that of *Thalichthys* of recent creation.

No Characiniids are known north of the valley of the Río Grande del Norte (Río Bravo), in which one species was collected by the Mexican Boundary Commission, in whose report it is figured and described.

The Scopelids have furnished us, so far, with one species of the genus *Saurus* from the Pacific coast.

The fresh waters teem with Cyprinoids and Percoids, the former east and west of the Rocky Mountains, the latter almost solely eastwardly, in the shape of sunfishes (*Pomoxis*) and bass (*Ambloplites* and *Centarchus*), a single species of bass having been noticed in California.

1859. GIRARD, CHARLES—Continued.

Of the Cyprinodont family, we mention but one species, an inhabitant of the fresh waters of California. Those collected in the interior of the continent we propose to investigate at some future time.

The Etheostomoids are likewise left aside for the present.

A few pickerels, or Esocids, have been observed in the hydrographic basin of the Arkansas.

Some catfishes, or Pimelodi, were secured at the initial point of exploration of the thirty-fifth and forty-seventh parallels, none having been noticed west of the Rocky Mountains.

Of the Clupeidae or herring family we meet with two herrings proper, one belonging to the genus *Clupea*, the other to the genus *Melitta*, and several anchovies (*Engraulis*), but thus far no shad (*Alosa*) have been seen in the collections, which have been made and submitted to our examination.

Three Plectognaths have been noticed, a "Moon-fish" (*Oethogoriscus*), a "Balloon-fish" (*Tetraodon*), and a "Trigger" (*Balistes*).

Five "Pipe-fishes" (*Syngnathus*) and one "Sea-horse" (*Hippocampus*) represent the Lophobranch family.

The Ganoids of the western coast consist in three species of sturgeons (*Acipenser*), and in the interior of the continent in a "Paddle-fish" (*Polyodon*), a "Shovel-nose" (*Scaphirhynchus*), two species of "Mud-fishes" (*Ambia*), and three species of "Gar-pikes" (*Lepisosteus*).

The cartilaginous fishes, as observed, are anything but numerous: five species of Sharks belonging to the genera *Triakis*, *Mustelus*, *Cetoracion*, *Heptanchus*, and *Acanthias*; five species of Skates belonging to the genera *Rhinobatus*, *Narcine*, *Raja*, *Crapatea*, and *Rhinoptera*, and nine species of Lampreys belonging to the genera *Petromyzon*, *Ichthyomyzon*, *Ammocetes*, and *Scolocosa*.

The "Elephant-fish" (*Chimarra*) was observed as far up as Puget Sound.

Order ACANTHOPTERI.....	3
Family PERCIDE, Bonap	3
DIPLITES, Rafin	4
<i>Dioplites nuceensis</i> , G.	4
POMOXIS, Rafin	5
<i>Pomoxis sparoides</i> , G.	6
<i>Pomoxis nigro maculatus</i> , G.	6
<i>Pomoxis annularis</i> , Rafin	6
<i>Pomoxis nitidus</i> , G., pl. ii, figs. 5-8.	6
AMBLOPLITES, Rafin	8
<i>Ambloplites aureus</i> , Agass., pl. i.	8
<i>Ambloplites interruptus</i> , G., pl. ii, figs. 1-4.	10
CALLIURUS, Rafin	11
<i>Calliurus melanops</i> , G., pl. iii	11
<i>Calliurus diaphanus</i> , G., pl. iv., figs. 1-5	13
<i>Calliurus formosus</i> , G., pl. v, figs. 1-4	14
<i>Calliurus longulus</i> , G., pl. v, figs. 5-8	16
<i>Calliurus microps</i> , G., pl. iv, figs. 5-8	17
<i>Calliurus murinatus</i> , G., pl. vii., figs. 1-4	18
BRYTTUS, Chev. & Val	19
<i>Bryttus albus</i> , G., pl. vi, figs. 1-4	19
<i>Bryttus signifer</i> , G., pl. vii, figs. 5-8	20
<i>Bryttus humilis</i> , G., pl. vii, figs. 9-24	21
POMOTIS, Rafin	22
<i>Pomotis luna</i> , G., pl. viii, figs. 1-4	22
<i>Pomotis speciosus</i> , B. & G., pl. viii, figs. 5-8	23
<i>Pomotis heros</i> , B. & G., pl. ix, figs. 13-16	24
<i>Pomotis aquilensis</i> , B. & G., pl. ix, figs. 1-11; pl. x, figs. 8-11	25
<i>Pomotis popii</i> , n. s.	26
<i>Pomotis fallax</i> , B. & G., pl. viii, figs. 1-10; pl. ix, figs. 5-12; pl. x, figs. 1-7	27
<i>Pomotis breviceps</i> , B. & G.	28
LABRAX, Chev.	29
<i>Labrax chrysops</i> , G., pl. xi, figs. 1-4	29
STIZOSTEDION, Rafin	31
<i>Stizostedion boreus</i> , G., pl. xi, figs. 5-8	31
PARALABRAX, Girard	33
<i>Paralabrax nebulifer</i> , G., pl. xii, figs. 1-4	33
<i>Paralabrax clathratus</i> , G., pl. xii, figs. 5-8	34
Family TRACHINIDÆ, Bonap	35
HETEROSTICHUS, Girard	36

1859. GIRARD, CHARLES—Continued.

<i>Heterostichus costatus</i> , G., pl. xiii	36
Family SPHYRENIDÆ, Bonap	38
SPHYRENA, Artédi	38
<i>Sphyreca argentea</i> , G., pl. xiv	39
Tribe of CATAPHRACTI	40
Family HETEROLEPIDÆ, Girard	40
CHIRUS, Steller	41
CHIROPIS, Girard	41
<i>Chiropsis constellatus</i> , G., pl. xix	42
<i>Chiropsis pictus</i> , G., pl. xx, figs. 1-4	43
<i>Chiropsis guttatus</i> , G., pl. xx, figs. 5-8	44
<i>Chiropsis nebulosus</i> , n. s.	45
OPILOPOMA, Girard	46
<i>Opilopoma pantherina</i> , G., pl. xviii, figs. 1-3	46
OPIHODON, Girard	48
<i>Ophiodon elongatus</i> , G., pl. xviii, figs. 4-7	48
Family COTTIDÆ, Girard	50
COTTOPSIS, Girard	51
<i>Cottopsis asper</i> , G.	51
<i>Cottopsis gulosus</i> , G.	53
<i>Cottopsis parvus</i> , G.	54
OLIGOCOTTUS, Girard	55
<i>Oligocottus maculosus</i> , G.	56
<i>Oligocottus analis</i> , G.	57
<i>Oligocottus globiceps</i> , n. s.	58
LEPTOCOTTUS, Girard	59
<i>Leptocottus armatus</i> , G., pl. xv, fig. 2	60
LEIOCOTTUS, Girard	62
<i>Leiocottus hirundo</i> , G., pl. xvi, figs. 2 and 3	62
SCORPENICHTHYS, Girard	63
<i>Scorpenichthys marmoratus</i> , G., pl. xvi, fig. 1	64
ASPICOTTUS, Girard	65
<i>Aspicottus bison</i> , G., pl. xv, fig. 1	66
HEMILEPIDOTUS, Cuv.	67
<i>Hemilepidotus spinosus</i> , AYRES	68
ARTEDIUS, Girard	69
<i>Artedius lateralis</i> , G., pl. xxii ^a , fig. 5 and 6	70
<i>Artedius notospilotus</i> , G., pl. xxii ^b , figs. 5 and 6	71
ZANIOLEPIS, Girard	73
<i>Zaniolepis latipinnis</i> , G., pl. xvii, figs. 5 and 6	73
NAUTICHTHYS, n. g.	74
<i>Nautichthys oculo-fasciatus</i> , G.	75
Family SCORPENIDÆ, Swains	76
SCORPENA, Artédi	76
<i>Scorpena guttata</i> , G., pl. xvii, figs. 1-4	77
SEBASTES, Cuv.	78
<i>Sebastes rosaceus</i> , G., pl. xxi	78
<i>Sebastes fasciatus</i> , G., pl. xxii	79
<i>Sebastes auriculatus</i> , G.	80
<i>Sebastes melanops</i> , G.	81
<i>Sebastes paucispinus</i> , AYRES, pl. xxii ^a , figs. 1-4	83
Family GASTEROSTEIDÆ, Bonap.	84
GASTEROSTEUS, Artédi	85
<i>Gasterosteus plebeius</i> , G.	86
<i>Gasterosteus serratus</i> , AYRES	88
<i>Gasterosteus intermedius</i> , G.	89
<i>Gasterosteus inopinatus</i> , G.	90
<i>Gasterosteus microcephalus</i> , G.	91
<i>Gasterosteus Pugetti</i> , G.	92
<i>Gasterosteus Williamsoni</i> , G.	93
Family SCLANIDÆ, Bonap.	95
AMBLODON, Rafin	95
<i>Ambلودon grunniens</i> , Rafin., pl. xxiii	96
<i>Ambلودon saturans</i> , n. s.	98
LEOSTOMUS, Lacép	99

1859. GIRARD, CHARLES—Continued.

<i>Leiostomus lineatus</i> , Ayres, pl. xxii, figs. 1-4	99
UMBRINA, Cuv	101
<i>Umbrina unbulata</i> , G.	101
Family ATHERINIDÆ, Bonap	102
ATHERINOPSIS, Girard	102
<i>Atherinopsis californiensis</i> , G.	103
Family SCOMBRIDÆ, Bonap	105
<i>Scomber diego</i> , Ayres	105
PELAMYS, Cuv. & Val	105
<i>Pelamys lineolata</i> , n. s.	106
TRACHURUS, Rafin	107
<i>Trachurus symmetricus</i> , G.	107
<i>Trachurus boops</i> , n. s.	108
Family SQCAMPINNÆ, Müll	110
EPHIPPIUS, Cuv	110
<i>Ephippus zonatus</i> , n. s.	110
Family BLENNIDÆ, Bonap	112
BLENNIUS, Artédi	113
<i>Blennius gentilis</i> , G., pl. xxv, fig. 4.	113
NEOCLINUS, n. g.	114
<i>Neoclinus Blanchardi</i> , n. s.	115
GUNNELLS, Cuv	116
<i>Gunnellus ornatus</i> , G.	116
APODICTHYS, Girard	117
<i>Apodictchys flavidus</i> , G.	117
<i>Apodictchys virescens</i> , Ayres	118
XIPHIION, n. g.	119
<i>Xiphidion mucosum</i> , n. s.	119
CEBIDICTHYS, Ayres	121
<i>Cebidictchys violaceus</i> , G., pl. xxv, figs. 4, 5	121
LUMPENS, Reinh.	122
<i>Lumpenus anguillaris</i> , G., pl. xxv, figs. 1-3	123
ANARRHICTHYS, Ayres	124
<i>Anarrhictchys felis</i> , G., pl. xxv, figs. 1-3	125
Family GOBIDÆ, Bonap	126
GOBIOUS, Artédi	126
<i>Gobius lepidus</i> , G., pl. xxv, figs. 5, 6.	127
<i>Gobius Newberryi</i> , G.	128
Family CYCLOPTERIDÆ, Bonap	129
LEPADOGASTER, Gouan	129
<i>Lepadogaster meandricus</i> , G.	130
CYCLOGASTER, Gronov	131
<i>Cyclogaster pulchellus</i> , G.	132
Family LOPHIDÆ, Bonap	133
Family BATRACHIDÆ, Swains	133
PORICTHYS, Girard	134
<i>Porictchys notatus</i> , G., pl. xxv	134
Order ANACANTHINI	137
Suborder APODES	137
Family OPHIDIDÆ, Bonap	137
OPHIDIION, Artédi	138
<i>Ophidion Taylori</i> , n. s.	138
AMMODYTES, Artédi	138
<i>Ammodytes personatus</i> , G.	139
Suborder THORACICI	140
Family GADIDÆ, Bonap	140
<i>Brosinus marginatus</i> , Ayres	141
<i>Merlangus productus</i> , Ayres	141
MORRHUA, Cuv	141
<i>Morrhua proxima</i> , G., pl. xp, figs. 5-8.	142
HOMALOPOMUS, Girard	143
<i>Homalopomus Trovbridgi</i> , pl. xp, figs. 1-4	144
Family PLEURONECTIDÆ, Bonap	145
PARALICTHYS, n. g.	146
<i>Paralictchys maculosus</i> , G.	147
PLATICHTHYS, Girard	148

1859. GIRARD, CHARLES—Continued.

	<i>Platichthys rugosus</i> , G.	148
	<i>Platichthys umbrosus</i> , G.	149
PLEURONICHTHYS, Girard		150
	<i>Pleuronichthys canosus</i> , G.	151
	<i>Pleuronichthys guttulatus</i> , G.	152
PAROPHYRYS, Girard		153
	<i>Parophrys retulus</i> , G.	153
PSOTTICHTHYS, Girard		154
	<i>Psottichthys melanostictus</i> , G.	154
	<i>Psottichthys sordidus</i> , G., pl. XF	155
Order PHARYNGOGNATHI		157
Suborder MALACOPTERYGII		157
Family SCOMBERESOCIDÆ, Owen		157
	BELONE, Cuv.	158
	<i>Belone exilis</i> , G.	158
Suborder ACANTHOPTERYGII		160
Family POMACENTRIDÆ, Agass.		160
	GLYPHISODON, Lacép.	160
	<i>Glyphisodon rubicundus</i> , G., pl. XXIV	161
Family LABRIDÆ, Bonap.		162
	JULIS, Cuv.	162
	<i>Julis modestus</i> , G.	163
Family EMBIOTOCIDÆ or HOLCONOTI, Agass.		164
EMBIOTOCA, Agass.		168
	<i>Embiotoca Jacksoni</i> , Ag., pl. xxvi, figs. 3, 4; pl. xxvii and pl. xxviii	168
	<i>Embiotoca Cassidi</i> , G., pl. xxvi, fig. 12; pl. xxix	171
	<i>Embiotoca Webbi</i> , G., pl. xxx	173
	<i>Embiotoca lineata</i> , G., pl. xxvi, figs. 5, 6; pl. xxxi	174
	<i>Embiotoca ornata</i> , G., pl. xxvi, fig. 11	176
	<i>Embiotoca perspicabilis</i> , G., pl. xxvi, figs. 1, 2; pl. xxxii	178
	<i>Embiotoca argyrosoma</i> , G.	180
DAMALICHTHYS, Girard		181
	<i>Damalichthys raven</i> , G., pl. xxxiii	182
PHANERODON, Girard		183
	<i>Phanerodon furcatus</i> , G., pl. xxxiv, figs. 1-5	184
ABEONA, Girard		186
	<i>Abeona Troubridgi</i> , G., pl. xxxiv, figs. 6-10	186
RHACOCHEILUS, Agass.		188
	<i>Rhacochilus toxotes</i> , Agass., pl. xl	188
HYSTEROCARPUS, Gibbons		190
	<i>Hysterocharpus traski</i> , Gibbons, pl. xxvi, fig. 14	190
HOLCONOTUS, Agass.		193
	<i>Holeconotus rholaterus</i> , Ag., pl. xxvi, figs. 7, 8; pl. xxxv, xxxvi, figs. 1-4	193
ENNICHTHYS, Girard		196
	<i>Ennichthys megalops</i> , G., pl. xxvi, fig. 10, and pl. xxxvii	197
	<i>Ennichthys Hoermanni</i> , G., pl. xxvi, fig. 9, and pl. xxxviii	199
AMPHISTICHUS, Agass.		201
	<i>Amphistichus argenteus</i> , Ag., pl. xxxix	201
	<i>Amphistichus simulis</i> , G., pl. xxxvi, figs. 5-9	203
Order PHYSOSTOMI or MALACOPTERI		206
Suborder APODES		206
Suborder ABDOMINALES		206
Family SILURIDÆ, Bonap.		207
	PIMELODUS, Linn.	207
	<i>Pimelodus catulus</i> , n. s., pl. xli, figs. 4-6	207
	<i>Pimelodus felivus</i> , n. s.	209
	<i>Pimelodus Antoniensis</i> , n. s.	209
	<i>Pimelodus albus</i> , n. s., pl. xlii	210
	<i>Pimelodus lupus</i> , n. s.	211
	<i>Pimelodus olivaceus</i> , n. s., pl. xli, figs. 1-3; pl. xlii	211
Family CYPRINIDÆ, Girard		212
Tribe of CYPRINA, Girard		213
	MYLOCHEILUS, Agass.	213
	<i>Mylocheilus caurinus</i> , G., pl. xlii, figs. 1-4	213
	<i>Mylocheilus lateralis</i> , Ag. & Pick., pl. xlv., figs. 5-8	214
	<i>Milochelidius fraterculus</i> , G., pl. xlv, figs. 1-4	215

1859. GIRARD, CHARLES—Continued.

MYLOPHARODON, Ayres	215
<i>Mylopharodon conocephalus</i> , G., pl. xlvii, figs. 5-8	216
<i>Mylopharodon robustus</i> , Ayres, pl. xlvii	216
Tribe of CATOSTOMI, Girard	217
CARPIODES, Rafin	218
<i>Carpiodes damalis</i> , G., pl. xlviii, figs. 1-4	218
MOXOSTOMA, Rafin	219
<i>Moxostoma clariformis</i> , G., pl. xlviii, figs. 5-8	219
PTYCHOSTOMUS, Agass	220
<i>Ptychostomus Haydeni</i> , G., pl. xlix, figs. 1-4	220
ACOMUS, Girard	221
<i>Acomus generosus</i> , G	221
<i>Acomus griseus</i> , G., pl. xlix, figs. 5-9	222
<i>Acomus lactarius</i> , G., pl. l	223
CATOSTOMUS, Lesueur	223
<i>Catostomus occidentalis</i> , Ayres	224
<i>Catostomus labiatus</i> , Ayres	224
<i>Catostomus mucrocheilus</i> , G	225
<i>Catostomus sucklii</i> , G., pl. li	226
Tribe of CHONDROSTOMI, Girard	226
DIONDA, Girard	227
<i>Dionda episcopa</i> , G	227
<i>Dionda papalis</i> , G	228
<i>Dionda plumbea</i> , G., pl. lii, figs. 21-25	228
<i>Dionda spadicea</i> , G., pl. lii, figs. 26-30	229
<i>Dionda grisea</i> , G., pl. lii, figs. 6-8	230
HYBORHYNCHUS, Agass	230
<i>Hyborhynchus perspicuus</i> , G., pl. lii, figs. 16-20	231
<i>Hyborhynchus tenuis</i> , G	231
<i>Hyborhynchus puniceus</i> , G., pl. lii, figs. 1-5, 11-15	232
<i>Hyborhynchus confertus</i> , G., pl. lix, figs. 11-15	233
PIMEPHALES, Rafin	233
<i>Pimephales maculosus</i> , G	234
<i>Pimephales fasciatus</i> , G	234
HYBOGNATHUS, Agass	235
<i>Hybognathus argyritis</i> , G., pl. liii, figs. 5-8	235
<i>Hybognathus Eansii</i> , G	236
<i>Hybognathus placitus</i> , G	236
ORTHODON, Girard	237
<i>Orthodon microlepidotus</i> , G., pl. liii, figs. 1-4	237
ALGANSEA, Girard	238
<i>Algausea bicolor</i> , G	238
<i>Algausea obesa</i> , G	239
<i>Algausea formosa</i> , G	239
LAVINIA, Girard	240
<i>Lavinia exilicauda</i> , pl. liv, figs. 1-4	241
<i>Lavinia harengus</i> , G	242
Tribe POGONICHTHI, Girard	242
ARGYREUS, Heck	243
<i>Argyreus duleis</i> , G., pl. liv, figs. 6-8	243
<i>Argyreus umbilus</i> , G	244
POGONICHTHYS, Girard	245
<i>Pogonichthys inaequilobus</i> , pl. lvi, fig. 14	245
<i>Pogonichthys symmetricus</i>	246
<i>Pogonichthys arguceus</i>	246
<i>Pogonichthys communis</i> , pl. lv	247
GOBIO, Cuv	248
<i>Gobio gelidus</i> , G	248
<i>Gobio vernalis</i> , G	249
LEUCOSOMUS, Heck	250
<i>Leucosomus dissimilis</i> , G	250
<i>Leucosomus pallidus</i> , G., pl. lxi, figs. 6-10	251
<i>Leucosomus incassatus</i> , G., pl. lxi, figs. 1-6	252
<i>Leucosomus macrocephalus</i> , G	252
CERATICHTHYS (Baird), Girard	252
<i>Ceraticthys leptocephalus</i> , G	253

