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DEPARTMENT OF THE INTERIOR.

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OF

THE TERRITORIES.

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DEPARTMENT OF THE INTERIOR.

UNITED STATES GEOLOGICAL AND GEOGRAPHICAL SURVEY OF THE TERRITORIES.

F. V. HAYDEN, U. S. GEOLOGIST-IN-CHARGE.

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I.—AN ACCOUNT OF THE VARIOUS PUBLICATIONS RELATING  
TO THE TRAVELS OF LEWIS AND CLARKE, WITH A  
COMMENTARY ON THE ZOOLOGICAL RESULTS OF THEIR  
EXPEDITION.

BY DR. ELLIOTT COUES, U. S. A.

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# AN ACCOUNT OF THE VARIOUS PUBLICATIONS RELATING TO THE TRAVELS OF LEWIS AND CLARKE, WITH A COMMENTARY ON THE ZOOLOGICAL RESULTS OF THEIR EXPEDITION.

By Dr. ELLIOTT COUES, U. S. A.

## PART I.—BIBLIOGRAPHICAL.

Publication of the results of this memorable undertaking was attended by the untoward circumstances that neither of the persons chiefly concerned became the ostensible author, and that, pending the preparation of their unfinished MSS. for the press at other hands, two separate sources of incomplete information respecting their travels became available. These were eagerly seized by publishers, who appreciated the lively and general interest which the intrepid explorers had awakened. The result has been the appearance of a number of books of the most diversified character, all of which, nevertheless, purport to be, in one way or another, the "Narrative," "Travels," or "Journey," of "Lewis and Clarke," though the claim of the majority of them to be so considered rests upon slight foundation. The bibliography of the subject, if not more extensive than would be expected, is in a confused state, and quotation of Lewis and Clarke has become impossible without