1859. GIRARD, CHARLES—Continued.

NOCOMIS, Girard	254
<i>Nocomis nebrascensis</i> , G.	254
HYBOPUS, Agass.	255
Tribe of ALBURNI	255
EXOGLOSSUM, Rafin.	255
<i>Exoglossum mirabile</i> , G., pl. lvi, figs. 5-8.	256
CLIOLA, Girard	256
<i>Cliola rigilar</i> , G.	257
<i>Cliola vector</i> , G.	258
<i>Cliola vicax</i> , G.	258
ALBURNELLUS, Girard	259
<i>Alburnellus dilectus</i> , G., pl. lvii, figs. 9-12.	259
<i>Alburnellus umbratilis</i> , G.	260
ALBURNOPS, Girard	260
<i>Alburnops blennius</i> , G., pl. lvii, figs. 13-16.	261
<i>Alburnops Shumardi</i> , G., pl. lvii, figs. 1-4.	261
<i>Alburnops illecebrosus</i> , G., pl. lvii, figs. 5-8.	262
PLARGYRUS, Rafin.	263
<i>Plargyrus Boermanni</i> , G., pl. lix, figs. 1-5.	263
CYPRINELLA, Girard.	264
<i>Cyprinella bubalina</i> , G.	265
<i>Cyprinella umbrosa</i> , G., pl. lviii, figs. 1-5.	266
<i>Cyprinella Guanoisoni</i> , G.	267
<i>Cyprinella Beckwithi</i> , G.	267
<i>Cyprinella suavis</i> , G.	268
<i>Cyprinella lepida</i> , G., pl. lviii, figs. 21-25.	268
<i>Cyprinella notata</i> , G., pl. lviii, figs. 16-20.	269
<i>Cyprinella Whipplei</i> , G., pl. lviii, figs. 6-10.	270
<i>Cyprinella lugubris</i> , G.	271
<i>Cyprinella ludibunda</i> , G.	271
MONIANA, Girard	272
<i>Moniana lutrensis</i> , G.	272
<i>Moniana leonina</i> , G., pl. lix, figs. 6-10.	273
<i>Moniana deliciosa</i> , G.	274
<i>Moniana lortabilis</i> , G.	275
<i>Moniana pulchella</i> , G., pl. lviii, figs. 11-15.	275
<i>Moniana frigida</i> , G., pl. lix, figs. 16-20.	276
<i>Moniana tristis</i> , G.	277
RICHARDSONIUS, Girard	278
<i>Richardsonius ballatus</i> , G., pl. lx, figs. 1-4.	278
<i>Richardsonius lateralis</i> , G., pl. lx, figs. 5-8.	279
LUXILUS, Rafin.	280
<i>Luxilus occidentalis</i> , G.	280
<i>Luxilus seco</i> , G.	281
<i>Luxilus lucidus</i> , G., pl. lx, figs. 9-12.	282
SEMOTILUS, Rafin.	283
<i>Semotilus speciosus</i> , G., pl. lxi, figs. 11-25.	283
HOBSONIUS, Girard	284
GILA, B. & G.	284
<i>Gila robusta</i> , B. & G.	285
<i>Gila elegans</i> , B. & G.	286
<i>Gila gracilis</i> , B. & G.	287
TIGOMA, Girard	288
<i>Tigoma conformis</i> , G.	289
<i>Tigoma bicolor</i> , G.	289
<i>Tigoma obesa</i> , G.	290
<i>Tigoma Humboldtii</i> , G.	291
<i>Tigoma egregia</i> , G.	291
<i>Tigoma lineata</i> , G.	292
<i>Tigoma crassa</i> , G., pl. lxi.	293
<i>Tigoma gracilis</i> , G.	293
CHEONDA, Girard	294
<i>Cheonda Cooperi</i> , G., pl. lxiii, figs. 1-5.	294
<i>Cheonda corubra</i> , G., pl. lxiii, figs. 6-9.	295
SIBOMA, Girard	296
<i>Siboma crassicauda</i> , G., pl. lxiv, figs. 1-4.	296
<i>Siboma atraria</i> , G.	297

1859. GIRARD, CHARLES—Continued.

PSYCHOCEILUS, Agass	298
<i>Psychoceilus Oregonensis</i> , G., pl. lxiiv, figs. 5-9	298
<i>Psychoceilus grandis</i> , G.	299
<i>Psychoceilus rapax</i> , G., pl. lxxv	300
<i>Psychoceilus corax</i> , G.	301
CLINOSTOMUS, Girard	302
Family CYPRINODONTIDÆ, Owen	302
FUNDULUS, Lacép	303
<i>Fundulus parvipinnis</i> , G.	303
Family ESOCIDÆ, Bonap	304
Family SALMONIDÆ, Bonap	304
SALMO (Artédi), Valenciennes	305
<i>Salmo scouleri</i> , Richards	305
<i>Salmo quinnet</i> , Richards, pl. lxxvii	306
<i>Salmo spectabilis</i> , G.	307
FARIO, Valenc	308
<i>Fario aurora</i> , G., pl. lxxviii	308
<i>Fario tsuppitch</i> , G., pl. lxxix, figs. 1-4	310
<i>Fario argyreus</i> , G., pl. lxx	312
<i>Fario Gairdneri</i> , G., pl. lxxi, figs. 1-4	313
<i>Fario Clarki</i> , G., pl. lxxi, figs. 5-8	314
<i>Fario stellatus</i> , G., pl. lxxix, figs. 5-8	316
SALAR, Valenc	318
<i>Salar Lewisii</i> , G., pl. lxxii	318
<i>Salar virginalis</i> , G.	320
<i>Salar iridea</i> , G., pl. lxxiii, fig. 5 and pl. lxxiv	321
OSMERUS, Artédi	323
<i>Osmerus pretiosus</i> , G., pl. lxxv, fig. 5	324
THALEICHTHYS, Girard	325
<i>Thaleichthys Storeri</i> , G., pl. lxxv, figs. 1-4	325
COREGONUS, Artédi	326
<i>Coregonus Williamsoni</i> , G., pl. lxxvi	326
Family SCOPELIDÆ, Owen	328
<i>Saurus (Laurida) lucioiceps</i> , Ayles	328
Family CLUPEIDÆ, Bonap	328
CLUPEA, Artédi	329
<i>Clupea mirabilis</i> , G.	329
MELETTA, Valenc	330
<i>Meletta corulea</i> , G., pl. lxxv, figs. 5-7	330
HYODON, Lesueur	332
<i>Hyodon tergisus</i> , Lesn., pl. lxxv, figs. 1-4	332
ENGRAULIS, Cuv	333
<i>Engraulis mordax</i> , G.	334
<i>Engraulis annis</i> , n. s.	335
<i>Engraulis delicatissimus</i> , G.	335
<i>Engraulis compressus</i> , n. s.	336
Order PLECTOGNATHI	338
Family BALISTIDÆ, Bonap	338
Family GYMNOBONTIDÆ, Yarell	339
TETRAODON, Linn	339
<i>Tetraodon politus</i> , n. s.	340
Order LOPHOBRANCHII	341
Family HIPPOCAMPIDÆ, Owen	342
HYPOCAMPUS, Cuv	342
<i>Hippocampus ingens</i> , n. s.	342
Family SYNGNATHIDÆ, Bonap	343
SYNGNATHUS, Artédi	344
<i>Syngnathus Californiensis</i> , Storer	344
<i>Syngnathus brevirostris</i> , G.	345
<i>Syngnathus leptochrychus</i> , G.	345
<i>Syngnathus Abboti</i> , n. s.	346
<i>Syngnathus arcuadiantens</i> , n. s.	347
Order GAZOIDEI	348
Family AMIADÆ, Baird	348
AMIA, Linn	349
<i>Amia ocellifera</i> , Richards	349
<i>Amia occidentalis</i> , De Kay	350

1859. GIRARD, CHARLES—Continued.

Family SAURIDE, De Kay	350
LEPIDOSTEUS, Lacép	350
<i>Lepidosteus leptorhynchus</i> , n. s.	351
<i>Lepidosteus (Cylindrosteus) latirostris</i> , n. s.	352
<i>Lepidosteus (Atractosteus) Berlandieri</i> , n. s.	353
Family STURIONIDE, Swains	354
ACIPENSER, Artéd	354
<i>Acipenser brachyrhynchus</i> , Ayres	355
<i>Acipenser transmontanus</i> , Richards	355
<i>Acipenser acutirostris</i> , Ayres	355
<i>Acipenser medirostris</i> , Ayres	356
SCAPHIRHYNCHUS, Heck	357
<i>Scaphirhynchus platyrhynchus</i> , Bd	357
POLYODON, Lacép	357
<i>Polyodon folium</i> , Lacép	358
Order HOLOCEPHALI	359
Family CHIMERIDE, Bonap	359
CHIMERA, Linn	359
<i>Chimera collie</i> , Benn	360
Order PLAGIOSTOMI	361
Suborder SQUALI	361
Family SCYLLIODONTIDE, Girard	362
TRIAKIS, Mull. & Henle	362
<i>Triakis semifasciatus</i> , G	362
Family MUSTELIDE, Girard	364
<i>Mustelus felix</i> , Ayres	364
Family CESTRACIONTIDE, Owen	364
CESTRACION, Cuv	365
<i>Cestracion francisci</i> , G	365
Family NOTIDANIDE, Owen	366
<i>Heptanchus maculatus</i> , G	367
Family SPINACIDE, Owen	367
ACANTHIAS, Risso	367
<i>Acanthias suckli</i> , G	368
Suborder RAJE	369
Family RHYNOBATIDE, Owen	370
RHYNOBATIS, Bl. Schn	370
<i>Rhynobatus productus</i> , Ayres	371
Family TORPEDINIDE, Owen	371
<i>Narcine californica</i> , G	371
Family RAJIDE, Owen	371
RAJA, Artéd	372
<i>Raja Cooperi</i> , n. s.	372
URAPTERA, Mull. & Henle	373
<i>Uroptera bimaculata</i> , G	373
Family MYLIOBATIDE, Owen	374
RHINOPTERA, Kuhl	374
<i>Rhinoptera vespertilio</i> , G	375
Order DERMOPTERI	376
Suborder MARSIPOBRANCHII, s. Cyclostomi	376
Family PETROMYZONTIDE, Owen	376
PETROMYZON, Linn	377
<i>Petromyzon tridentatus</i> , Gaird	377
<i>Petromyzon ciliatus</i> , Ayres	378
<i>Petromyzon lirus</i> , n. s.	379
<i>Petromyzon plumbeus</i> , G	380
<i>Petromyzon Astori</i> , n. s.	380
ICHTHYOMYZON, n. g.	381
<i>Ichthyomyzon castaneus</i> , n. s.	381
<i>Ichthyomyzon birula</i> , n. s.	382
AMMOCETES, Dum	383
<i>Ammocetes eibarius</i> , n. s.	383
SOLECOSOMA, n. g.	384
<i>Solecosoma unicolor</i> — <i>Ammocetes unicolor</i> , Kirk.	
<i>Solecosoma unicolor</i> — <i>Amm. unicolor</i> , De Kay.	
<i>Solecosoma borealis</i> — <i>Amm. borealis</i> , Agass.	

1859. GIRARD, CHARLES. Report on Fishes collected on the Survey of route near the thirty-eighth and thirty-ninth parallels, explored by Capt. F. W. Gunnison, and near the forty-first parallel, explored by Lieut. E. G. Beckwith. Pacific Railroad Expl. and Surv., vol. x, Part iii, No. iv.

<i>Bryttus humilis</i> , G., pl. vii, figs. 9-24	21
<i>Amblodon granulicus</i> , Raf., pl. xxiii	21
<i>Ptychostomus Haydeni</i> , Grd., pl. xlix	21
<i>Acanus generosus</i> , Grd., figs. 1-4	21
<i>Acanus griseus</i> , Grd., pl. xlix, figs. 5-9	22
<i>Pinarphales maculosus</i> , Grd.	22
<i>Hybognathus placitus</i> , Grd.	22
<i>Hybognathus Erasii</i> , Grd.	22
<i>Alypssea obesa</i> , Grd.	22
<i>Lacinia exilicauda</i> , B. & G., pl. liv, figs. 1-4	23
<i>Argyrops dulcis</i> , Grd., pl. liv, figs. 5-8	23
<i>Pogonichthys inaequilobus</i> , B. & G., pl. lvi, figs. 1-4	23
<i>Xocomis Nebraskaensis</i> , Grd.	23
<i>Exoglossum mirabile</i> , Grd., pl. lvi, figs. 5-8	23
<i>Cyprinella Gunnisoni</i> , Grd.	24
<i>Cyprinella Beckwithi</i> , Grd.	24
<i>Cyprinella lugubris</i> , Grd.	24
<i>Cyprinella bulidunda</i> , Grd.	24
<i>Montana tristis</i> , Grd.	24
<i>Scenatilus speciosus</i> , Grd., pl. lxi, figs. 11-15	25
<i>Gila elegans</i> , B. & G.	25
<i>Tigoma obesa</i> , Grd.	25
<i>Tigoma Humboldti</i> , Grd.	25
<i>Tigoma egregia</i> , Grd.	25
<i>Tigoma lineata</i> , Grd.	26
<i>Tigoma gracilis</i> , Grd.	26
<i>Siboma utraque</i> , Grd.	26
<i>Ptychocheilus vorax</i> , Grd.	26
<i>Salar virginialis</i> , Grd.	26
<i>Salar iridea</i> , Grd., pl. lxxiii, fig. 5, and pl. lxxiv	27
<i>Meletta curalea</i> , Grd., pl. lxxv, figs. 5-7	27
<i>Hypodon terysuis</i> , Grd., pl. xxv, figs. 1-4	27

1859. GIRARD, CHARLES. Report upon Fishes Collected on the Survey of route near the thirty-fifth parallel, explored by Lieut. A. W. Whipple, and near the thirty-second parallel, explored by Lieut. J. G. Parke and Capt. John Pope. Pacific Rail Road Expl. and Surv., vol. x, Part vi, No. 5.

<i>Diplotes nevadensis</i> , Grd.	47
<i>Ambloplites interruptus</i> , Grd., pl. ii, figs. 1-4	47
<i>Callinurus melanops</i> , Grd., pl. iii	47
<i>Callinurus diaphanus</i> , Grd., pl. iv, figs. 1-4	47
<i>Callinurus formosus</i> , Grd., pl. v, figs. 1-4	47
<i>Callinurus longulus</i> , Grd., pl. v, figs. 5-8; pl. vi, figs. 5-8	48
<i>Callinurus microps</i> , Grd., pl. iv, figs. 5-8	48
<i>Bryttus albulus</i> , Grd., pl. vi, figs. 1-4	48
<i>Bryttus signifer</i> , Grd., pl. vii, figs. 5-8	48
<i>Bryttus humilis</i> , Grd., pl. vii, figs. 9-24	48
<i>Pomotis speciosus</i> , B. & G., pl. viii, figs. 5-8	49
<i>Pomotis heros</i> , B. & G., pl. ix, figs. 13-16	49
<i>Pomotis apulensis</i> , B. & G., pl. ix, figs. 1-4; pl. x, figs. 8-11	49
<i>Pomotis fallax</i> , B. & G., pl. viii, figs. 9-12; pl. ix, figs. 5-12; pl. x, figs. 1-7	49
<i>Chiropsis constellatus</i> , Grd., pl. xix	49
<i>Schastes roseus</i> , Grd., pl. xxi	50
<i>Amblodon granulicus</i> , Rafin., pl. xxiii	50
<i>Atherinopsis Californensis</i> , Grd., pl. xxii	50
<i>Porichthys notatus</i> , Grd., pl. xxv	50
<i>Morhua proxima</i> , Grd., pl. xii, figs. 5-8	50

1859. GIRARD, CHARLES—Continued.

<i>Parophrys vetulus</i> , Grd.....	50
<i>Psettichthys sordidus</i> , Grd., pl. x1 ^b	51
<i>Glyphisodon rubicundus</i> , Grd., pl. xxiv.....	51
<i>Embiotoco lineata</i> , Grd., pl. xxxi; pl. xxvi, figs. 5-6.....	51
<i>Holconotus chodoterus</i> , Ag., pl. xxxv; pl. xxxvi, figs. 1-4; pl. xxvi, figs. 7, 8.....	51
<i>Amphistichus argenteus</i> , Ag., pl. xxxix.....	51
<i>Pimelodus catulus</i> , Grd., pl. xli, figs. 5, 6.....	52
<i>Pimelodus Antoniensis</i> , Grd.....	52
<i>Pimelodus felinus</i> , Grd.....	52
<i>Moxostoma clariformis</i> , Grd., pl. xlviii, figs. 5, 9.....	52
<i>Dionda plumbea</i> , Grd., pl. lii, figs. 21-25.....	52
<i>Dionda spadicea</i> , Grd., pl. lii, figs. 26-30.....	53
<i>Dionda grisea</i> , Grd., pl. lii, figs. 6-10.....	53
<i>Hyborhynchus perspicuus</i> , Grd., pl. lii, figs. 16-20.....	53
<i>Hyborhynchus puniceus</i> , Grd., pl. lii, figs. 1-5; figs. 11-15.....	53
<i>Hyborhynchus tenellus</i> , Grd.....	53
<i>Hyborhynchus confertus</i> , Grd., pl. lix, figs. 11-15.....	54
<i>Hybognathus argyritis</i> , Grd., pl. liii, figs. 5-8.....	54
<i>Gobio vernalis</i> , Grd.....	54
<i>Leucosomus pallidus</i> , Grd., pl. lxi, figs. 6-10.....	54
<i>Leucosomus incrassatus</i> , Grd., pl. lxi, figs. 1-6.....	54
<i>Exoglossum mirabile</i> , Grd., pl. lvi, figs. 5-8.....	55
<i>Cliola vivax</i> , Grd.....	55
<i>Alburnellus dilectus</i> , Grd., pl. lvii, figs. 9-12.....	55
<i>Alburnellus umbratilis</i> , Grd.....	55
<i>Alburnops blennioides</i> , Grd., pl. lvii, figs. 13-16.....	55
<i>Alburnops Shumardi</i> , Grd., pl. lvii, figs. 1-4.....	56
<i>Alburnops illecebrosus</i> , Grd., pl. lvii, figs. 5-8.....	56
<i>Cyprinella umbrosa</i> , Grd., pl. lviii, figs. 1-5.....	56
<i>Cyprinella swaris</i> , Grd.....	56
<i>Cyprinella lepida</i> , Grd., pl. lviii, figs. 21-25.....	56
<i>Cyprinella notata</i> , Grd., pl. lviii, figs. 16-20.....	57
<i>Cyprinella Whipplei</i> , Grd., pl. lviii, figs. 6-10.....	57
<i>Moniana lutrensis</i> , Grd.....	57
<i>Moniana Leonina</i> , Grd., pl. lix, figs. 6-10.....	57
<i>Moniana deliciosa</i> , Grd.....	57
<i>Moniana latabilis</i> , Grd.....	58
<i>Moniana pulchella</i> , Grd., pl. lviii, figs. 11-15.....	58
<i>Moniana frigida</i> , Grd., pl. lix, figs. 16-20.....	58
<i>Luxilus seco</i> , Grd.....	58
<i>Luxilus lucidus</i> , Grd., pl. lx, figs. 9-12.....	58
<i>Meletta caerulea</i> , Grd., pl. lxxv, figs. 5-7.....	59
<i>Scaphirhynchus platyrhynchus</i> , Bd.....	59

98.

1859. GIRARD, CHARLES. Report on Fishes Collected on the Survey of routes in California to connect with the routes near the thirty-fifth and thirty-second parallels, explored by Lieut. R. S. Williamson. Pacific Rail Road Expl. and Surv., vol. x, Part iv, No. 1.

<i>Pomoxis nitidus</i> , Grd., pl. ii, figs. 5-8.....	83
<i>Ambloplites interruptus</i> , Grd., pl. ii, figs. 1-4.....	83
<i>Paralabrax nebulifer</i> , Grd., pl. xii, figs. 1-4.....	83
<i>Paralabrax clathratus</i> , Grd., pl. xii, figs. 5-8.....	83
<i>Chiropsis constellatus</i> , Grd., pl. xix.....	83
<i>Chiropsis pictus</i> , Grd., pl. xx, figs. 1-4.....	84
<i>Chiropsis guttatus</i> , Grd., pl. xx, figs. 5-8.....	84
<i>Ophiodon elongatus</i> , Grd., pl. xviii, figs. 4-7.....	84
<i>Cottopsis gulosus</i> , Grd.....	84
<i>Leptocottus armatus</i> , Grd., pl. xv, fig. 2.....	84
<i>Scorpenichthys marmoratus</i> , Grd., pl. xvi, fig. 1.....	84
<i>Aspicottus bison</i> , Grd., pl. xv, fig. 1.....	85
<i>Hemilepidotus spinosus</i> , Ayres.....	85
<i>Sebastes fasciatus</i> , Grd., pl. xxii.....	85
<i>Sebastes auriculatus</i> , Grd.....	85

1859. GIRARD, CHARLES—Continued.

<i>Gasterosteus microcephalus</i> , Grd.	85
<i>Gasterosteus Williamsoni</i> , Grd.	86
<i>Atherinopsis Californensis</i> , Grd., pl. xxii ^a	86
<i>Gobius lepidus</i> , Grd., pl. xxxv ^a , figs. 5-6.	86
<i>Morrhua proxima</i> , Grd., pl. xl ^a , figs. 5-8.	86
<i>Platichthys rugosus</i> , Grd.	86
<i>Pleuronichthys canosus</i> , Grd.	86
<i>Parophrys vetulus</i> , Grd.	87
<i>Psittichthys melanostictus</i> , Grd.	87
<i>Embiotoca Jacksoni</i> , Ag., pl. xxvii, xxviii; pl. xxvi, figs. 3-4.	87
<i>Embiotoca lineata</i> , Grd., pl. xxxi; pl. xxvi, figs. 5-6.	87
<i>Holeonotus chodoterus</i> , Ag., pl. xxxv; xxxvi, figs. 1-4; xxvi, figs. 7-8.	87
<i>Ennichthys Hermannii</i> , Grd., pl. xxxviii, xxvi, fig. 9.	88
<i>Amphistechus argenteus</i> , Ag., pl. xxxix.	88
<i>Amphistechus similis</i> , Grd., pl. xxxvi, figs. 5-9.	88
<i>Mglopharodon robustus</i> , Ayres, pl. xlvii.	88
<i>Mglopharodon conocephalus</i> , Grd., pl. xlvi, figs. 5-8.	88
<i>Algansea formosa</i> , Grd.	88
<i>Lavinia exciliauda</i> , B. & G., pl. liv, figs. 1-4.	89
<i>Pogonichthys inæquilobus</i> , B. & G., pl. lvi, figs. 1-4.	89
<i>Pogonichthys symmetricus</i> , B. & G.	89
<i>Luxilus occidentalis</i> , Grd.	89
<i>Tigoma conformis</i> , Grd.	90
<i>Tigoma crassa</i> , Grd., pl. lxii.	90
<i>Sibonma crassicauda</i> , Grd., pl. lxiv, figs. 1-4.	90
<i>Clupea mirabilis</i> , Grd.	90
<i>Melitta caerulea</i> , Grd., pl. lxx, figs. 5-7.	90
<i>Engraulis nanus</i> , Grd.	91

99.

1859. GIRARD, CHARLES. Report upon Fishes Collected on the Survey of routes in California and Oregon, explored by Lieut. R. S. Williamson and Lieut. Henry L. Abbot. Pacific Rail Road Expl. and Surv., vol. vi. [Also referred to in Part iv, vol. x.]

<i>Sebastes paucispinis</i> , Grd., pl. xxii ^a , figs. 1-4.	34
<i>Arctidius lateralis</i> , Grd., pl. xxii ^a , figs. 5-6.	34
<i>Arctidius notospilotus</i> , Grd., pl. xxii ^b , figs. 5-6.	34
<i>Leiostomus lineatus</i> , pl. xxii ^b , figs. 1-5.	34
<i>Anarrhichthys felis</i> , pl. xxv ^a , figs. 1-3.	34
<i>Blennius gentilis</i> , Grd., pl. xxv ^a , fig. 4.	34
<i>Gobius lepidus</i> , Grd., pl. xxv ^a , figs. 5-6.	34
<i>Lampanyx anguillarum</i> , pl. xxv ^b , figs. 1-3.	34
<i>Cebidichthys violaceus</i> , pl. xxv ^b , figs. 4-5.	34
<i>Gannellus ornatus</i> , pl. xxv ^b , figs. 6-7.	34
<i>Homalopomus Trochbridgi</i> , Grd., pl. xl ^a , figs. 1-4.	34
<i>Morrhua proxima</i> , pl. xl ^a , figs. 5-8.	34
<i>Mglochilus caurinus</i> , pl. xlv, figs. 1-4.	34
<i>Mglopharodon conocephalus</i> , pl. xlv, figs. 5-8.	34
<i>Tigoma crassa</i> , Grd., pl. lxii.	34
<i>Coregonus Williamsoni</i> , Grd., pl. lxvi.	34
<i>Fario aurora</i> , Grd., pl. lxviii.	34
<i>Fario argyreus</i> , Grd., pl. lxx.	34
<i>Salix iridea</i> , pl. xxiv.	34

100.

1859. GIRARD, CHARLES, with SPENCER F. BAIRD. Reports of Explorations and Surveys to Ascertain the Most Practical and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean. Made under the direction of the Secretary of War in 1853-56, according to acts of Congress of March 3, 1853, May 31, 1853, and August 5, 1851. Vol. x. REPTILES. By Spencer F. Baird. Washington, 1859. 4^o.

A "general report" upon the reptiles collected by the various explorations and surveys for the Pacific Railroad was contemplated by Spencer F. Baird and Charles Girard. Plates for

1859. GIRARD, CHARLES—Continued.

that purpose were prepared at the Smithsonian Institution under their supervision and care, including those accompanying the reports of Drs. Cooper and Hallowell, as shown by the unique serial numeration. In the mean time the characteristics of the new genera and species appeared in the *Proceedings of the Academy of Natural Sciences of Philadelphia*. (See above, Nos. 34, 35, 36, 37, 39, and 63.) Professor Baird being personally in charge of the reports upon "mammals" and "birds," and Dr. Girard of the report upon "fishes," there was not sufficient time to do justice to the report upon "reptiles." Dr. Girard being called abroad, the entire task fell upon Professor Baird, who prepared all the data upon the subject, describing such new species as had not been characterized before. It is much to be regretted that plates xxiv to xxxvi appeared with a merely nominal explanation, when a comparative discussion of all the genera and species figured was contemplated by both of the herpetologists named.

The following list enumerates the species which have been studied by Dr. Girard, under whose direction the plates were prepared.

CHELONIA.

- Actinemys marmorata*, Agass.
Emy nigra, Hallow.

SAURIA.

- Callisaurus centralis*, Baird.
Crotaphytus collaris, Holbr., pl. xxiv, fig. 1.
Crotaphytus Wislizeni, B. & G.
Cnemidophorus tessellatus.
Dipsosaurus dorsalis, Hallow.
Doliosaurus platyrhinos, Grd.
Elgaria grandis, B. & G.
Elgaria principis, B. & G.
Heloderma horridum, Wiegna.
Holbrookia maculata, Grd.
Holbrookia texana, B. & G.
Ignoana lateralis, Dum. & Bibr.
Phrynosoma carolinum, Gray.
Plestiodon skiltonianum, B. & G.
Plestiodon septentrionalis, B. & G., pl. xxiv, fig. 2.
Plestiodon fasciatus, B. & G.
Plestiodon obsoletum, B. & G.
Sceloporus graciosus, B. & G.
Sceloporus occidentalis, B. & G.
Sceloporus undulatus, Wiegna.
Sceloporus consobrinus, B. & G.
Sceloporus Thayeri, B. & G.
Tapaya brevirostris, Grd.
Tapaya Douglasi, Grd.
Tapaya Heroldesi, Grd.
Tapaya ornativissima, Grd.
Urosaurus graciosus, Hallow.
Uta Stansburiana, B. & G.

OPHIDIA.

- Ancistradon contortrix*, B. & G., pl. xxv, fig. 12.
Abaster erythrogrammus, Gray, pl. xxxiii, fig. 83.
Bascanion constrictor, B. & G., pl. xxxi, fig. 67.
Bascanion Fremonti, B. & G., pl. xxxi, fig. 68.
Bascanion Foxi, B. & G., pl. xxxi, 69.
Bascanion flavicentris, B. & G., pl. xxxi, fig. 70.
Bascanion retustus, B. & G., pl. xx, fig. 1, and pl. xxxvi, fig. 6.
Celata umona, B. & G., pl. xix, fig. 2, and pl. xxxiii, fig. 95.
Chlorosomus vernalis, B. & G., pl. xxxii, fig. 81.
Contia mitis, B. & G., pl. xxxvi, fig. 7.
Crotalus lucifer, B. & G., pl. xi and pl. xxxvi, fig. 1.
Crotalus durissus, L., pl. xxiv, fig. 1.
Crotalus atrox, B. & G., pl. xxiv, fig. 3.
Crotalus confluentus, Say, pl. xii and pl. xxiv, fig. 4.
Crotalus adamanteus, Beauv., pl. xxiv, fig. 2.
Crotalus molossus, B. & G., pl. xxiv, fig. 5.
Crotalus Oreganus, Holbr., pl. xxiv, fig. 6.
Crotalus cerastes, Holbr., pl. xxxv, figs. 4-5.
Crotalus tigris, Kenn., pl. xxxv, fig. 1.
Crotalophorus miliarius, Holbr., pl. xxiv, fig. 7.

1859. GIRARD, CHARLES—Continued.

- Crotalophorus consors*, B. & G., pl. xxiv, fig. 8.
Crotalophorus tergeminus, Holbr., pl. xxv, fig. 9.
Crotalophorus Edwardsi, B. & G., pl. xxv, fig. 10.
Crotalophorus Kirtlandi, Holbr., pl. xxv, fig. 11.
Diadophis punctatus, B. & G., pl. xxxiii, fig. 82.
Diadophis amabilis, B. & G., pl. xxxiii, fig. 83.
Diadophis docilis, B. & G., pl. xxxii, fig. 1, and pl. xxxiii, fig. 81.
Diadophis pulchellus, B. & G., pl. xxxii, fig. 85.
Diadophis regalis, B. & G., pl. xxx, fig. 86.
Dipsos septentrionalis, Kenn., pl. xxv, fig. 18.
Elaps fulvius, Cuv., pl. xxv, fig. 15.
Elaps tener, B. & G., pl. xxv, fig. 16.
Elaps tristis, B. & G., pl. xxv, fig. 17.
Eutania saurita, B. & G., pl. xxvi, fig. 19.
Eutania faurei, B. and G., pl. xlii and xvi, and pl. xxvi, fig. 20.
Eutania proxima, B. & G., pl. xxvi, fig. 21.
Eutania ornata, B. & G., pl. xxvi, fig. 23.
Eutania sirtalis, B. & G., pl. xxvi, fig. 23.
Eutania orliuata, B. & G., pl. xxvi, fig. 24.
Eutania radix, B. & G., pl. xxvi, fig. 25 and pl. xxxiv, fig. 5.
Eutania marciama, B. & G., pl. xxvi, fig. 26.
Eutania ordinoides, B. & G., pl. xxvi, fig. 3.
Eutania dorsalis, B. & G., pl. xxvi, fig. 2.
Eutania eugræns, B. & G., pl. xvii.
Eutania infernalis, B. & G.
Eutania coccinea, B. & G., pl. xv, fig. 2.
Eutania elegans, B. & G.
Eutania Cooperi, Kenn., pl. xv, fig. 1.
Eutania Pickeringi, B. & G., pl. xxxvi, fig. 3.
Eutania leptocephalo, B. & G., pl. xxxvi, fig. 2.
Eutania Haydeni, Kenn., pl. xiv.
Furcraia obscura, B. & G., pl. xxxiii, fig. 82.
Georgia obsoleta, B. & G., pl. xxxi, fig. 66.
Georgia Couperi, B. & G., pl. xxxiv, fig. 1.
Haldia striatula, B. & G., pl. xxxiii, fig. 81.
Herpetodryas flavigularis, Hallow.
Heterodon platyrhinos, Latr., pl. xxviii, fig. 38.
Heterodon cognatus, B. & G., pl. xxviii, fig. 39.
Heterodon niger, Troost., pl. xxviii, fig. 40.
Heterodon atmodes, B. & G., pl. xxviii, fig. 40.
Heterodon sinus, Holbr., pl. xxviii, figs. 42 and 42 bis.
Heterodon nasicus, B. & G., pl. xxviii, fig. 43.
Lamprosona occipitale, Hallow., pl. xxxv, figs. 6, 7.
Leptophis asticus, Bell, pl. xxxii, fig. 79.
Leptophis majalis, B. & G., pl. xxxii, fig. 80.
Lulia tennis, B. & G., pl. xxxvi, fig. 8.
Masticophis flagelliformis, B. & G., pl. xxxi, fig. 71, and pl. xxxii, fig. 72.
Masticophis flavigularis, B. & G., pl. xxxii, fig. 73.
Masticophis morron, B. & G., pl. xxxii, fig. 74.
Masticophis ornatus, B. & G., pl. xxxiii, fig. 75.
Masticophis tenuatus, B. & G., pl. xxxii, and pl. xxxii, fig. 76.
Masticophis Schotti, B. & G., pl. xxxii, fig. 77.
Masticophis testaceus, B. & G.
Nerodia transversa, B. & G., pl. xxvi, fig. 1.
Nerodia fasciata, B. & G., pl. xxxiv, fig. 4.
Nerodia sipedon, B. & G., pl. xxxvii, fig. 27.
Nerodia cythrogaster, B. & G., pl. xxxiii, and pl. xxxvii, fig. 28.
Nerodia taxispilota, B. & G., pl. xxxvii, fig. 29.
Nerodia Holbrookii, B. & G., pl. xxxvii, fig. 30.
Nerodia nigra, B. & G., pl. xxxvii, fig. 31.
Nerodia rhombifer, B. & G., pl. xxxiv, fig. 2.
Nerodia Woodhousei, B. & G., pl. xxxiv, fig. 3.
Ninia diademata, B. & G., pl. xxvii, fig. 37.
Ophibolus Boyli, B. & G., pl. xxx, fig. 57.
Ophibolus splendidus, B. & G., pl. xxx, fig. 58.
Ophibolus Sayi, B. & G., pl. xxx, fig. 59.

1859. GIRARD, CHARLES—Continued.

- Ophibolus rhombomaculatus*, B. & G., pl. xxx, fig. 60.
Ophibolus eximius, B. & G., pl. xxx, fig. 61.
Ophibolus clericus, B. & G., pl. xxx, fig. 62.
Ophibolus dolatus, B. & G., pl. xxx, fig. 63.
Ophibolus gentilis, B. & G., pl. xxx, fig. 64.
Ophibolus getulus, B. & G., pl. xxxi, fig. 65.
Oseola clapsoides, B. & G., pl. xxxiii, fig. 97.
Pityophis bellona, B. & G., pl. xxix, fig. 46.
Pityophis melanoleucus, Holbr., pl. xxix, fig. 44.
Pityophis Sagi, B. & G., pl. xxii, and pl. xxix, fig. 45.
Pityophis, McClellani, B. & G., pl. xxix, fig. 47.
Pityophis, annectens, B. & G., pl. xxix, fig. 48.
Pityophis, catenifer, B. & G., pl. xxxvi, fig. 4.
Pityophis, Wilkesi, B. & G., pl. xxxvi, fig. 5.
Regina leberis, B. & G., pl. xxvii, fig. 32.
Regina rigida, B. & G., pl. xxvii, fig. 33.
Regina Grahami, B. & G., pl. xix, fig. 1, and pl. xxvii, fig. 34.
Regina Clarki, B. & G., pl. xxvii, fig. 35.
Regina Kirlandi, Kenn., pl. xx, fig. 2; pl. xxvii, fig. 36.
Rena dulcis, B. & G., pl. xxxiii, fig. 100.
Rhinocheilus Lecanti, B. & G., pl. xxxiii, fig. 90.
Rhinostoma coccinea, Holbr., pl. xxxiii, fig. 89.
Salvadora Grahamia, B. & G., pl. xix, fig. 1.
Scotophis Alleghaniensis, B. & G., pl. xxix, fig. 49.
Scotophis Lindheimeri, B. & G., pl. xxix, fig. 50.
Scotophis vulpinus, B. & G., pl. xxii; pl. xix, fig. 51.
Scotophis confinis, B. & G., pl. xxx, fig. 52.
Scotophis latus, B. & G., pl. xxx, fig. 53.
Scotophis guttatus, B. & G., pl. xxx, fig. 54.
Scotophis 4 vittatus, B. & G., pl. xxx, fig. 55.
Scotophis Emoryi, B. & G., pl. xxx, fig. 56.
Sonora semi annulata, B. & G., pl. xxxiii, fig. 88.
Storeria Dekayi, B. & G., pl. xxxiii, fig. 98.
Storeria occipitomaculata, B. & G., pl. xxxiii, fig. 99.
Tarbiophis inapicalis, B. & G., pl. xxxiii, fig. 87.
Tantilla coronata, B. & G., pl. xxxiii, fig. 96.
Toluca lineata, Kenn., pl. xxxv, fig. 8.
Toxicophis piscivorus, B. & G., pl. xxv, fig. 13.
Toxicophis pugnat. B. & G., pl. xxv, fig. 14.
Virginia valeria, B. & G., pl. xxxiii, fig. 84.
Wenona plumbea, B. & G., ? pl. xxxii, fig. 3.

BATRACHIA.

- Amblystoma macrotium*, Baird.
Amblystoma Californiense, Gray, pl. xxx, fig. 1-3.
Aneides lugubris, Baird, pl. xxx, fig. 4.
Bufo Columbiensis, B. & G.
Bufo Americanus, Leconte, pl. xxxv, fig. 2.
Bufo nebulifer, Girard.
Bufo Woodhousi, Girard, pl. xxxv, fig. 1.
Bufo cognatus, Say, pl. xxxvi.
Bufo boreas, B. & G.
Hyla regilla, B. & G., pl. xxviii, fig. 3.
Rana catesbeiana, Shaw.
Rana clamitans, Daud.
Rana baleriana, Kalm., pl. xxix, fig. 7.
Rana pretiosa, B. & G.
Scaphiopus Hammondi, Baird, pl. xxxiii, fig. 2.
Siredon tichenodes, Baird.
Siredon gracilis, Baird, pl. xlii, fig. 2.
Taricha torosa, Gray.

101.

1859. GIRARD, CHARLES, with SPENCER F. BAIRD. United States and Mexican |
 Boundary Survey, | under the order of | Lieut. Col. W. H. Emory, | Major
 First Cavalry, and United States Commissioner. | — | Reptiles | of the

1859. GIRARD, CHARLES, with SPENCER F. BAIRD.—Continued.

Boundary, | by | Spencer F. Baird. | Assistant Secretary of the Smithsonian Institution. | With notes by the Naturalists of the Survey. | = | 4to. pp. (2) 3-35, pl. xli (for title of volume see under 80 and 81).

The remarks above under No. 94 apply equally here.

CHELONIA.

1. <i>Aspidonectes Emorni</i> , Agassiz.....	3
2. <i>Gypochelys lacertina</i> , Agassiz.....	
3. <i>Ozotheca tristycha</i> , Agassiz.....	
4. <i>Thyrosternum sonoriense</i> , Agassiz.....	
5. <i>Platythya flavescens</i> , Agassiz.....	
6. <i>Ptychenys mobilensis</i> , Agassiz.....	
7. <i>Trachemys elegans</i> , Agassiz.....	
8. <i>Chrysemys Oregonensis</i> , Agassiz.....	4
9. <i>Xerobates Berlandieri</i> , Agassiz.....	

SAURIA.

10. <i>Alligator lucius</i> , Cuv.....	5
11. <i>Sceloporus Clarki</i> , B. & G.....	
12. <i>Sceloporus spinosus</i> , Wieg. pl. xxix, figs. 4-6.....	
13. <i>Sceloporus consobrinus</i> , B. & G.....	
14. <i>Sceloporus torquatus</i> , Wiegmann.....	
15. <i>Sceloporus Poinsetti</i> , B. & G., pl. xxix, figs. 1-3.....	
16. <i>Sceloporus ornatus</i> , Baird.....	
17. <i>Sceloporus Thayeri</i> , B. & G.....	6
18. <i>Sceloporus sedalis</i> , Wiegmann.....	
19. <i>Sceloporus marmoratus</i> , Hallow.....	
20. <i>Sceloporus Couchi</i> , Baird.....	
21. <i>Euphryne obesa</i> , Baird., pl. xxvii.....	
22. <i>Crotaphytus collaris</i> , Holbrook.....	
23. <i>Crotaphytus reticulatus</i> , Baird.....	
24. <i>Crotaphytus Wislizeni</i> , B. & G., pl. xxxi.....	7
25. <i>Uta Stansburiana</i> , B. & G.....	
26. <i>Uta ornata</i> , B. & G.....	
27. <i>Uta ornata</i> var. <i>linearis</i> , Baird.....	
28. <i>Uta symmetrica</i> , Baird.....	
29. <i>Uta Schotti</i> , Baird.....	
30. <i>Uta graciosa</i> , Baird.....	
31. <i>Dipsosaurus dorsalis</i> , Hallowell, pl. xxxii, figs. 7-13.....	8
32. <i>Callisaurus ventralis</i> , Baird.....	
33. <i>Holbrookia maculata</i> , Girard.....	
34. <i>Holbrookia propinqua</i> , B. & G.....	
35. <i>Holbrookia approximans</i> , Baird.....	
36. <i>Holbrookia tezana</i> , B. & G., pl. xxx.....	
37. <i>Holbrookia affinis</i> , B. & G.....	
38. <i>Tapaya Hernandezi</i> , Girard.....	
39. <i>Tapaya ornatissima</i> , Girard.....	9
40. <i>Phrynosoma cornutum</i> , Gray.....	
41. <i>Phrynosoma regale</i> , Girard, pl. xxviii, figs. 1-3.....	
42. <i>Doliosaurus McCalli</i> , Girard, pl. xxviii, figs. 4-6.....	
43. <i>Doliosaurus modestus</i> , Girard.....	10
44. <i>Cnemidophorus Grahani</i> , B. & G., pl. xxxii, figs. 1-6.....	
45. <i>Cnemidophorus inornatus</i> , Baird.....	
46. <i>Cnemidophorus octolineatus</i> , Baird.....	
47. <i>Cnemidophorus perplexus</i> , B. & G.....	
48. <i>Cnemidophorus tigris</i> , B. & G., pl. xxxiii.....	
49. <i>Cnemidophorus gracilis</i> , B. & G., pl. xxxiv, fig. 7-14.....	
<i>Cnemidophorus guttalis</i> , B. & G.....	11
50. <i>Heloderma horridum</i> , Wiegmann, pl. xxvi.....	
51. <i>Gerrhonotus Webbi</i> , Baird, pl. xxiv, figs. 1-10.....	
52. <i>Gerrhonotus nobilis</i> , B. & G., pl. xxv, figs. 1-8.....	
53. <i>Gerrhonotus infernalis</i> , Baird.....	
54. <i>Gerrhonotus olivaceus</i> , Baird.....	
55. <i>Plestiodon guttulatus</i> , Hallow.....	12
56. <i>Anolis Carolinensis</i> , Cuv.....	

1859. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

57. <i>Phyllodoctylus tuberculatus</i> , Wiegman, pl. xxiii, figs. 1-8.	
<i>Sphaeriodactylus aolatus</i> , Baird, pl. xxiv, figs. 29-37.	
58. <i>Stenodactylus variegatus</i> , Baird, pl. xxiii, figs. 9-27; pl. xxiv, figs. 11-19.	
59. <i>Plestiodon obsoletus</i> , B. & G., pl. xxv, figs. 9-16.	
60. <i>Plestiodon tetragrammus</i> , Baird.	
61. <i>Lygosoma laterale</i> , Dum. Bib.	13
62. <i>Anniella pulchra</i> , Gray.	

OPHIDIA.

63. <i>Crotalus atrox</i> , B. & G., pl. i.	14
64. <i>Crotalus confluentus</i> , Say.	
65. <i>Crotalus molossus</i> , B. & G., pl. ii.	
66. <i>Crotalus tigris</i> , Kennicott, pl. iv.	
67. <i>Crotalus cerastes</i> , Hallowell, pl. iii.	
68. <i>Crotalophorus cinctors</i> , B. & G.	15
69. <i>Crotalophorus Edwardsi</i> , B. & G., pl. v, fig. 1.	
70. <i>Toxiophis pugnar</i> , B. & G., pl. vi.	
71. <i>Ancistrodon contortrix</i> , B. & G.	
72. <i>Urops truer</i> , B. & G., pl. vii, fig. 1.	
73. <i>Dipsos septentrionalis</i> , Kennicott, pl. viii, fig. 1.	16
74. <i>Eutania proxima</i> , B. & G.	
75. <i>Eutania ornata</i> , B. & G., pl. ix.	
76. <i>Eutania marciana</i> , B. & G.	17
77. <i>Xerodia Woodhousi</i> , B. & G.	
78. <i>Regina Grahami</i> , B. & G., pl. vii, fig. 2.	
79. <i>Regina Clarki</i> , B. & G., pl. x, adult; pl. xi, fig. 2, young.	
80. <i>Heterodon cognatus</i> , B. & G.	
81. <i>Heterodon nasicus</i> , B. & G., pl. xi, fig. 1.	18
82. <i>Ptygophis bellona</i> , B. & G.	
83. <i>Arizona elegans</i> , Kennicott, pl. xiii.	
84. <i>Scotophis Lindheimeri</i> , B. & G.	19
85. <i>Scotophis Emoryi</i> , B. & G., pl. xii.	
86. <i>Ophibolus Bogli</i> , B. & G.	20
87. <i>Ophibolus splendidus</i> , B. & G., pl. xiv.	
88. <i>Ophibolus Sani</i> , B. & G.	
89. <i>Georgia obsoleta</i> , B. & G., pl. xv.	
90. <i>Bascanina flaviventris</i> , B. & G.	
91. <i>Masticophis Schotti</i> , B. & G., pl. xviii.	
92. <i>Masticophis ornatus</i> , B. & G., pl. xvii.	
93. <i>Masticophis testaceus</i> , B. & G., pl. xvi.	
94. <i>Salvadora Grahami</i> , B. & G., pl. v, fig. 2.	21
95. <i>Leptophis majalis</i> , B. & G.	
96. <i>Sauvagei seminudulata</i> , B. & G., pl. xix, fig. 3.	
97. <i>Rhinochilus Lecontei</i> , B. & G., pl. xx.	
98. <i>Lamprosoma occipitale</i> , Hallowell, pl. xxi, fig. 1.	
99. <i>Lamprosoma episcopum</i> , Kennicott, pl. xviii, fig. 2.	22
100. <i>Diadophis regalis</i> , B. & G.	
101. <i>Diadophis docilis</i> , B. & G., pl. xxi, fig. 3.	
102. <i>Tamniophis imperialis</i> , B. & G., pl. xix, fig. 1.	23
103. <i>Tantilla gracilis</i> , B. & G.	
104. <i>Toluca lineata</i> , Kennicott, pl. xxi, fig. 2.	
105. <i>Rena dulcis</i> , B. & G.	24

BATRACHIA.

<i>Bufo Americanus</i> , Le Conte, pl. xxxix, figs. 1-4.	25
106. <i>Bufo punctatus</i> , B. & G., pl. xxxix, figs. 5-7.	
107. <i>Bufo nebulifer</i> , Grd., pl. xl, figs. 1-4.	
108. <i>Bufo speciosus</i> , Grd., pl. xl, figs. 5-10.	26
109. <i>Bufo alvarius</i> , Grd., pl. xli, figs. 1-6.	
110. <i>Bufo balophila</i> , B. & G., pl. xli, figs. 7-12.	
111. <i>Bufo insidiosus</i> , Grd., pl. xli, figs. 13-18.	
112. <i>Bufo Woodhousi</i> , Girard.	27
113. <i>Bufo cognatus</i> , Say.	
114. <i>Bufo debilis</i> , Girard.	
115. <i>Rana catesbeiana</i> , Shaw.	

1859. GIRARD, CHARLES, with SPENCER F. BAIRD—Continued.

116. *Rana Montezumae*, Baird, pl. xxxvi, figs. 1-6.
 117. *Rana Berlandieri*, Baird, pl. xxxvi, figs. 7-10.
 118. *Rana arcolata*, B. & G., pl. xxxvi, figs. 11, 12. 28
 119. *Scaphiopus Couchi*, Baird, pl. xxxv, figs. 1-6.
 120. *Acris crepitans*, Baird, pl. xxxvii, figs. 14-17.
 121. *Holocetes Clarki*, Baird, pl. xxxvii, figs. 4-9.
 122. *Hyla semifasciata*, Hallow.
 123. *Hyla eximia*, Baird, pl. xxxviii, figs. 8-10. 29
 124. *Hyla Vanclieti*, Baird, pl. xxxviii, figs. 1-3.
 125. *Hyla affinis*, Baird, pl. xxxviii, figs. 4-7.
 126. *Amblystoma proserpina*, B. & G., pl. xxxv, figs. 7-14.
 127. *Amblystoma Texanum*, Baird, pl. xxxv, fig. 15.
 128. *Siren bicertina*, L.

102.

1858. GIRARD, CHARLES. "A Representative of the *Myxinoid* Family on the north-eastern Coast."

Proceedings Academy of Natural Sciences Philadelphia, x, 223-4. 1858.

Ichthyological Notices, i.

Maxine timosa, n. s.

Bay of Fundy, Dr. W. Stimpson.

103.

1858. GIRARD, CHARLES. "A Giant Herring caught off Long Island."

Proceedings Academy of Natural Sciences Philadelphia, x, 224. 1858.

Ichthyological Notices, ii.

Megalops elongatus, n. s.

Off Long Island, W. H. Dougal. Probable habitat, Gulf of Mexico.

104.

1858. GIRARD, CHARLES. "New facts relating to the History of the Salmon of Columbia River."

Proceedings Academy of Natural Sciences Philadelphia, x, 224-5. 1858.

Ichthyological Notices, iii.

Salmo Newberri, n. s.

Columbia River.

105.

1858. GIRARD, CHARLES. "The Genus *Thaleichthys*."

Proceedings Academy of Natural Sciences Philadelphia, x, 225. 1858.

Ichthyological Notices, iv.

Thaleichthys Pacificus, Grd., identical with *T. Sterensi*, Grd.¹

106.

1859. GIRARD, CHARLES. "Curious traits of Organization amongst the Fishes of California and Oregon."

Proceedings Academy of Natural Sciences Philadelphia, xi, 56-8. 1859.

Ichthyological Notices, v.

Noelinius satiricus, n. s.

Bay of Monterey, California, A. S. Taylor.

107.

1859. GIRARD, CHARLES. "A Representative of the Family *Ophisurida*, from the Pacific coast."

Proceedings Academy of Natural Sciences Philadelphia, xi, 58. 1859.

Ichthyological Notices, vi.

MYRICHTHYS, n. g.

Myrichthys tigrinus, n. s.

Adair Bay, Oregon, Capt. C. P. Stone.

¹Report upon the Fishes of the U. S. P. R. R. Explorations and Surveys.

108.

1859. GIRARD, CHARLES. "A *Cyprinella* from the waters of Rock Creek."
Proceedings Academy of Natural Sciences Philadelphia, xi, 58-9. 1859.
 Ichthyological Notices, vii.
Cyprinella anastotana, n. s.
 Rock Creek, Potomac River.

109.

1859. GIRARD, CHARLES. "A *Fundulus* from Palatka, East Florida."
Proceedings Academy of Natural Sciences Philadelphia, xi, 59-60. 1859.
 Ichthyological Notices, viii.
Fundulus seminolis, n. s.
 East Florida, Townsend, Glover.

110.

1859. GIRARD, CHARLES. " *Fundulus tenellus*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 60. 1859.
 Ichthyological Notices, ix.
Zygocetes tenellus.
 Prairie Mer Rouge, Louisiana; Russellville, Kentucky.

111.

1859. GIRARD, CHARLES. " *Hydrargyra*, collected between Fort Defiance and Fort Union, New Mexico."
Proceedings Academy of Natural Sciences Philadelphia, xi, 60-1. 1859.
 Ichthyological Notices, x.
Hydrargyra zebra, n. s.
 Rio Bravo, tributary Rio Grande del Norte, Ives' Party.

112.

1859. GIRARD, CHARLES. "The Genus *Gambusia*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 61-2, 1859.
 Ichthyological Notices, xi.
Gambusia Holbrooki, n. s.
 South Carolina, Florida, Ch. Girard; T. Glover.
 Note by Professor Poey of Cuba.

113.

1859. GIRARD, CHARLES. "On *Girardinus formosus*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 62-3, 1859.
 Ichthyological Notices, xii.
Girardinus formosus, Grd.
 South Carolina, Mr. Glover.
 Noticed by Agassiz, as *Heterandria formosa*, Ag. (M. S.)

114.

1859. GIRARD, CHARLES. "A Blind Fish, taken from a well, near Bowling Green, Kentucky."
Proceedings Academy of Natural Sciences Philadelphia, xi, 63-4, 1859.
 Ichthyological Notices, xiii.
 TYPHLICHTHYS, n. g.
Typhlichthys subterraneus, n. s.
 Bowling Green, Kentucky, J. E. Younglove.

115.

1859. GIRARD, CHARLES. "On *Pomotis obesus*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 64, 1859.
 Ichthyological Notices, xiv.
 Refers to *Pomotis obesus*, Grd., and genus *Bryttus*; *Bryttus obesus*, Grd.

116.

1859. GIRARD, CHARLES. "A *Megalops* from the Tortugas, Garden Key, Florida." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 64, 1859. Ichthyological Notices, xv.
Refers to *Megalops elongatus*, Girard.

117.

1859. GIRARD, CHARLES. "The genus *Arlina*." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 64-5, 1859. Ichthyological Notices, xvi.
ARLINA, n. g.
Arlina cfulgens, n. s.
Potomac River and tributaries.

118.

1859. GIRARD, CHARLES. "Another Representative of the Etheostomid family, from the Potomac River." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 65-6. 1859. Ichthyological Notices, xvii.
ESTRELLA, n. g.
Estrella atramaculata, n. s.
Potomac River.

119.

1859. GIRARD, CHARLES. "*Percina nebulosa*, in the waters of the Potomac River." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 66. 1859. Ichthyological Notices, xviii.
Described by Professor Haldeman; captured in the Susquehanna River.

120.

1859. GIRARD, CHARLES. "*Etheostoma caprodes* of Rafinesque." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 66. 1859. Ichthyological Notices, xix.
Refers to genus PERCINA, Haldeman; *Percina caprodes*, Grd.

121.

1859. GIRARD, CHARLES. "Are *Pilcoma semifasciatum* and *Percina nebulosa* identical?" *Proceedings Academy of Natural Sciences Philadelphia*, xi, 66. 1859. Ichthyological Notices, xx.
Reference to the third species of the genus PERCINA: *Percina semifasciata*, Grd.

122.

1859. GIRARD, CHARLES. "*Pilcoma Zebra*." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 66. 1859. Ichthyological Notices, xxi.
Reference to the fourth species of Percina, appellation, *Percina zebra*, Grd.

123.

1859. GIRARD, CHARLES. "*Pilcoma carbonaria*." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 66. 1859. Ichthyological Notices, xxii.
Reference to the fifth species of PERCINA, appellation, *Percina carbonaria*, Grd.
Bull. 41, N. M.—6

124.

1859. GIRARD, CHARLES. "A new genus of Etheostomid."
Proceedings Academy of Natural Sciences Philadelphia, xi, 67. 1859.
 Ichthyological Notices, xxiii.
 OLIGOCEPHALUS, n. g.
Oligocephalus lepidus, n. s.
 Described under the name of *Percilichthys lepidus*, Grd., in the report of the United States and Mexican Boundary Commission.

125.

1859. GIRARD, CHARLES. "Oligocephalus from James River, Virginia."
Proceedings Academy of Natural Sciences Philadelphia, xi, 67. 1859.
 Ichthyological Notices, xxiv.
Oligocephalus humeralis, n. s.
 James River, Virginia.

126.

1859. GIRARD, CHARLES. "Oligocephalus Linslii from Wolcott, Wayne County, New York."
Proceedings Academy of Natural Sciences Philadelphia, xi, 67, 1859.
 Ichthyological Notices, xxv.
Oligocephalus Linslii, Grd.
 Wolcott, Wayne County, New York.
 Described by Dr. H. R. Storer under the appellation of *Etheostoma Linsleyi*.

127.

1859. GIRARD, CHARLES. "A Species of Etheostoma collected at Fort Gratiot, Lake Huron."
Proceedings Academy of Natural Sciences Philadelphia, xi, 67-8, 1859.
 Ichthyological Notices, xxvi.
 ALVORDIUS, n. g.
Alvordius maculatus, n. s.
 Lake Huron, Maj. B. Alvord.

128.

1859. GIRARD, CHARLES. "*Catonotus fasciatus*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 68, 1859.
 Ichthyological Notices, xxvii.
Catonotus fasciatus, n. s.
 E. S. Dayton.

129.

1859. GIRARD, CHARLES. "Hadropterus in the Waters of the Potomac River."
Proceedings Academy of Natural Sciences Philadelphia, xi, 100, 1859.
 Ichthyological Notices, xxviii.
Hadropterus maculatus, n. s.
 Tributary of the Potomac River, in Anne Arundel County, Maryland.

130.

1859. GIRARD, CHARLES. "Hadropterus in the Arkansas River."
Proceedings Academy of Natural Sciences Philadelphia, xi, 100, 1859.
 Ichthyological Notices, xxix.
Hadropterus Shumardi, n. s.
 Arkansas River, Dr. George G. Shumard.

131.

1859. GIRARD, CHARLES. "A Representative of the *Etheostoma* family procured by the U. S. and Mexican Boundary Commission."
Proceedings Academy of Natural Sciences Philadelphia, xi, 101, 1859.
 Ichthyological Notices, xxx.
ALVARIUS, n. g.
Alvarius lateralis, n. s.
 Rio Bravo of the Rio Grande del Norte.

132.

1859. GIRARD, CHARLES. "Diplesion in the Waters of Chihuahua River."
Proceedings Academy of Natural Sciences Philadelphia, xi, 101-2, 1859.
 Ichthyological Notices, xxxi.
Diplesion fasciatus, n. s.
 Chihuahua River, John Potts.

133.

1859. GIRARD, CHARLES. "Aplesion in Chihuahua River."
Proceedings Academy of Natural Sciences Philadelphia, xi, 102, 1859.
 Ichthyological Notices, xxxii.
Aplesion Pottsi, n. s.
 Chihuahua River, John Potts.

134.

1859. GIRARD, CHARLES. "Oligocephalus in Devil's River, Texas."
Proceedings Academy of Natural Sciences Philadelphia, xi, 102, 1859.
 Ichthyological Notices, xxxiii.
Oligocephalus Grahamii, n. s.
 Devil's River, Texas, John H. Clark.

135.

1859. GIRARD, CHARLES. "Oligocephalus in the Rio Leona, Texas."
Proceedings Academy of Natural Sciences Philadelphia, xi, 102, 1859.
 Ichthyological Notices, xxxiv.
Oligocephalus Leonensis, n. s.
 Rio Leona, Texas, John H. Clark.

136.

1859. GIRARD, CHARLES. "Oligocephalus in a Tributary of Gypsum Creek."
Proceedings Academy of Natural Sciences Philadelphia, xi, 102-3, 1859.
 Ichthyological Notices, xxxv.
Oligocephalus patchellus, n. s.
 Gypsum Creek, Whipple party.

137.

1859. GIRARD, CHARLES. "Boleosoma in the Rio Seco, Texas."
Proceedings Academy of Natural Sciences Philadelphia, xi, 103, 1859.
 Ichthyological Notices, xxxvi.
Boleosoma gracile, n. s.
 Rio Seco and Rio Leona, Texas, Dr. C. B. Kennerty.

138.

1859. GIRARD, CHARLES. "The Genus *Boleichthys*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 103-4, 1859.
 Ichthyological Notices, xxxvii.
BOLEICHTHYS, n. g.
Boleichthys exilis, n. s.
 Little Muddy River, Upper Missouri, Dr. George Suckley.

139.

1859. GIRARD, CHARLES. "Boleichthys in Coal Creek, Arkansas."
Proceedings Academy of Natural Sciences Philadelphia, xi, 103, 1859.
 Ichthyological Notices, xxxviii.
Boleichthys Whipplei, n. s.
 Coal Creek, Arkansas, Whipple party.

140.

1859. GIRARD, CHARLES. "Boleichthys at Piedrapainte, Texas."
Proceedings Academy of Natural Sciences Philadelphia, xi, 104, 1859.
 Ichthyological Notices, xxxix.
Boleichthys elegans, n. s.
 Piedrapainte, Texas, John H. Clark.

141.

1859. GIRARD, CHARLES. "Boleichthys in Cannon Ball River."
Proceedings Academy of Natural Sciences Philadelphia, xi, 104, 1859.
 Ichthyological Notices, xl.
Boleichthys Warreni, n. s.
 Upper Missouri and Yellowstone Rivers, Lieut. G. K. Warren.

142.

1859. GIRARD, CHARLES. "The Genus *Zygocetes*."
Proceeding Academy of Natural Sciences Philadelphia, xi, 113, 1859.
 Ichthyological Notices, xli.
Zygocetes pulchellus, n. s.
 Sugar Loaf Creek, Arkansas, Whipple party.

143.

1859. GIRARD, CHARLES. "*Limia* Along Our Own Shores and in the Mexican Provinces."
Proceedings Academy of Natural Sciences Philadelphia, xi, 114, 1859.
 Ichthyological Notices, xlii.
 Comparison between the genus *Limia* and *Pacilia*. Professor Poey quoted.
Mollinesia latipinna were collected at Galveston, Texas, by Dr. Kennedy, and *Pacilia multilacata* collected at Palatka, East Florida, by Mr. Glover.

144.

1859. GIRARD, CHARLES. "*Pacilia lincolata* from Brownsville."
Proceedings Academy of Natural Sciences Philadelphia, xi, 114-15, 1859.
 Ichthyological Notices, xliii.
Pacilia lincolata, Gbd.
 Rio Bravo of the Rio Grande del Norte.

145.

1859. GIRARD, CHARLES. "The Species *Limia parvifoides*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 115, 1859.
 Ichthyological Notices, xlv.
Limia parvifoides, n. s.
 Indianola, Texas, John H. Clark.

146.

1859. GIRARD, CHARLES. "*Limia formosa* in a Lagoon at Paolo Alto."
Proceedings Academy of Natural Sciences Philadelphia, xi, 115, 1859.
 Ichthyological Notices, xlv.
Limia formosa, n. s.
 Paolo Alto, Mexico, John H. Clark.

147.

1859. GIRARD, CHARLES. "*Limia* in the Province of New Leon."
Proceeding Academy of Natural Sciences Philadelphia, xi, 116, 1859.
 Ichthyological Notices, xlvi.
Limia Coahuilana, n. s.
 Rio San Juan, Lieut. D. N. Conch.

148.

1859. GIRARD, CHARLES. "A Species of *Limia* Common about Matamoras."
Proceedings Academy of Natural Sciences Philadelphia, xi, 116-17, 1859.
 Ichthyological Notices, xlvii.
Limia Matamorenensis, n. s.
 Matamoras, L. Berlandier.

149.

1859. GIRARD, CHARLES. "The genus *Adinia*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 117. 1859.
 Ichthyological Notices, xlviii.
ADINIA, n. g.
Adinia multifasciata, n. s.
 Galveston, Texas, Dr. C. B. K. Kennerly.

150.

1859. GIRARD, CHARLES. "The genus *Lucania*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 118. 1859.
 Ichthyological Notices, xlix.
LUCANIA, n. g.
Lucania venusta, Grd.
 Indianola, Texas, John H. Clark.
 This is *Limia venusta*, Grd., described and figured in the Ichthyology of the United States and Mexican Boundary.

151.

1859. GIRARD, CHARLES. "*Lucania*, collected in the Neighborhood of Matamoras."
Proceedings Academy of Natural Sciences Philadelphia, xi, 118. 1859.
 Ichthyological Notices, l.
Lucania affinis, n. s.
 Matamoras, L. Berlandier.

152.

1859. GIRARD, CHARLES. "*Lucania* collected in the Vicinity of the City of Mexico."
Proceedings Academy of Natural Sciences Philadelphia, xi, 118-19. 1859.
 Ichthyological Notices, li.
 A cyprinodont of peculiar shape, collected in the vicinity of the City of Mexico in 1853 by Maj. W. Rich. The specific name originally selected was *L. Richi*, but by a singular oversight it disappeared from the text while going through the press.

153.

1859. GIRARD, CHARLES. "The Characters to be assigned to *Girardinus*." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 119. 1859. Ichthyological Notices, lii.
Girardinus occidentalis, Grd.
Rio Santa Cruz, John H. Clark; Tneson, Dr Heermann.

154.

1859. GIRARD, CHARLES. "*Girardinus sonoricensis* collected in San Bernardino Creek, Mexico." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 120. 1859. Ichthyological Notices, liii.
Girardinus sonoricensis, n. s.
San Bernardino Creek, Dr. C. B. R. Kennerly.

155.

1859. GIRARD, CHARLES. "The Affinities between *Gambusia* and *Zygonectes*." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 120. 1859. Ichthyological Notices, liv.
Gambusia nobilis, Grd.
Specimens collected by Lieut. J. G. Parke in Comanche Spring, Mexico.

156.

1859. GIRARD, CHARLES. "*Gambusia affinis* collected in Texas." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 120. 1859. Ichthyological Notices, lv.
Specimens collected in San Pedro Creek and in Dry Creek, Texas, by Dr. C. B. R. Kennerly.

157.

1859. GIRARD, CHARLES. "As to *Gambusia patraclis*." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 121. 1859. Ichthyological Notices, lvi.
Collected by Dr. C. B. R. Kennerly in the Rio Nueces; also, in the Rio Leon, Rio Blanco, and Rio Seco.

158.

1859. GIRARD, CHARLES. "*Gambusia* from the Hydrographic Basin of the Rio San Juan." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 121. 1859. Ichthyological Notices, lvii.
Gambusia speciosa, n. s.
Rio San Diego, New Leon, D. N. Couch.

159.

1859. GIRARD, CHARLES. "*Gambusia* in the Collection of the late Louis Berlandier, of Matamoras." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 121. 1859. Ichthyological Notices, lviii.
Gambusia gracilis, n. s.

160.

1859. GIRARD, CHARLES. "A species of *Gambusia* in Chihuahua River." *Proceedings Academy of Natural Sciences Philadelphia*, xi, 121-22. 1859. Ichthyological Notices, lix.
Gambusia senilis, n. s.
Chihuahua, John Potts.

161.

1859. GIRARD, CHARLES. "Fundulus in Charlotte Bay, Florida."
Proceedings Academy of Natural Sciences Philadelphia, xi, 157. 1859.
 Ichthyological Notices, ix.
Fundulus Floridensis, n. s.
 Charlotte Bay, Florida.

162.

1859. GIRARD, CHARLES. "A Cyprinodon collected in the Neighborhood of San Diego, California."
Proceedings Academy of Natural Sciences Philadelphia, xi, 157. 1859.
 Ichthyological Notices, lxi.
Cyprinodon Californiensis, n. s.
 San Diego, California, Dr. Thomas Webb.

163.

1859. GIRARD, CHARLES. "A Cyprinodon collected in Chihuahua River."
Proceedings Academy of Natural Sciences Philadelphia, xi, 158. 1859.
 Ichthyological Notices, lxii.
Cyprinodon eximius, n. s.
 Chihuahua River, John Potts.

164.

1859. GIRARD, CHARLES. "*Pomotis chatodon*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 158. 1859.
 Ichthyological Notices, lxiii.
Bryttus chatodon, Grd.
Pomotis chatodon, Baird, ix, Ann. Rep. Smiths. Inst., 1855, 324.

165.

1859. GIRARD, CHARLES. "*Clupea teres*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 158. 1859.
 Ichthyological Notices, lxiv.
 Refers that species to genus *Harengula*, of Valenciennes, under the name of *H. teres*. Baird and DeKay quoted.

166.

1859. GIRARD, CHARLES. "*Pimelodus lemniscatus*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 158. 1859.
 Ichthyological Notices, lxv.
 This is the same as *Noturus lemniscatus*, Grd
 Pennsylvania, Lesueur.

167.

1859. GIRARD, CHARLES. "*Pimelodus gracilis*."
Proceedings Academy of Natural Sciences Philadelphia, xi, 158-9. 1859.
 Ichthyological Notices, lxvi.
 This is the same as *Pimelodus Houghi*, Grd.
 Sommerville, New York, F. B. Hough; Foxburgh and Ogdensburg, Pennsylvania.
 Baird.

168.

1859. GIRARD, CHARLES. "A Species of *Pimelodus* collected in the Neighborhood of Racine, Wisconsin."
Proceedings Academy of Natural Sciences Philadelphia, xi, 159. 1859.
 Ichthyological Notices, lxvii.
Pimelodus Hoyi, n. s.
 Racine, Wisconsin, Dr. Hoy.

169.

1859. GIRARD, CHARLES. "Specimens of a Species of *Pimelodus* caught in Root River, near Racine, Wisconsin."
Proceedings Academy of Natural Sciences Philadelphia, xi, 159. 1859.
 Ichthyological Notices, lxxviii.
Pimelodus confinis, n. s.
 Root River, Wisconsin. S. F. Baird.

170.

1859. GIRARD, CHARLES. "A Species of *Pimelodus* collected by Robert Kennicott, Aux Plaines, Illinois."
Proceedings Academy of Natural Sciences Philadelphia, xi, 159. 1859.
 Ichthyological Notices, lxxix.
Pimelodus capricoides, n. s.
 Aux Plaines, Illinois. Robert Kennicott.

171.

1859. GIRARD, CHARLES. "*Pimelodus catus*," DeKay (not Cuv. and Val.).
Proceedings Academy of Natural Sciences Philadelphia, xi, 160. 1859.
 Ichthyological Notices, lxxx.
Pimelodus DeKayi, n. s.
 Lake Ontario, S. F. Baird.

172.

1859. GIRARD, CHARLES. "The true *Pimelodus catus*" (not DeKay).
Proceedings Academy of Natural Sciences Philadelphia, xi, 160. 1859.
 Ichthyological Notices, lxxxi.
Pimelodus catus, Cuv. and Val., l.
 Southern States.

173.

1859. GIRARD, CHARLES. "The 'Channel Cat,' or 'Mud Cat,' of the Chesapeake."
Proceedings Academy of Natural Sciences Philadelphia, xi, 160, 1859.
 Ichthyological Notices, lxxxii.
Pimelodus lyax, n. s.
 Potomac River and Deep Run, and at Carlisle, Pennsylvania.

174

1859. GIRARD, CHARLES. "*Pimelodus puma* collected in Charleston, South Carolina."
Proceedings Academy of Natural Sciences Philadelphia, xi, 160, 1859.
 Ichthyological Notices, lxxxiii.
Pimelodus puma, n. s.
 Charleston, South Carolina, Charles Girard.

175.

1859. GIRARD, CHARLES. "*Pimelodus vulpeculus*, collected in Charleston, South Carolina."
Proceedings Academy of Natural Sciences Philadelphia, xi, 160, 1859.
 Ichthyological Notices, lxxxiv.
Pimelodus vulpeculus, n. s.
 Charleston, South Carolina, Charles Girard.

176.

1859. GIRARD, CHARLES. "*Pimelodus platycephalus* collected in the Neighborhood of Anderson, South Carolina."
Proceedings Academy of Natural Sciences Philadelphia, xi, 161, 1859.
 Ichthyological Notices, lxxxv.
Pimelodus platycephalus, n. s.
 Anderson, South Carolina, Mrs. Daniel.

177.

1859. GIRARD, CHARLES. "A Catfish collected in the Black Warrior and Bigsby Rivers, Alabama.

Proceedings Academy of Natural Sciences Philadelphia, xi, 161, 1859.

Ichthyological Notices, LXXVI.

Pimelodus megalops, n. s.

Black Warrior and Bigsby Rivers, Alabama. Prof. A. Winchell.

178.

1859. GIRARD, CHARLES. "A Catfish collected at Prairie Mer Rouge, Louisiana."

Proceedings Academy of Natural Sciences Philadelphia, xi, 161, 1859.

Ichthyological Notices, LXXVII.

Pimelodus graciosus, n. s.

Prairie Mer Rouge, Louisiana, James Fairie.

179.

1858-59. GIRARD, CHARLES. Ichthyological Notices, a reprint from the *Proceedings of the Academy of Natural Sciences of Philadelphia*, December 11, 1858; March, April, and May, 1859. A pamphlet of 36 pages, 8vo.

Alphabetical list of the species as discussed *supra*:

<i>Ailinia multifasciata</i> , G.	25
<i>Alcarius lateralis</i> , G.	17
<i>Alvordius maculatus</i> , G.	14
<i>Apleision Pottsi</i> , G.	18
<i>Artina effulgens</i> , G.	12
<i>Bolichthys elegans</i> , G.	20
<i>Bolichthys exilis</i> , G.	20
<i>Bolichthys Warreni</i> , G.	20
<i>Bolichthys Whipplei</i> , G.	20
<i>Bolcosoma gracile</i> , G.	19
<i>Bryttus chortodon</i> , G.	32
<i>Bryttus obesus</i> , G.	11
<i>Catanotus fasciatus</i> , G.	15
<i>Cyprinella anabostana</i> , G.	6
<i>Cyprinodon Californiensis</i> , G.	32
<i>Cyprinodon eximius</i> , G.	32
<i>Diplesion bleennioides</i> , Rafin.	17
<i>Diplesion fasciatus</i> , G.	17
<i>Estrella atromaculata</i> , G.	13
<i>Fario Newberri</i> , G.	3
<i>Fundulus Floridensis</i> , G.	31
<i>Fundulus seminolis</i> , G.	6
<i>Gambusia affinis</i> , G.	28
<i>Gambusia formosa</i> , G.	9
<i>Gambusia gracilis</i> , G.	29
<i>Gambusia Holbrooki</i> , G.	8
<i>Gambusia nobilis</i> , G.	28
<i>Gambusia patruelis</i> , G.	28
<i>Gambusia senilis</i> , G.	30
<i>Gambusia speciosa</i> , G.	29
<i>Girardinus occidentalis</i> , G.	27
<i>Girardinus sonoriensis</i> , G.	28
<i>Hadropterus maculatus</i> , G.	10
<i>Hadropterus Shumardi</i> , G.	16
<i>Harenula teres</i> , G.	33
<i>Hydrargyra zebra</i> , G.	7
<i>Linia Couchiana</i> , G.	24
<i>Linia formosa</i> , G.	23
<i>Linia matamorensis</i> , G.	25
<i>Linia pavoideus</i> , G.	22
<i>Lucania affinis</i> , G.	26

1858-59. GIRARD, CHARLES—Continued.

<i>Lucania venusta</i> , G.....	26
<i>Lucania</i> [spec. inanim.].	26
<i>Megalops elongatus</i> , G.....	2, 11
<i>Mollicasia latipinna</i> , Lesueur.....	22
<i>Myrichthys tigrinus</i> , G.....	5
<i>Maxine limosa</i> , G.....	2
<i>Neoclinus Blanchardi</i> , G.....	4
<i>Neoclinus satyrius</i> , G.....	4
<i>Naturus lemniscatus</i> , G.....	23
<i>Oligocephalus Grahami</i> , G.....	19
<i>Oligocephalus humeralis</i> , G.....	13
<i>Oligocephalus Linsli</i> , G.....	14
<i>Oligocephalus Leonensis</i> , G.....	19
<i>Oligocephalus lepidus</i> , G.....	14
<i>Oligocephalus pulchellus</i> , G.....	19
<i>Percina caprodes</i> , G.....	13
<i>Percina carbonaria</i> , G.....	13
<i>Percina nebulosa</i> , Hald.....	13
<i>Percina semijasciata</i> , G.....	13
<i>Percina zebra</i> , G.....	13
<i>Pimelodus entus</i> , CHY. & VAL.....	34
<i>Pimelodus confinis</i> , G.....	33
<i>Pimelodus coprooides</i> , G.....	34
<i>Pimelodus Dokuji</i> , G.....	34
<i>Pimelodus gracilis</i> , G.....	33
<i>Pimelodus graciosus</i> , G.....	36
<i>Pimelodus Hogii</i> , G.....	33
<i>Pimelodus lynx</i> , G.....	34
<i>Pimelodus megalops</i> , G.....	35
<i>Pimelodus platycephalus</i> , G.....	35
<i>Pimelodus pinnu</i> , G.....	35
<i>Pimelodus vulpeculus</i> , G.....	35
<i>Thalichthys Pacificus</i> , G.....	3
<i>Typhlichthys subterranus</i> , G.....	9
<i>Zyguncetes pulchellus</i> , G.....	21
<i>Zyguncetes tenellus</i> , G.....	6

180.

1859. GIRARD, CHARLES. Herpetological Notices.

Proceedings Academy of Natural Sciences Philadelphia, xi, 169-70, 1859

Bufo lamentor, n. s.

Fort Bridger, Utah, Mr. Drexler.

Egystoma Texense, n. s.

Texas, Capt. John Pope.

181.

1860. GIRARD, CHARLES. La vie | au point de vue Physique | on | Physiogénie Philosophique | par | Charles Girard | Docteur en Médecine et en Chirurgie, | membres de plusieurs sociétés Savantes. | Paris | J. B. Baillière et Fils. | Libraries de l'Académie Impériale de Médecine. | 19, Rue Hautefeuille. | J. B. Baillière et Fils, Paris, 1-73, 1860.

A French edition of "Life in its Physical Aspect," published at Washington in the "Proceedings of the National Institute" and subsequently in a separate pamphlet printed by R. A. Waters, 1855. (See No. 81.)

182.

1863. GIRARD, CHARLES. Les États Confédérés d'Amérique. Paris, 1863. Svo. Pamphlet.

A trip through both Carolinas and Virginia during the months of July and August, 1863.

183.

1872. GIRARD, CHARLES. Principes de Biologie appliqués à la Médecine. Paris, 18. 1872.

A second and revised edition of "La vie au point de vue physique."

184.

1872. GIRARD, CHARLES. Contribution à l'Histoire médico-chirurgicale du Siège de Paris. L'ambulance militaire de la rue Violet, No. 57. Succursale de l'Hôtel des Invalides. Paris, 1872. Pp. 100. 8vo.

As chief physician of one of the military ambulances during the memorable siege of Paris, in 1870-71, Dr. Girard was afforded an opportunity for writing an elaborate chapter on the diseases originating in the alimentary canal, with special reference to the etiology of typhoid fever, of which the various stages have been carefully described.

185.

1888. GIRARD, CHARLES. Systematic Catalogue [of the] Scientific Labors [of] Dr. Charles Girard. Poissy, 8. Pp. 3-13. 1888.

A limited number of copies were printed for private circulation.

186.

1888. GIRARD, CHARLES. Les Poissons Aveugles des Cavernes Américaines. *Le Naturaliste*, Paris, 107-8. 1888.

Typhlichthys subterraneus, Grd., is figured from an original drawing graciously furnished by Professor Baird, Secretary Smithsonian Institution.

187.

1888. GIRARD, CHARLES. Les Poissons souterrains du Nouveau Monde.

Le Naturaliste, Paris, 222. 1888.

Animal life exists in the underground waters and is only seen incidentally. Thus the volcanos of the equator throw up periodically large quantities of fishes of which but little is known. The mud volcanos of Guatemala likewise emit fishes yet undescribed. We are aware by the inspection of the so-called "Cénoles" of Yucatan that in the shoets of subterranean water of that region are to be found fishes of various kinds. In California the artesian wells furnish fishes of whose character, however, we know but little.

Explorers of those regions ought to devote some of their time to the investigation of these matters.

188.

1889. GIRARD, CHARLES. Les Poissons Musiciens.

Le Naturaliste, Paris, 57-8. 1889. (fig.)

The fact that certain fishes possess the singular faculty of emitting given sounds within the element in which they live is well known. The names of *Gurnards*, *Grunters*, *Croakers*, *Drums*, and similar appellations by which they are usually designated have been named with reference to the sounds they emit.

Extraordinary sounds attributed to a fish are reported upon by Lieutenant Gilliss, U. S. Navy, as follows:

"During the following summer of 1852—a submarine phenomenon attracted no little attention among the residents and visitors at Caldera, of which more than one account reached Santiago. One correspondent wrote me: 'The night I stopped at Caldera I went at half past 11 o'clock to hear the submarine music, and I confess it has astonished me. Though the position is neither graceful nor comfortable, on lying down in the boat and placing your ear upon the bottom you hear it in its perfection. I stuck to it for a long time and was charmed indeed. It has now been pretty well ascertained that it comes from fish, which gather in great number on a quiet and retired spot on the bay, and as each one produces a single note, the most soft and charming harmony results, resembling the Æolian harp nearer than anything to which I can compare it. If we suppose the sounds to be produced by fish, that will also account for the different localities where they are heard. On my return to Caldera I will endeavor to obtain the name by which the fish is known there, if

1889. GIRARD, CHARLES.—Continued.

I should not succeed in obtaining a specimen for you.' Another friend, to whom I wrote on receiving the above, tells me: 'The idea of the music heard here being produced by fish never entered my brain until you wrote me about Mr. H. I am not fully prepared to oppose the señoritas who pronounce it a siren, and among whom it has caused no little sensation. It is always near one place, and is never heard during the day. You must come down for a personal examination, because, though I shall send you a box containing some of the small fish caught in the bay, I have no intention to assert that *a* or *the* musical fish shall be among them.' My friend sent fish according to promise, of which an account is given in the report from Mr. Charles Girard. One of them he has named *Aloa musica* from this circumstance. When I wrote again, only four months later, these charming aquatic serenaders had shut up their orchestra, or gone elsewhere.'—[Gilliss's Exp. to South Hemisphere, vol. i. p. 270, 271.]

According to all probabilities, says Dr. Girard, those musicians have taken a northerly direction, having been heard near the equator by the engineer Ouffroy de Thoron, who speaks of them as follows:

"It was in the Bay of Paillon, surrounded with virgin forests, that I heard for the first time the song of the *fish musician*. Already, while at Campana, much about it was told me. There were many of those fishes in the Matajé; they were heard at certain hours in the evening and in certain quarters pointed out to me. But I attached no great importance to the subject at that moment, my conviction being that this animal was well known to naturalists, so that as a mere satisfaction of curiosity I awaited a favorable opportunity in going to hear them. But as it sometimes happens that these fishes do not await obscurity for uttering their music, a chance served me admirably on my return from Paillon to Campana.

"On proceeding along a seacoast at sunset, a strange song, extremely grave and prolonged, was suddenly heard about me. I first thought it to be a goat or a bumblebee of an extraordinary size, but perceiving nothing above or around me, I asked the oarsman of my pirogue whence this noise came. 'Sir,' he answered, 'it is a fish which thus sings; some call these fishes *siren*, and others *musiciana*.' On progressing a little further I heard a multitude of divers voices, harmonizing amongst themselves, imitating to perfection the sound of a church organ.

"The Bay of Paillon is not the sole locality where one may enjoy this phenomenon. It occurs in several places, and even with greater power and evidence in the river Matajé, especially at the foot of a promontory called Campanilla. This river has two outlets upon the Pacific Ocean and a third one into the bay already named. By ascending it beyond Campana one reaches Campanilla, where the same phenomenon occurs. I was told that in the River *del Molino*, an affluent of the Matajé, the song of these fishes had likewise been heard. It may not be uninteresting to know that these animals live in waters of different qualities, since that of Paillon is salted, whilst that of the river does not mingle with the preceding except at tide times. The fishes musicians execute their music without being troubled by your presence, and this for several hours consecutively without exhibiting themselves near the surface of the water, and the continuous vibration of their song produces an aerial sound. One feels amazed that such a noise could proceed from an animal *no more than 10 inches in length. It is a fish, the exterior configuration of which presents nothing peculiar; its color is white with some olivish spots along the back.* Such is the fish which is taken by the hook on the very places where the song is uttered. It is towards sunset when these fishes begin to make themselves heard, continuing their song during the night, imitating the grave and medial sounds of an organ. [Ouffroy de Thoron, *L'Amérique équatoriale*, 1866, 137-140.]

The origin of the harmonious sounds heard in the bays of Caldera and Paillon deserve the attention of the future explorers of the Pacific coast of South America. The magnitude of the scene on which the phenomenon is displayed, the mystery which surrounds its manifestation, are such as to awaken general curiosity.

189.

1889. GIRARD, CHARLES. Les Poissons Souterraines du Nord de l'Afrique. *Le Naturaliste*, Paris, 103-6, 1889.

The Desert of Sahara contains many wells of considerable magnitude. Surrounding these wells rich oases have sprung up, sustaining a native population of some importance. But what is most remarkable about the wells is the fact that they bring forth from great depths living fishes, which, instead of being blind, as one would be led to suppose *a priori*, are provided with eyes as perfect as those of fishes living in the rivers. The prevailing opinion is that the fishes from the artesian wells are native of the water courses over the surface of the soil and have penetrated subsequently into the ground, whence they are brought up by the wells.

1889. GIRARD, CHARLES—Continued.

This question, however, has not been definitely settled. The objections to this theory are given in the above paper.

The following species have been observed and figured:

Cyprinodon calaritanus, Val.

Zab occidental and all the wells of Oued Rix.

Chromis Desfontainii, Sauv.

Hot Springs of Gafsa. 30° R.

Chromis zillii, Sauv.

Oued Rix from Melrix Chott to Toungourt.

Hemichromis Sahara, Sauv.

Wells from the vicinities of Toungourt.

Hemichromis Rolandii, Sauv.

Zab occidental (Zibans).

Similar, though different species of the Chromid family, live in the depths of the Lake of Tiberias, with the curious habits of hatching their own eggs and bringing up their progeny sheltered in their buccal cavity. It remains to be seen whether the Chromids of Africa exhibit the same traits in their habits.

190.

1889. GIRARD, CHARLES. Les Andes et la Cordillere équatoriales. *Le Naturaliste*, Paris, 37-38, 159-161, 1889.

The committee for the organization of the first international congress of zoölogy have endeavored to point out a certain number of questions upon which a discussion might be usefully raised by its future members. Among those questions was the "Determination of the regions of the globe the fauna of which was insufficiently known."

The above paper tends to show that the Republic of the Equator throughout, with the surrounding headwaters of the Rio del Cauca, the Rio Magdalena, the Amazon River, the Rio Parana, and the Rio La Plata, with special references to the subterranean faunas, were included in that category.

191.

1889. GIRARD, CHARLES. Les Andes, la Cordillere d'Amazonie: Précédé d'une lettre à Mr. Raph. Blanchard.

Congrès international de Zoölogie, Paris, 1889, 101.

Revised edition of the foregoing paper, together with special reference to the fishes ejected by the volcanos of the equator, and to the lack of scientific information as to their natural history. A letter to R. Blanchard enumerates the species actually living in open waters surrounding those volcanos, and which have been too hastily identified from Humboldt's time to our days by ichthyologists.

192.

1889. GIRARD, CHARLES. La Faune Souterraine des Andes et de la Cordillere.

Congrès international de Zoölogie, Paris, 1889, 110.

A complement of the foregoing "Paper," and entering into fuller details respecting our actual knowledge upon the subterranean fauna of the regions previously mentioned.

193.

1890. GIRARD, CHARLES. Les Poissons vivipares de la côte Américaine de l'océan Pacifique.

Le Naturaliste, No. 69, 21-25; No. 70, 39; No. 72, 61-62 (figs.). Paris, 1890.

A French translation from the "Report on the Fishes in the Explorations and Surveys of the Pacific Railroad." [No. 93.]

194.

1890. GIRARD, CHARLES. De la Phosphorescence en général et celle des mers en particulier.

Le Naturaliste Paris, 1890, pp. 210-212.

1890. GIRARD, CHARLES—Continued.

ABSTRACT.

There are naturalists who still believe that phosphorescence is the "result of a peculiar secretion of a viscous or slimy liquid." Others think that the same phenomenon "does not depend upon the will of the animal and manifests itself through anomalous circumstances."

To show the inanity of such conceptions Dr. Girard relates a curious and quite decisive observation made in Boston harbor in 1847, in company with Agassiz, Desor, and Pourtalès.

"The house we inhabited on the cliff of East Boston, faced the harbor, Birds Island, and Governors Island on the left hand, and the city of Boston on the right.

"Towards the end of summer, during a calm night lighted by a full moon, Pourtalès called our attention to an unusual brightness of a silvery blue over the surface of the water. It looked like a sheet of liquid silver. Agassiz and Desor thought it to be a reflection of the satellite. We were, however, soon convinced that such was not the case, inasmuch as the brightness continued, even with a greater intensity, when the moon happened to be momentarily hidden behind packs of heavy clouds driven by upper currents of the atmosphere.

"To leave no room for any possible doubt, Pourtalès and myself went on a little skiff gathering in a pail a sample of water from the center of the phenomenon. Nothing particular attracted our attention except that as we were progressing, the brightness which we still perceived at a given distance, disappeared from our immediate surroundings, the surface of the water showing its usual aspect and the thought occurred whether we were not laboring under an optical delusion. Nevertheless we filled our pail to examine its contents at home. By the light of our lamps, the water appeared perfectly limpid and contained no living beings visible to the naked eye. But in the obscurity and calmness one could see a myriad of sparks darting to and fro—genuine aquatic fireworks in miniature. The least agitation or a simple shock against the pail would cause these sparks to vanish, and to reappear after quietness was restored. In a transparent glass jar, little animalculæ could be distinguished like so many whitish dots disseminated throughout the liquid. The microscope showed a small crustacea of the genus *calanus*, bearing a strong resemblance to *Varicots* of Templeton. The luminous emission, of a celestial blue, could be seen proceeding from the nervous system of the little animal whose transparency enabled us to see its entire organization. The point initial was the cephalic ganglion above the esophagus, subject to isochronal contractions, and whence the luminous flashing passed rapidly through all the nervous strings to the other ganglia, which themselves were motionless."

Dr. Girard considers the phenomenon of phosphorescence as manifesting itself under two distinct aspects. First, an *active state*, and second, a *passive state*. The active state proceeds, during life, from the nervous system of the animals in which the phenomenon occurs and under the immediate control of their will, intermittent therefore in its aspect, whilst the passive state resides latent among diffused or disaggregated organic substances without vital impulse, and showing some activity under agitation of various sorts and under the action too, of luminous rays like those of the moon.

195.

1890. GIRARD, CHARLES. La maladie du Barbeau (*Barbus fluviatilis* L.) *Le Naturaliste*, Paris, p. 254, 1890.

ABSTRACT.

A very strange and serious disease, characterized by an accumulation, between skin and flesh, all along the lateral line, of an apparently fatty substance made of *sarcosproïdes*, affected the common barbel of the river Seine in its windings about Paris. That disease assumes the character of an epidemic, already observed years ago among the same fish in the rivers Meuse and Moselle. It terminates fatally and the dead fishes may be seen floating on the surface of the water. Death is brought about by asphyxia in the following manner: The bulky and fatty substance affecting but one side of the body, the fish loses both equilibrium and specific gravity. Unable to maintain itself any longer swimming in full water, it rises thus forcibly to the surface, where the access of the air to the gills impedes respiration and brings about death. The flesh as well as the organs in the abdominal cavity exhibit at first no signs of alteration. By and by suppuration may set in and the swollen region then bursts open like an abscess.

196.

1891. GIRARD, CHARLES. Une tortue bicéphale. *Le Naturaliste*, Paris, p. 1, 1891, (fig.).

A very young specimen of *Chrysemys picta* from the United States, exhibits two well-formed heads emerging from under a carapax seemingly normal in its exterior aspect. Four limbs,

1891. GIRARD, CHARLES—Continued.

two to the right and two to the left, and a single tail are well developed, the limbs on the right side probably belonging to one fetus and those of the left side to the other fetus. Dissection, however, was not made, the author having had but one sketch of the animal at his command.

197.

1891. GIRARD, CHARLES. Deux espèces nouvelles de planariés américaines.

Le Naturaliste, Paris, 1891.

Hydrolimax brunneus, n. s.

Rivulet from Fairmount Park, Jos. Leidy.

Phagocata coronata, n. s.

Near Fort Bridger, Wyoming, Jos. Leidy.

198.

1891. GIRARD, CHARLES. Recherches sur les planaires et les némettiens de l'Amérique du Nord.

Annales Sciences Naturelles, Paris, 1891.

A systematic record of notes and cursory observations, viewing a general treatise on the subject (see No. 59), and which circumstances prevented from carrying out fully.

TERRESTRIAL PLANARIANS:

RHYNCHODEMUS, Leidy.

Rhynchodemus sylvestris, Leidy.

FRESH-WATER PLANARIANS:

HYDROLIMAX, Hald.

Hydrolimax griseus, Hald.

Hydrolimax brunneus, Grd.

PROCOTYLA, Leidy.

Procotyla fluvialtilis, Leidy.

PHAGOCATA, Leidy.

Phagocata gracilis, Leidy.

Phagocata coronata, Grd.

DUGESIA, Girard.

Dugesia goniocephaloides, Grd.

Dugesia Foremani, Grd.

Dugesia maculata, Grd.

Dugesia truncata, Grd.

DENDROCELUM, Oeust.

Dendrocelum superbum, Grd.

Dendrocelum pulcherrimum, Grd.

MARINE PLANARIANS:

PLANOCERA, Blairv.

Planocera elliptica, Grd.

Planocera nebulosa, Grd.

LEPTOPLANA.

Leptoplana ellipsoides, Grd.

IMOGINE, Girard.

Imogine oculifera, Grd.

THYSANOZOON, Grube.

Thysanozoon nigrum, Grd.

PROCEERODES, Girard.

Proceerodes Wheatlandi, Grd.

NIOBE, Girard.

Niobe zonata, Grd.

TYPHLOLEPTA, Oeust.

Typhlolepta acuta, Grd.

Typhlolepta fuliginosa, Leidy.

POLYCELI, Ehrh.

Polycelis variabilis, Grd.

Polycelis tigrinus, Grd.

PROSTHIOSTOMUM, Quatref.

Prosthlostomum gracile, Grd.

1891. GIRARD, CHARLES—Continued.

BOLLOCHA, Leidy.

Bolloyra candida, Grd.*Bolloyra rustica*, Leidy.

RHABDOCELA:

DEROSTOMA, Dugis.

Derostoma marginatum, Grd.

FOVIA, Girard.

Fovia Warreni, Grd.

MONOCELIS, Ehr.

Monocelis spatulicauda, Grd.

MACROSTOMA, Ed. v. Ben.

Macrostoma hystrix, Oerst.*Macrostoma sensitivum*, Sillim.

MICROSTOMA, O. Sch.

Microstoma lineare, Oerst.*Microstoma caudatum*, Leidy.*Microstoma Philadelphicum*, Leidy.*Microstoma variabile*, Leidy.

STENOSTOMA, O. Sch.

Stenostoma leucops, O. Sch.*Stenostoma agile*, Sillim.

PRORHYNCHUS, M. Schultze.

Prorhynchus fluviatilis, Leydig.

MESOSTOMA, Dugis.

Mesostoma gonocephalum, Sillim.*Mesostoma caecum*, Sillim.*Mesostoma Pattersoni*, Sillim.*Mesostoma viviparum*, Sillim.

GYRATOR.

Gyrator albus, Sillim.

VORTEX, Ehr.

Vortex armiger, S. Sch.*Vortex Pinguis*, Sillim.*Vortex Blodgettii*, Sillim.

PLAGIOSTOMA.

Plagiostoma platum, Sillim.

FRESH-WATER NEMERTEANS:

EMEA, Leidy.

Emea rubra, Leidy.*Emea Sillimani*, Grd.

MARINE NEMERTEANS:

TETRASTEMMA, Ehr.

Tetrestemma serpentina, Grd.

HECATE, Girard.

Hecate elegans, Grd.

POSEIDON, Girard.

Poseidon colvi, Grd.*Poseidon affinis*, Grd.

NAREDA, Girard.

Nareda superba, Grd.

BORLASSIA, Oken.

Borlussia Körtzi, Grd.

LEODES, Girard.

Leodes striolata, Grd.

RENERIA, Girard.

Renèria rubra, Grd.

AMPHIPORUS, Ehr.

Amphiporus sanguineus, Grd.

POLIA, DeLellhiage.

Polia gracilis, Grd.

MECKELIA, Leuck.

Meckelia fragilis, Grd.*Meckelia atra*, Grd.*Meckelia pocahontas*, Grd.*Meckelia lizzie*, Grd.

1891. GIRARD, CHARLES—Continued.

Meckelia lutea, Leidy.*Meckelia rosea*, Leidy.

OMMATOPLEA, Ehr.

Ommatoplea Stimpsoni, Grd.

STIMPSONIA, Girard.

Stimpsonia aurantiaca, Grd.

II. SYSTEMATIC CATALOGUE.

ANALYSIS.

	Page.
Bibliography.....	97
Embryology, physiology, and medicine.....	97
Natural history.....	97
Mammals.....	98
Reptiles and batrachians.....	98
Fishes.....	99
Insects.....	99
Arachnids and myriopods.....	100
Crustacea.....	100
Entomostracans.....	100
Worms.....	100
Planarians and Nemerteans.....	101
Mollusks.....	101
Echinoderms.....	101

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17. On the Organs of Vision and Nervous System in the Embryo of Ascidia. Proc. Bost. Soc. Nat. Hist., iv, 1851, 30.
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III. LIST OF GENERA AND SPECIES DISCUSSED AND ILLUSTRATED.

ANALYSIS.

Reptiles	102
Batrachians.....	113
Fishes	116
Insects	137
Arachnidians	137
Myriapods.....	137
Crustacea.....	137
Entomostracans	138
Worms	138
Planarians.....	138
Nemerteans.....	140
Mollusks	141
Echinoderms	141

REPTILES.

- ABASTOR.**
Cat. N. A. Reptiles, 1853, part i, p. 125.
- ABASTOR ERYTHROGRAMMUS.**
Cat. N. A. Reptiles, 1853, part i, p. 125; P. R. R. Surv., x, 1859, pl. xxxiii, fig. 83.
- ACTINEMYS.**
U. S. Expl. Exped., 1858, p. 464.
- ACTINEMYS MARMORATA.**
U. S. Expl. Exped., 1858, p. 465, pl. xxxii; P. R. R. Surv., x, 1859.
- ALLIGATOR LUCIUS.**
Mex. Bound. Surv., ii, 1859, p. 5.
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U. S. Expl. Exped., 1858, p. 413.
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Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exped., 1858, p. 417.
- AMPHIBOLURUS MURICATUS.**
U. S. Expl. Exped., 1858, p. 414.
- AMPHICMA RHODOMELAS.**
U. S. Expl. Exped., 1858, p. 165.
- ANCIRODON.**
Cat. N. A. Reptiles, 1853, part i, p. 17.
- ANCIRODON CONTORTRIX.**
Cat. N. A. Reptiles, 1853, part i, p. 17; Mex. Bound. Surv., vol. ii, 1859, p. 15; P. R. R. Surv., vol. x, 1859, pl. xxv, fig. 12.
- ANNIELLA PULCHRA.**
Pr. Acad. Nat. Sci. Phila., vi, 1853, p. 301; Mex. Bound. Surv., vol. ii, 1859, p. 13.
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Mex. Bound. Surv., vol. ii, 1859, p. 12.
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Gilliss's Rep. Exped. S. Hemisph., ii, 1855, p. 19.
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Gilliss's Rep. Exped. S. Hemisph., vol. ii, 1855, p. 19, pl. xxxix, figs. 1-4.
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Mex. Bound. Surv., vol. ii, 1859, p. 18, pl. xiii; P. R. R. Surv., vol. x, p. 42.
- ASCALABOTES.**
U. S. Expl. Exped., 1858, p. 288.
- ASCALABOTES DELALANDII.**
U. S. Expl. Exped., 1858, p. 289, pl. xxv, figs. 1-8.
- ASPIDONUTES EMORYI.**
Mex. Bound. Surv., vol. ii, 1859, p. 3.
- BASCANION.**
Cat. N. A. Reptiles, 1853, part i, p. 93; U. S. Expl. Exped., 1858, p. 126.
- BASCANION CONSTRICTOR.**
Cat. N. A. Reptiles, 1853, part i, p. 93; P. R. R. Surv., vol. x, pl. xxxi, fig. 67.
- BASCANION FLAVIVENTRIS.**
Cat. N. A. Reptiles, 1853, part i, p. 96; Mex. Bound. Surv., vol. ii, p. 20; P. R. R. Surv., vol. x, pl. xxxi, fig. 70.
- BASCANION FOXI.**
Cat. N. A. Reptiles, 1853, part i, p. 96; P. R. R. Surv., vol. x, 1859, pl. xxxi, fig. 69.
- BASCANION FREMONTI.**
Cat. N. A. Reptiles, 1853, part i, p. 95; P. R. R. Surv., vol. x, 1859, pl. xxxi, fig. 68.
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Pr. Acad. Nat. Sci. Phila., vi, 1853, p. 300; Cat. N. A. Reptiles, 1853, part i, p. 97; U. S. Expl. Exped., 1858, p. 127, pl. viii, figs. 12-19; P. R. R. Surv., vol. x, 1859, pl. xxxvi, fig. 6.
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U. S. Expl. Exped., 1858, p. 400.
- BATRACHOSOMA CORONATUM.**
U. S. Expl. Exped., 1858, p. 400, pl. xx, figs. 10-13.
- BOLTALIA.**
U. S. Expl. Exped., 1858, p. 279.
- BRACHYLOPHUS.**
U. S. Expl. Exped., 1858, p. 373.
- BRACHYLOPHUS FASCIATUS.**
U. S. Expl. Exped., 1858, p. 374, pl. xviii, figs. 8 and 9.
- BRONCHOCELA.**
U. S. Expl. Exped., 1853, p. 411.
- BRONCHOCELA IBISTATELLA.**
U. S. Expl. Exped., 1858, p. 411.
- CALAMARIA TENUIS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 176.
- CALLIRHINUS.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 182; U. S. Expl. Exped., 1858, p. 139.
- CALLIRHINUS PATAGONIENSIS.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 182; U. S. Expl. Exped., 1858, p. 139, pl. xii, figs. 1-6.
- CALLISAURUS VENTRALIS.**
Mex. Bound. Surv., vol. ii, p. 8; P. R. R. Surv., vol. x, p. 17.
- CALOTES.**
U. S. Expl. Exped., 1858, p. 411.
- CANTORIA.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 182; U. S. Expl. Exped., 1858, p. 156.
- CANTORIA VIOLACEA.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 182; U. S. Expl. Exped., 1858, p. 156, pl. xi, figs. 7-10.
- CARETTA.**
U. S. Expl. Exped., 1858, p. 438.
- CARETTA IMBRICATA.**
U. S. Expl. Exped., 1858, p. 440.
- CARETTA ROSTRATA.**
U. S. Expl. Exped., 1858, p. 446, pl. xxx, figs. 8-13.
- CARETTA SQUAMOSA.**
U. S. Expl. Exped., 1858, p. 442, pl. xxx, figs. 1-7.
- CELUTA.**
Cat. N. A. Reptiles, 1853, part i, p. 129.
- CELUTA AMGENA.**
Cat. N. A. Reptiles, 1853, part i, p. 129; P. R. R. Surv., vol. x, pl. xxxiii, fig. 95.
- CEPHALOPELTIS.**
U. S. Expl. Exped., 1858, p. 216.
- CEPHALOPELTIS SCUTIGERA.**
U. S. Expl. Exped., 1858, p. 217.
- CERBERUS.**
U. S. Expl. Exped., 1858, p. 170.

- CHARINA.**
U. S. Expl. Exped., 1858, p. 111.
- CHELONIA.**
U. S. Expl. Exped., 1858, p. 452.
- CHELONIA BICARINATA.**
U. S. Expl. Exped., 1858, p. 441.
- CHELONIA FORMOSA.**
U. S. Expl. Exped., 1858, p. 456, pl. xxxi, figs. 1-4.
- CHELONIA MAMMOSA.**
U. S. Expl. Exped., 1858, p. 444.
- CHELONIA MARMORATA.**
U. S. Expl. Exped., 1858, p. 455, pl. xxxi, figs. 5-7.
- CHELONIA PSEUDOCARETTA.**
U. S. Expl. Exped., 1858, p. 441.
- CHELONIA PSEUDOMYDAS.**
U. S. Expl. Exped., 1858, p. 454.
- CHELONIA VIRGATA.**
U. S. Expl. Exped., 1858, p. 437.
- CHELONIA VIRIDIS.**
U. S. Expl. Exped., 1858, p. 453.
- CHELONIA TEXCUS.**
U. S. Expl. Exped., 1858, p. 459, pl. xxxi, fig. 8.
- CHELYMYS.**
U. S. Expl. Exped., 1858, p. 462.
- CHIONIA.**
U. S. Expl. Exped., 1858, p. 230.
- CHIONIA VENUSTA.**
U. S. Expl. Exped., 1858, p. 230.
- CHLOROSOMA.**
Cat. N. A. Reptiles, 1853, part i, p. 108.
- CHLOROSOMA VERNALIS.**
Cat. N. A. Reptiles, 1853, part i, p. 108; P. R. R. Surv., vol. x, pl. xxxii, fig. 81.
- CHRYSEMYS OREGONENSIS.**
Mex. Bound. Surv., vol. ii, p. 4.
- CHURCHILLA.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 70; Stansbury Surv. Salt Lake, 1853, p. 350.
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Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 70; Stansbury's Surv. of Salt Lake, 1853, p. 350.
- CNEMIDOPHORUS.**
Marcy and McClellan's Rep. Expl. Red River La., 1853, p. 239; Gilliss's Rep. Exp. S. Hemisph., ii, 1855, p. 22.
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Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 128; Pr. Acad. Nat. Sci. Phila., vi, 1853, p. 301; Mex. Bound. Surv., vol. ii, p. 10, pl. xxxiv, figs. 7-14.
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- CNEMIDOPHORUS GULARIS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 128; Marcy and McClellan's Expl. Red River, La., 1853, p. 239, pl. x, figs. 1-4; Mex. Bound. Surv., vol. ii, p. 11; P. R. R. Surv., vol. x, p. 38.
- CNEMIDOPHORUS ISORNATUS.**
Pr. Acad. Nat. Sci. Phila., 1858, p. 255; Mex. Bound. Surv., vol. ii, p. 10.
- CNEMIDOPHORUS MARMORATUS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 128.
- CNEMIDOPHORUS OCTOLINEATUS.**
Pr. Acad. Nat. Sci. Phila., 1858, p. 255; Mex. Bound. Surv., vol. ii, p. 10.
- CNEMIDOPHORUS PERPLEXUS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 128; Mex. Bound. Surv., vol. ii, p. 10.
- CNEMIDOPHORUS PRESSIONIS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 128; Gilliss's Rep. Exp. S. Hemisph., vol. ii, 1855, p. 23, pl. xxxviii, figs. 1-5.
- CNEMIDOPHORUS SEXLINEATUS.**
P. R. R. Surv., vol. x, p. 38.
- CNEMIDOPHORUS TESSELLATUS.**
P. R. R. Surv., vol. x, p. 18.
- CNEMIDOPHORUS TIGRIS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 69; Stansbury's Surv. Salt Lake, 1853, p. 338, pl. ii, Mex. Bound. Surv., vol. ii, p. 10, pl. xxxiii.
- COLUBER MORMON.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 70; Stansbury's Surv. Salt Lake, 1853, p. 351.
- CONTIA.**
Cat. N. A. Reptiles, 1853, part i, p. 110; U. S. Expl. Exp., 1858, p. 124.
- CONTIA MITIS.**
Cat. N. A. Reptiles, 1853, part i, p. 110; Pr. Acad. Nat. Sci. Phila., 1853, p. 300; U. S. Expl. Exp., 1858, p. 125, pl. x, figs. 6-10; P. R. R. Surv., vol. x, pl. xxxvi, fig. 7.
- CROSSURUS.**
U. S. Expl. Exp., 1858, p. 281.
- CROSSURUS PLATYURUS.**
U. S. Expl. Exp., 1858, p. 281.
- CROTALOPHORUS.**
Cat. N. A. Reptiles, 1853, part —, p. 11.
- CROTALOPHORUS CONSORS.**
Cat. N. A. Reptiles, 1853, part i, p. 12; Mex. Bound. Surv., vol. ii, p. 15; P. R. R. Surv., vol. x, pl. xxvi, fig. 8.
- CROTALOPHORUS EDWARDSI.**
Cat. N. A. Reptiles, 1853, part i, p. 15; Mex. Bound. Surv., vol. ii, p. 15, pl. v, fig. 1; P. R. R. Surv., vol. x, pl. xxv, fig. 10.
- CROTALOPHORUS KIRTLANDI.**
Cat. N. A. Reptiles, 1853, part i, p. 16; P. R. R. Surv., vol. x, pl. xxv, fig. 11.
- CROTALOPHORUS MILIARIS.**
Cat. N. A. Reptiles, 1853, part i, p. 11; P. R. R. Surv., vol. x, p. 40, pl. xxiv, fig. 7.
- CROTALOPHORUS TERGEMINUS.**
Cat. N. A. Reptiles, 1853, part i, p. 14; P. R. R. Surv., vol. x, pl. xxv, fig. 9.
- CROTALUS.**
Cat. N. A. Reptiles, 1853, p. 1; Marcy and McClellan's Rep. Expl. Red River, La., 1853, p. 217; U. S. Expl. Exp., 1858, p. 187.
- CROTALUS ADAMANTEUS.**
Cat. N. A. Reptiles, 1853, part i, p. 3; P. R. R. Surv., vol. x, pl. xxiv, fig. 2.
- CROTALUS ATROX.**
Cat. N. A. Reptiles, 1853, part i, p. 5; Mex. Bound. Surv., ii, p. 14, pl. 1; P. R. R. Surv., vol. x, p. 39, pl. xxiv, fig. 3.

CROTALUS CERASTES.

Mex. Bound. Surv., vol. ii, p. 14, fig. 3; P. R. R. Surv., vol. x, pl. xxxv, fig. 4.

CROTALUS CONFLUENTUS.

Cat. N. A. Reptiles, 1853, part i, p. 8; Marey and McClellan's Expl. Red River, La., 1853, p. 217, pl. i; Mex. Bound. Surv., vol. ii, p. 14; P. R. R. Surv., vol. x, p. 40, pl. xxiv, fig. 4.

CROTALUS DURISSUS.

Cat. N. A. Reptiles, 1853, part i, p. 1; P. R. R. Surv., vol. x, p. 39, pl. xxiv, fig. 1.

CROTALUS LUCIFER.

Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 176; Cat. N. A. Reptiles, 1853, part i, p. 6; Pr. Acad. Nat. Sci. Phila., 1853, p. 300; U. S. Expl. Exp., 1858, p. 187, pl. xv, figs. 1-6; P. R. R. Surv., vol. x, pl. xxxvi, fig. 1.

CROTALUS MOLOSSUS.

Cat. N. A. Reptiles, 1853, part i, p. 10; Mex. Bound. Surv., vol. ii, p. 14, pl. ii; P. R. R. Surv., vol. x, pl. xxiv, fig. 5.

CROTALUS OREGONUS.

Cat. N. A. Reptiles, 1853, part i, p. 145; P. R. R. Surv., vol. x, pl. xxiv, fig. 6.

CROTALUS TIGRIS.

Mex. Bound. Surv., vol. ii, p. 14, pl. iv; P. R. R. Surv., vol. x, pl. xxv, fig. 1.

CROTAPHYTUS.

Stansbury's Surv. Salt Lake, 1853, p. 339; Marey and McClellan's Rep. Expl. Red River, La., 1853, p. 234.

CROTAPHYTUS COLLARIS.

Marey and McClellan's Expl. Red River, La., 1853, p. 235; Mex. Bound. Surv., vol. ii, p. 6; P. R. R. Surv., vol. x, p. 17 and 37, pl. xxiv, fig. 1.

CROTAPHYTUS DORSALIS.

Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 126; Pr. Acad. Nat. Sci. Phila., vi, 1853, p. 301.

CROTAPHYTUS GAMBELL.

Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 126.

CROTAPHYTUS RETICULATUS.

Pr. Acad. Nat. Sci. Phila., 1858, p. 253; Mex. Bound. Surv., vol. ii, p. 6.

CROTAPHYTUS WISLEZENI.

Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 69; Stansbury's Surv. Salt Lake, p. 340, pl. iii; Mex. Bound. Surv., vol. ii, p. 7, pl. xxxi; P. R. R. Surv., vol. x, pp. 17 and 37.

CRYPTOBLEPHARUS.

U. S. Expl. Exped., 1858, p. 219.

CRYPTOBLEPHARUS EXIMUS.

U. S. Expl. Exped., 1858, p. 222, pl. xxvi, figs. 25-32; Pr. Acad. Nat. Sci., Phila., ix, 1857, p. 195.

CRYPTOBLEPHARUS PLAGIOCEPHALUS.

U. S. Expl. Exped., 1858, p. 222, pl. xxvi, figs. 17-24.

CYCLODINA.

Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 195; U. S. Expl. Exped., 1858, p. 235.

CYCLODINA JENEA.

Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 195; U. S. Expl. Exped., 1858, p. 236, pl. xxvi, figs. 9-16.

CYCLODINA TEMMINCKI.

U. S. Expl. Exped., 1858, p. 236.

CYCLODUS.

U. S. Expl. Exped., 1858, p. 232.

CYCLODUS GIGAS.

U. S. Expl. Exped., 1858, p. 233.

CYLINDROPHIS.

U. S. Expl. Exped., 1858, p. 108.

CYLINDROPHIS RUFA.

U. S. Expl. Exped., 1858, p. 109.

DACTYLOPERUS.

U. S. Expl. Exped., 1858, p. 279.

DACTYLOPERUS INSCLENSIS.

Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 197; U. S. Expl. Exped., 1858, p. 280.

DENDROPHIS.

U. S. Expl. Exped., 1858, p. 129.

DENDROPHIS PICTA.

U. S. Expl. Exped., 1858, p. 129.

DENDROPHIS PRASINUS.

U. S. Expl. Exped., 1858, p. 131, pl. xii, figs. 7-10; Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 181.

DIADOPHIS.

Cat. N. A. Reptiles, 1853, part i, p. 112.

DIADOPHIS AMABILIS.

Cat. N. A. Reptiles, 1853, part i, p. 113; Pr. Acad. Nat. Sci. Phila., vi, 1853, p. 300; P. R. R. Surv., vol. x, pl. xxxiii, fig. 83.

DIADOPHIS DOCLIS.

Cat. N. A. Reptiles, 1853, part i, p. 114; Mex. Bound. Surv., vol. ii, p. 22, pl. xxi, fig. 3; P. R. R. Surv., vol. x, p. 43, pl. xxxii, fig. 1, and pl. xxxiii, fig. 84.

DIADOPHIS PULCHELLUS.

Cat. N. A. Reptiles, 1853, part i, p. 115; P. R. R. Surv., vol. x, pl. xxxiii, fig. 85.

DIADOPHIS PUNCTATUS.

Cat. N. A. Reptiles, 1853, part i, p. 112; P. R. R. Surv., vol. x, pl. xxxiii, fig. 82.

DIADOPHIS REGALIS.

Cat. N. A. Reptiles, 1853, part i, p. 115; Mex. Bound. Surv., vol. ii, p. 22; P. R. R. Surv., vol. x, pl. xxxiii, fig. 86.

DIPSAS SEPTENTRIONALIS.

Mex. Bound. Surv., vol. ii, p. 16, pl. viii, fig. 1; P. R. R. Surv., vol. x, pl. xxv, fig. 18.

DIPSOSAURUS DORSALIS.

Mex. Bound. Surv., vol. ii, p. 8; pl. xxxii, figs. 7-13; P. R. R. Surv., x, 1859.

DIPLODACTYLUS.

U. S. Expl. Exped., 1858, p. 296.

DIPLODACTYLUS VITATUS.

U. S. Expl. Exped., 1858, p. 297, pl. xxiv, figs. 9-16.

DISCODACTYLUS.

U. S. Expl. Exped., 1858, p. 299.

DISCODACTYLUS PHACOPHORUS.

U. S. Expl. Exped., 1858, p. 300, pl. xxv, figs. 25-32.

DOLIOPHIS.

Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 182; U. S. Expl. Exped., 1858, p. 175.

- DOLIOPHIS FLAVICEPS.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 182; U. S. Expl. Exped., 1858, p. 176, pl. x, figs. 1-5.
- DOLIOSAURUS.**
U. S. Expl. Exped., 1858, p. 407.
- DOLIOSAURUS MCCALLI.**
U. S. Expl. Exp., 1858, p. 408; Mex. Bound. Surv., vol. ii, p. 9, pl. xxviii, figs. 4-6.
- DOLIOSAURUS MODESTUS.**
U. S. Expl. Exp., 1858, p. 409; Mex. Bound. Surv., vol. ii, p. 10; P. R. R. Surv., vol. x, p. 38.
- DOLIOSAURUS PLATYRHINUS.**
U. S. Expl. Exp., 1858, p. 409; P. R. R. Surv., vol. x, p. 18.
- DORYCRA.**
U. S. Expl. Exped., 1858, p. 285.
- DORYCRA VULPECUA.**
U. S. Expl. Exp., 1858, p. 286, pl. xxiv, figs. 17-24; Pr. Acad. Nat. Sci. Phila., 1857.
- DROMICUS TEMMINCKI.**
U. S. Expl. Exp., 1858, p. 161.
- DRYOPHIS.**
Gilliss' Rep. Exp. S. Hemisph., ii, 1855, p. 7.
- DRYOPHIS VITTATUS.**
Pr. Acad. Nat. Sci. Phila., 1854, p. 226; Gilliss' Rep. Exped. S. Hemisph., vol. ii, 1855, p. 7, pl. xxxvi, figs. 1-6.
- ELAPS.**
Cat. N. A. Reptiles, 1853, part i, p. 21; Gilliss' Rep. Exp. S. Hemisph., ii, 1855, p. 5.
- ELAPS FULVIUS.**
Cat. N. A. Reptiles, part i, 1853, p. 21; P. R. R. Surv., vol. x, pl. xxv, fig. 15.
- ELAPS NIGROCINCTUS.**
Pr. Acad. Nat. Sci. Phila., vii, 1854, p. 226; Gilliss' Rep. Exp. S. Hemisph., vol. ii, 1855, p. 6, pl. xxxv, figs. 1-6.
- ELAPS TENER.**
Cat. N. A. Reptiles, 1853, part i, p. 22; Mex. Bound. Surv., vol. ii, p. 15, pl. vii, fig. 1; P. R. R. Surv., vol. x, pl. xxv, fig. 16.
- ELAPS TRISTIS.**
Cat. N. A. Reptiles, 1853, p. 23; P. R. R. Surv., vol. x, pl. xxv, fig. 17.
- ELGARIA.**
U. S. Expl. Exped., 1858, p. 205.
- ELGARIA FORMOSA.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, 175; U. S. Expl. Exp., 1858, p. 206, pl. xxiii, figs. 10-17.
- ELGARIA GRANDIS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 176; U. S. Expl. Exp., 1858, p. 212, pl. xxii, fig. 1-9.
- ELGARIA NOBILIS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 128.
- ELGARIA PRINCIPIS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 175; U. S. Expl. Exp., 1858, p. 214, pl. xxii, figs. 9-16.
- ELGARIA SCINCICAUDA.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 69; Stansbury Surv. Salt Lake, 1853, p. 348.
- ELGARIA SCINCICAUDA—continued.**
pl. iv, figs. 1-4; Pr. Acad. Nat. Sci. Phila., vi, 1853, 301; U. S. Expl. Exp., 1858, p. 210, pl. xxiii, figs. 1-9.
- EMOA.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 197; U. S. Expl. Exped., 1858, p. 261.
- EMOA ATROCOSTATA.**
U. S. Expl. Exp., 1858, p. 264.
- EMOA BAUDINI.**
U. S. Expl. Exp., 1858, p. 263.
- EMOA CARTERETI.**
U. S. Expl. Exp., 1858, p. 263.
- EMOA CYANURA.**
U. S. Expl. Exp., 1858, p. 270.
- EMOA HIEROGLYPHICA.**
U. S. Expl. Exp., 1858, p. 263.
- EMOA NIGRITA.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 197; U. S. Expl. Exp., 1858, p. 268.
- EMOA SAMENSIS.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 197; U. S. Expl. Exp., 1858, p. 265.
- EMYS MARMORATA.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 176.
- EMYS NIGRA.**
P. R. R. Surv., x, 1859, pl. i.
- ENYGRUS.**
U. S. Expl. Exped., 1858, p. 117.
- ENYGRUS BIBRONI.**
U. S. Expl. Exped., 1858, p. 117, pl. viii, figs. 8-11.
- ERETMOCHELYS.**
U. S. Expl. Exped., 1858, p. 439.
- ERYTHROLAMPRIUS VENUSTISSIMUS.**
U. S. Expl. Exped., 1858, p. 169.
- EUCHELYS.**
U. S. Expl. Exped., 1858, p. 447.
- EUCHELYS MÆROPIUS.**
U. S. Expl. Exp., 1858, p. 448.
- EULEMUS.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exped., 1858, p. 357.
- EULEMUS AFFINIS.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exp., 1858, p. 366.
- EULEMUS DARWINI.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exped., 1858, p. 361, pl. xvii, figs. 8-14.
- EULEMUS FITZINGERI.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exp., 1858, p. 365.
- EULEMUS MAMMATUS.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exp., 1858, p. 367.
- EULEMUS PICTUS.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exped., 1858, p. 364.
- EULEMUS STGNIFER.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exp., 1858, p. 366.
- EULEMUS TENUIS.**
Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exp., 1858, p. 358, pl. xxviii, figs. 9-16.
- EUPHYRNE OBESA.**
Mex. Bound. Surv., vol. ii, p. 6, pl. 27.

EUPREPIS.

U. S. Expl. Exped., 1858, p. 229.

EUPREPIS VENUSTUS.

Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 195; U. S. Expl. Exp., 1858, p. 229, pl. xxvi, figs. 1-8.

EUTENIA.

Cat. N. A. Reptiles, 1853, part i, p. 24; Marcy and McClellan Rep. Expl. Salt Lake, 1853, p. 209; U. S. Expl. Exped., 1858, p. 147.

EUTENIA CONCINNA.

Cat. N. A. Reptiles, 1853, part i, p. 46; P. R. R. Surv., vol. x, 1859, pl. xv, fig. 2.

EUTENIA COOPERI.

P. R. R. Surv., vol. x, 1859, pl. xv, fig. 1.

EUTENIA DORSALIS.

Cat. N. A. Reptiles, 1853, part i, p. 31; P. R. R. Surv., vol. x, p. 40, pl. xxvi, fig. 2.

EUTENIA ELEGANS.

Cat. N. A. Reptiles, 1853, part i, p. 34; P. R. R. Surv., x, 1859.

EUTENIA FAHREYI.

Cat. N. A. Reptiles, 1853, part i, p. 25; P. R. R. Surv., vol. x, pl. xxvi, fig. 20.

EUTENIA HAYDENI.

P. R. R. Surv., vol. x, 1859, pl. xiv.

EUTENIA INFERNALIS.

Cat. N. A. Reptiles, 1853, part i, p. 26; U. S. Expl. Exp., 1858, p. 148, pl. xvi, figs. 11-16; P. R. R. Surv., vol. x, 1859.

EUTENIA LEPTOCEPHALA.

Cat. N. A. Reptiles, 1853, part i, p. 29; U. S. Expl. Exp., 1858, p. 151, pl. xiii, figs. 7-13; P. R. R. Surv., vol. x, 1859, pl. xxxvi, fig. 2.

EUTENIA MARTIANA.

Cat. N. A. Reptiles, 1853, part i, p. 36; Marcy and McClellan Expl. Red River, La., 1853, p. 221, pl. iii; Mex. Bound. Surv., vol. ii, p. 17; P. R. R. Surv., vol. x, p. 41, pl. xxxvi, fig. 26.

EUTENIA ORDINATA.

Cat. N. A. Reptiles, 1853, part i, p. 32; P. R. R. Surv., vol. x, pl. xxvi, fig. 24.

EUTENIA ORDINOIDES.

Cat. N. A. Reptiles, 1853, part i, p. 33; Pr. Acad. Nat. Sci. Phila., 1853, p. 300; U. S. Expl. Exp., 1858, p. 153, pl. xix, figs. 1-4; P. R. R. Surv., vol. x, p. 19, pl. xxvi, fig. 3.

EUTENIA ORNATA.

Mex. Bound. Surv., vol. ii, p. 16, pl. ix; P. R. R. Surv., vol. x, pl. xxvi, fig. 22.

EUTENIA PARIETALIS.

Cat. N. A. Reptiles, 1853, part i, p. 28.

EUTENIA PICKERINGI.

Cat. N. A. Reptiles, 1853, part i, p. 27; U. S. Expl. Exp., 1857, p. 150, pl. xiii, figs. 14-20; P. R. R. Surv., vol. x, pl. xxxvi, fig. 3.

EUTENIA PROXIMA.

Cat. N. A. Reptiles, 1853, part i, p. 25; Marcy and McClellan's Expl. Red River, La., 1853, p. 220, pl. ii; Mex. Bound. Surv., vol. ii, p. 16; P. R. R. Surv., vol. x, p. 40, pl. xxvi, fig. 21.

EUTENIA RADIX.

Cat. N. A. Reptiles, 1853, part i, p. 34; P. R. R. Surv., vol. x, pl. xxxiv, fig. 5, and pl. xxvi, fig. 25.

EUTENIA SAURITA.

Cat. N. A. Reptiles, 1853, part i, p. 24; P. R. R. Surv., vol. x, pl. xxvi, fig. 19.

EUTENIA SIRTALIS.

Cat. N. A. Reptiles, 1853, part i, p. 30; P. R. R. Surv., vol. x, pl. xxvi, fig. 23.

EUTENIA VAGRANS.

Cat. N. A. Reptiles, 1853, part i, p. 35; U. S. Expl. Exp., 1858, p. 154, pl. xiv, figs. 5-10; P. R. R. Surv., vol. x, pp. 19 and 41, pl. xvii.

FARANCIA.

Cat. N. A. Reptiles, 1853, part i, p. 123.

FARANCIA ABACURA.

Cat. N. A. Reptiles, 1853, part i, p. 123; P. R. R. Surv., vol. x, pl. xxiii, fig. 92.

GERKCO.

U. S. Expl. Exped., 1858, p. 290.

GEKKO INDIUS.

U. S. Expl. Exped., 1858, p. 290.

GEKKO MONARCHUS.

U. S. Expl. Exped., 1858, p. 292.

GEHYRA.

U. S. Expl. Exped., 1858, p. 272.

GEHYRA OCEANICA.

U. S. Expl. Exp., 1858, p. 273.

GEHYRA VORAX.

Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 197; U. S. Expl. Exp., 1858, p. 274, pl. xvi, figs. 1-8.

GEORGIA.

Cat. N. A. Reptiles, 1853, part i, p. 92.

GEORGIA COOPERI.

Cat. N. A. Reptiles, 1853, part i, p. 92; P. R. R. Surv., vol. x, pl. xxxiv, fig. 1.

GEORGIA OBSOLETA.

Cat. N. A. Reptiles, 1853, part i, p. 158; Mex. Bound. Surv., vol. ii, p. 20, pl. xv; P. R. R. Surv., vol. x, pl. xxxi, fig. 66.

GERRHONOTUS INFERNALIS.

Pr. Acad. Nat. Sci. Phila., 1858, p. 255; Mex. Bound. Surv., vol. ii, p. 71.

GERRHONOTUS NOBILIS.

Mex. Bound. Surv., vol. ii, p. 11, pl. xxv, figs. 1-8.

GERRHONOTUS OLIVACEUS.

Pr. Acad. Nat. Sci. Phila., 1858, p. 255; Mex. Bound. Surv., vol. ii, p. 11.

GERRHONOTUS WEBBI.

Pr. Acad. Nat. Sci. Phila., 1858, p. 255; Mex. Bound. Surv., vol. ii, p. 11, pl. xxiv, figs. 1-10.

GONIODACTYLUS.

U. S. Expl. Exped., 1858, p. 304.

GONIODACTYLUS MARMORATUS.

U. S. Expl. Exped., 1858, p. 304.

GYPCHIELYS LAERTINA.

Mex. Bound. Surv., vol. ii, p. 3.

HALDEA.

Cat. N. A. Reptiles, 1853, part i, p. 122.

HALDEA STRIATULA.

Cat. N. A. Reptiles, 1853, part i, p. 122; P. R. R. Surv., vol. x, pl. xxxiii, fig. 91.

HALICHELYS ATRA.

U. S. Expl. Exped., 1858, p. 452.

HELODERMA HORRIDUM.

Mex. Bound. Surv., vol. ii, p. 11, pl. xxvi; P. R. R. Surv., vol. x, p. 38.

- HEMIDACTYLUS.**
U. S. Expl. Exped., 1858, p. 282.
- HEMIDACTYLUS CYANODACTYLUS.**
U. S. Expl. Exp., 1858, p. 284, pl. xxv, figs. 17-24.
- HEMIDACTYLUS MABULA.**
U. S. Expl. Exp., 1858, p. 283.
- HERPETODRYAS FLAVIGULARIS.**
P. R. R. Surv., x, 1859.
- HETERODON.**
Cat. N. A. Reptiles, 1853, part i, p. 51; Marcy and McClellan Rep. Expl. Red Riv., La., 1853, p. 222.
- HETERODON ATMODES.**
Cat. N. A. Reptiles, 1853, part i, p. 57; P. R. R. Surv., vol. x, pl. xxxviii, fig. 41.
- HETERODON COGNATUS.**
Cat. N. A. Reptiles, 1853, part i, p. 54; Mex. Bound. Surv., ii, p. 17; P. R. R. Surv., vol. x, pl. xxxviii, fig. 39.
- HETERODON NASCUS.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 70; Stansbury Surv. Salt Lake, 1853, p. 352; Cat. N. A. Reptiles, 1853, part i, p. 61; Marcy and McClellan Expl. Red River, La., p. 222, pl. iv; Mex. Bound. Surv., vol. ii, p. 18, pl. xi, fig. 1; P. R. R. Surv., vol. x, pp. 19 and 41, pl. xxviii, fig. 43.
- HETERODON NIGER.**
Cat. N. A. Reptiles, 1853, part i, p. 55; P. R. R. Surv., vol. x, pl. xxviii, fig. 40.
- HETERODON PLATYRHINOS.**
Cat. N. A. Reptiles, 1853, part i, p. 51; P. R. R. Surv., vol. x, pl. xxviii, fig. 38.
- HETERODON SIMUS.**
Cat. N. A. Reptiles, 1853, part i, p. 59; P. R. R. Surv., vol. x, pl. xxviii, fig. 42.
- HERONOTA.**
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- HERONOTA PELAGICA.**
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- HINCLIA.**
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- HINCLIA TENIOLATA.**
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- HOLBROOKIA.**
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- HOLBROOKIA AFFINIS.**
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- HOLBROOKIA APPROXIMANS.**
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- HOLBROOKIA MACULATA.**
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- HOLBROOKIA PROPINQUA.**
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- HOLBROOKIA TEXANA.**
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- HOMBRONIA.**
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- HOMBRONIA CRASSICAUDA.**
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- HOMBRONIA FASCIOLARIS.**
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- HOMBRONIA UNDOSA.**
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- HOPLODACTYLUS.**
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- HOPLODACTYLUS BREVIDACTYLUS.**
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- HOPLODACTYLUS DUBAUCELLI.**
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- HOPLODACTYLUS GRANULATUS.**
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- HOPLODACTYLUS MACULATUS.**
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- HOPLODACTYLUS POMARI.**
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- HYDROSAURUS.**
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- HYDROSAURUS VARIUS.**
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- LACERTA.**
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- LACERTA MADERENSIS.**
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- LAMPROSOA EPISCOPUM.**
Mex. Bound. Surv., vol. ii, p. 22, pl. vii, fig. 2.
- LAMPROSOA OCCIDENTALE.**
Mex. Bound. Surv., vol. ii, p. 21, pl. xxi, fig. 1; P. R. R. Surv., vol. x, pl. xxv, figs. 6, 7.
- LEPTOCHELYS.**
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- LEPTOCHELYS OLIVACEA.**
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- LEPTOCHELYS DUSSUMIERI.**
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- LEPTOPHIS.**
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- LEPTOPHIS ESTIVUS.**
Cat. N. A. Reptiles, 1853, part i, p. 106; P. R. R. Surv., vol. x, pl. xxxii, fig. 79.
- LEPTOPHIS MAJALIS.**
Cat. N. A. Reptiles, 1853, part i, p. 107; Marcy and McClellan Expl. Red River, La., 1853, p. 232, pl. ix; Mex. Bound. Surv., vol. ii, p. 21; P. R. R. Surv., vol. x, p. 43, pl. xxxii, fig. 80.
- LIODEIRA.**
U. S. Expl. Exped., 1858, p. 339.
- LIODEIRA CHILENSIS.**
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- LIOLLEMUS.**
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- LIOLLEMUS NITIDUS.**
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- LIOPHIS MEREMI.**
U. S. Expl. Exp., 1858, p. 159, pl. xi, fig. 1-6.
- LIPINIA.**
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- LIPINIA VULCUNIA.**
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- LODIA.**
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- LODIA TENNIS.**
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- LYGOPHIS ELEGANS.**
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- LYGOSOMA.**
Marey and McClellan Rep. Expl. Red Riv., La., 1853, p. 240.
- LYGOSOMA LATERALIS.**
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- LYGOSOMELLA.**
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- LYGOSOMELLA TESTOSA.**
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- MABUYA.**
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- MABUYA AGILIS.**
U. S. Expl. Exp., 1858, p. 261.
- MASTICOPHIS.**
Cat. N. A. Reptiles, 1853, part i, p. 98; Marey and McClellan Rep. Expl. Red Riv., La., 1853, p. 230.
- MASTICOPHIS FLAVIGULARIS.**
Cat. N. A. Reptiles, 1853, part i, p. 99; Marey and McClellan Expl. Red River, La., 1853, p. 230; P. R. R. Surv., vol. x, pl. xxxii, p. 73.
- MASTICOPHIS FLAGELLIFORMIS.**
Cat. N. A. Reptiles, 1853, part i, pp. 98 and 149; P. R. R. Surv., vol. x, pl. xxxi, fig. 71; pl. xxxii, fig. 72.
- MASTICOPHIS MORMON.**
Cat. N. A. Reptiles, 1853, part i, p. 101; P. R. R. Surv., vol. x, pl. xxxii, fig. 74.
- MASTICOPHIS ORNATUS.**
Cat. N. A. Reptiles, 1853, part i, p. 102; Mex. Bound. Surv., vol. ii, p. 20, pl. xvii; P. R. R. Surv., vol. x, pl. xxxiii, fig. 75.
- MASTICOPHIS SCHOTTII.**
Cat. N. A. Reptiles, 1853, part i, p. 160; Mex. Bound. Surv., vol. ii, p. 20, pl. xviii; P. R. R. Surv., vol. x, pl. xxxii, fig. 77.
- MASTICOPHIS TENIATUS.**
Cat. N. A. Reptiles, 1853, part i, p. 103; P. R. R. Surv., vol. x, p. 20, pl. xxxii and xxxii, fig. 76.
- MASTICOPHIS TESTACEUS.**
Mex. Bound. Surv., vol. ii, p. 20, pl. xvi; P. R. R. Surv., vol. x, p. 43.
- MICROLOPHUS.**
U. S. Expl. Exped., 1858, p. 313.
- MICROLOPHUS PERUVIANUS.**
U. S. Expl. Exp., 1858, p. 314.
- MICROPS LINEATUS.**
P. R. R. Surv., vol. x, pl. xxxiv, fig. 6.
- MORELLA.**
U. S. Expl. Exped., 1858, p. 115.
- MORELLA ARGUS.**
U. S. Expl. Exp., 1858, p. 115.
- NAULTINUS.**
U. S. Expl. Exped., 1858, p. 308.
- NAULTINUS PUNCTATUS.**
U. S. Expl. Exp., 1858, p. 309, pl. xvi, figs. 17-26.
- NERODIA.**
Cat. N. A. Reptiles, 1853, part i, p. 38.
- NERODIA AGASSIZI.**
Cat. N. A. Reptiles, 1853, part i, p. 41.
- NERODIA ERYTHROGASTER.**
Cat. N. A. Reptiles, 1853, part i, p. 40; P. R. R. Surv., vol. x, p. 19 and 41, pl. xxvi, fig. 28; pl. xviii.
- NERODIA FASCIATA.**
Cat. N. A. Reptiles, 1853, part i, p. 39; P. R. R. Surv., vol. x, pl. xxxiv, fig. 4.
- NERODIA HOLBROOKI.**
Cat. N. A. Reptiles, 1853, part i, p. 43; P. R. R. Surv., vol. x, pl. xxvii, fig. 30.
- NERODIA NIGRA.**
Cat. N. A. Reptiles, 1853, part i, p. 147; P. R. R. Surv., vol. x, pl. xxvii, fig. 31.
- NERODIA RHOMBIFER.**
Cat. N. A. Reptiles, 1853, part i, p. 147; P. R. R. Surv., vol. x, pl. xxxiv, fig. 2.
- NERODIA SIPEDON.**
Cat. N. A. Reptiles, 1853, part i, p. 38; P. R. R. Surv., vol. x, pl. xxxiv, fig. 2.
- NERODIA TAXISPILOTA.**
Cat. N. A. Reptiles, 1853, part i, p. 43; P. R. R. Surv., vol. x, pl. xxvii, fig. 29.
- NERODIA TRANSVERSA.**
Cat. N. A. Reptiles, 1853, part i, p. 148; P. R. R. Surv., vol. x, pl. xxvi, fig. 1.
- NERODIA WOODHOUSI.**
Cat. N. A. Reptiles, 1853, part i, p. 42; Mex. Bound. Surv., vol. ii, p. 17; P. R. R. Surv., vol. x, p. 41, pl. xxxiv, fig. 3.
- NINIA.**
Cat. N. A. Reptiles, 1853, part i, p. 45.
- NINIA DIADEMATA.**
Cat. N. A. Reptiles, 1853, part i, p. 49; P. R. R. Surv., vol. x, pl. xxvii, fig. 37.
- OLIGOSOMA.**
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- OLIGOSOMA NOCTUUM.**
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- OLIGOSOMA ZELANDICUM.**
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OPHIBOLUS.

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OPHIBOLUS BOYLI.

Cat. N. A. Reptiles, 1853, part i, p. 82; Mex. Bound. Surv., vol. ii, p. 20; P. R. R. Surv., vol. x, pl. xxx, fig. 57.

OPHIBOLUS CLERICUS.

Cat. N. A. Reptiles, 1853, part i, p. 88; P. R. R. Surv., vol. x, pl. xxx, fig. 62.

OPHIBOLUS DOLIATUS.

Cat. N. A. Reptiles, 1853, part i, p. 89; P. R. R. Surv., vol. x, pl. xxx, fig. 63.

OPHIBOLUS EVANSI.

P. R. R. Surv., vol. x, p. 43.

OPHIBOLUS EXIMUS.

Cat. N. A. Reptiles, 1853, part i, p. 87; P. R. R. Surv., vol. x, pl. xxx, fig. 61.

OPHIBOLUS GENTILIS.

Cat. N. A. Reptiles, 1853, part i, p. 90; Marcy and McClellan Expl. Red River, La., 1853, p. 229, pl. viii; P. R. R. Surv., vol. x, pl. xxx, fig. 64.

OPHIBOLUS GETULUS.

Cat. N. A. Reptiles, 1853, part i, p. 85; P. R. R. Surv., vol. x, pl. xxxi, fig. 65.

OPHIBOLUS RHOMBOMACULATUS.

Cat. N. A. Reptiles, 1853, part i, p. 86; P. R. R. Surv., vol. x, pl. xxx, fig. 60.

OPHIBOLUS SAYI.

Cat. N. A. Reptiles, 1853, part i, p. 84; Marcy and McClellan Expl. Red River, La., 1853, p. 228, pl. vii; Mex. Bound. Surv., vol. ii, p. 20; P. R. R. Surv., vol. x, pl. xxx, fig. 59.

OPHIBOLUS SPLENDIDUS.

Cat. N. A. Reptiles, 1853, part i, p. 83; Mex. Bound. Surv., vol. ii, p. 20; P. R. R. Surv., vol. x, p. 43, pl. xxx, fig. 58.

OPHIODES.

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OPHIODES STRIATUS.

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OREODEIRA.

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OREODEIRA GRACILIPES.

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ORTHOLEMUS.

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ORTHOLEMUS BEAGLI.

Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exped., 1858, p. 369, pl. xvii, figs. 15-21.

ORTHOLEMUS FITZROI.

Pr. Acad. Nat. Sci. Phila., ix, 1857, p. 198; U. S. Expl. Exped., 1858, p. 373.

ORTHOLEMUS MULTIMACULATUS.

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OSCEOLA.

Cat. N. A. Reptiles, 1853, part i, p. 133.

OSCEOLA ELAPSOIDES.

Cat. N. A. Reptiles, 1853, part i, p. 133; P. R. R. Surv., vol. x, pl. xxxiii, fig. 97.

OZOTHECA TRISTYCHA.

Mex. Bound. Surv., vol. ii, 1859, p. 3.

PELAMYS.

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PELAMYS BICOLOR.

U. S. Expl. Exped., 1858, p. 185.

PEROPUS.

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PEROPUS MUTILATUS.

U. S. Expl. Exped., 1858, p. 277.

PEROPUS NEGLECTUS.

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PHRYNOSOMA CORONATUM.

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PHRYNOSOMA DOUGLASSI.

Stansbury Surv. Salt Lake, 1853, p. 362, pl. vii, figs. 6-10; U. S. Expl. Exped., 1858, p. 392.

PHRYNOSOMA HERNANDESI.

U. S. Expl. Exped., 1858, p. 392.

PHRYNOSOMA MCCALLI.

U. S. Expl. Exped., 1858, p. 392.

PHRYNOSOMA MODESTUM.

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PHRYNOSOMA ORBICULARE.

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PHRYNOSOMA ORNATISSIMUM.

U. S. Expl. Exped., 1858, p. 392.

PHRYNOSOMA PLATYCHINUM.

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PHRYNOSOMA REGALE.

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PHYLLODACTYLUS TUBERCULOSUS.

Mex. Bound. Surv., vol. ii, p. 12, pl. xxiii, figs. 1-8.

PHYLLURUS.

U. S. Expl. Exped., 1858, p. 302.

- PHYLLURUS PLATURUS.**
U. S. Expl. Exped., 1858, p. 303.
- PITUOPHIS.**
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- PITUOPHIS ANNECTENS.**
Cat. N. A. Reptiles, 1853, part i, p. 72; Pr. Acad. Nat. Sci. Phila., vi, 1853, p. 300; P. R. R. Surv., vol. x., pl. xxix, fig. 48.
- PITUOPHIS BELLOXA.**
Cat. N. A. Reptiles, 1853, part i, p. 66; Mex. Bound. Surv., vol. ii, p. 18; P. R. R. Surv., vol. x, pp. 18 and 42, pl. xxix, fig. 46.
- PITUOPHIS CATENIFER.**
Cat. N. A. Reptiles, 1853, part i, p. 69; U. S. Expl. Exp., 1858, p. 135, pl. viii, figs. 1-7; P. R. R. Surv., vol. x, pl. xxxvi, fig. 4.
- PITUOPHIS McCLELLANI.**
Cat. N. A. Reptiles, 1853, part i, p. 68; Marcy and McClellan Expl. Red River, La., 1853, p. 225, pl. v; P. R. R. Surv., vol. x, pl. xxix, fig. 47.
- PITUOPHIS MELANOLEUCUS.**
Cat. N. A. Reptiles, 1853, part i, p. 65; P. R. R. Surv., vol. x, pl. xxix, fig. 44.
- PITUOPHIS SAYI.**
P. R. R. Surv., vol. x, pl. xxix, fig. 45.
- PITUOPHIS WILKESI.**
Cat. N. A. Reptiles, 1853, part i, p. 71; U. S. Expl. Exp., 1858, p. 137, pl. ix, figs. 1-7; P. R. R. Surv., vol. x, pl. xxxvi, fig. 5.
- PLATEMYS MACQUARIA.**
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- PLATURUS.**
U. S. Expl. Exp., 1858, p. 180.
- PLATURUS COLUBRINUS.**
U. S. Expl. Exp., 1858, p. 183.
- PLATURUS LATICAUDIATUS.**
U. S. Expl. Exp., 1858, p. 180.
- PLATYTHYRA FLAVESCENS.**
Mex. Bound. Surv., vol. ii, p. 3.
- PLESTIODON FASCIATUS.**
P. R. R. Surv., vol. x, p. 39.
- PLESTIODON GUTTULATUS.**
Mex. Bound. Surv., vol. ii, p. 12; P. R. R. Surv., vol. x, p. 18.
- PLESTIODON OBSOLETUM.**
Pr. Acad. Nat. Sci. Phila., vi, 1852, p. 128; Mex. Bound. Surv., vol. ii, p. 12, pl. xxv, figs. 9-16; P. R. R. Surv., vol. x, p. 39.
- PLESTIODON SEPTENTRIONALIS.**
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- PLESTIODON SKILTONIANUM.**
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- PLESTIODON TETRAGRAMMUM.**
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- PROCTOTRETUS.**
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- PROCTOTRETUS FEMORATUS.**
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- PROCTOTRETUS PERTINATUS.**
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- PROCTOTRETUS SPLENDIDUS.**
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- PROCTOTRETUS STANTONI.**
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- PROCTOTRETUS TENUIS.**
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- PSEUDELAPS PSAMMOPHIS.**
U. S. Expl. Exp., 1858, p. 178.
- PTYCHEMYS MOBILENSIS.**
Mex. Bound. Surv., vol. ii, p. 3.
- PTYCHODEIRA.**
U. S. Expl. Exp., 1859, p. 340.
- PTYCHODEIRA CYANOGASTER.**
U. S. Expl. Exp., 1858, p. 347.
- PTYCHODEIRA FEMORATA.**
U. S. Expl. Exp., 1858, p. 344.
- PTYCHODEIRA GRACILIS.**
U. S. Expl. Exp., 1858, p. 341, pl. xvii, figs. 22-28.
- PTYCHODEIRA INTERMEDIA.**
U. S. Expl. Exp., 1858, p. 348.
- PTYCHODEIRA MOSAICA.**
U. S. Expl. Exp., 1858, p. 349.
- PTYCHODEIRA STANTONI.**
U. S. Expl. Exp., 1858, p. 347.
- RABDION.**
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- RABDION OCCIPITALE.**
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- RACHITES.**
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- REGINA.**
Cat. N. A. Reptiles, 1853, part i, p. 45.
- REGINA CLARKI.**
Cat. N. A. Reptiles, 1853, part i, p. 48; Mex. Bound. Surv., pl. ii, p. 17, pl. x, pl. xi, fig. 2; P. R. R. Surv., vol. x, pl. xxvii, fig. 34.
- REGINA GRAHAMI.**
Cat. N. A. Reptiles, 1853, part i, p. 48; Mex. Bound. Surv., vol. ii, p. 17, pl. vii, fig. 2; P. R. R. Surv., vol. x, pl. xxvii, fig. 34.
- REGINA KIRKLANDI.**
P. R. R. Surv., vol. x, pl. xxvii, fig. 36.
- REGINA LEBERIS.**
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- REGINA RIGIDA.**
Cat. N. A. Reptiles, 1853, part i, p. 46; P. R. R. Surv., vol. x, pl. xxvii, fig. 33.
- RENA.**
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- RENA DULCIS.**
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- RHINOCEHLUS LECONTI.**
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- RHINOSTOMA COCCINEA.**
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- RHYTIDODEIRA.**
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- SALVADORA.**
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- SALVADORA GRAHAMLE.**
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- SCOLOPORUS FRONTALIS.**
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- SCOLOPORUS GRACIOSUS.**
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- SCOTOPIHUS CONFINIS.**
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- SCOTOPHIS LÆTUS.
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- SCOTOPHIS LINDHEIMERI.
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- SCOTOPHIS QUADRIVITTATUS.
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- SCOTOPHIS VULPINUS.
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- SIBYSON.
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- SIBYSON NEBULATUS.
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- SONORA.
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- SONORA SEMIANNULATA.
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- SPILERIODACTYLUS NOTATUS.
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- SPHARGIS.
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- STEBROLEPIS QUADRIVITTATA.
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- STEBROLEPIS THORACICA.
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- STEBROLEPIS TIGRIS.
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- STEBROLEPIS XANTOSTIGMA.
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- STENODACTYLUS VARIEGATUS.
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- STENOSTOMA.
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- STORERIA.
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- STORERIA DEKAYI.
Cat. N. A. Reptiles, 1853, part i, p. 135; P. R. R. Surv., vol. x, 1859, pl. xxxiii, fig. 98.
- STORERIA OCCIPITO MACULATA.
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- TANTILLA CORONATA.
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- TANTILLA GRACILIS.
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- THYROSTERNUM SONORIENSE.
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- TILIQUA RUFESCENS.
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- TOXICOPHIS.
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TOXICOPHIS PISCIVORUS.

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TOXICOPHIS PUGNAX.

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UTA STANSBURIANA.

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UTA STANSBURIANA—continued.

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UTA SYMMETRICA.

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VIRGINIA VALERIE.

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XEROBATES CERLANDIERI.

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AMBLYSTOMA.

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AMBLYSTOMA CALIFORNIENSE.

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1-4.

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16-20.

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1-5 and 11-15.

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1-4.

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ICHTHYOMYZON APPENDIX.

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ICHTHYOMYZON ARGENTEUS.

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xix, figs. 1-4.

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figs. 1-4; P. R. R. Surv., vol. x, 1859, p. 96.

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figs. 13-16.

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p. 241, pl. lix, figs. 1-4.

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figs. 2-3.

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figs. 1-4.

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pl. xv, fig. 2.

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p. 283, pl. xxi, fig. 2.

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figs. 1-6.

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figs. 6-10.

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xxxviii, figs. 8-14; Pr. Acad. Nat. Sci.
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xxxix, figs. 20-23.
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- LUCANIA AFFINIS.**
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P. R. R. Surv., vol. x, 1859, p. 122.
- LUMPENUS ANGUILLARIS.**
P. R. R. Surv., vol. x, 1859, p. 123, pl. xxv**b**,
figs. 1-3.
- LUXILUS.**
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R. R. Surv., vol. x, 1859, p. 280.
- LUXILUS AMERICANUS.**
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- LUXILUS CHRYSOCEPHALUS.**
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- LUXILUS LEPTOSOMUS.**
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xix, figs. 9-12.
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P. R. R. Surv., vol. x, 1859, p. 282, pl. lx,
figs. 9-12.
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xxviii, figs. 9 and 10.
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xi, 1859, p. 64.
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and 154; P. R. R. Surv., vol. x, 1859, p. 330.
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- MERLANGUS CHALCOGRAMMUS.**
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- MERLUCCUS.**
P. R. R. Surv., vol. x, 1859, p. 141 and 143.
- MERLUCCUS FIMBRIA.**
P. R. R. Surv., vol. x, 1859, p. 141.
- MICROMETRUS AGREGATUS.**
P. R. R. Surv., vol. x, 1859, p. 205.
- MICROMETRUS MINIMUS.**
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xxii, figs. 5-8.
- MINOMUS INSIGNIS.**
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xxi, figs. 1-4.
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6-10.

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5-8.

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POGONICHTHYS COMMUNIS.

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POLYODON POLIUM.

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POMOTIS.

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POMOXIS.

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PTYCHOCEILUS RAPAX.

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ATREUS CALIFORNICUS.

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ATREUS SAYI.

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SCORPIO CALIFORNICUS.

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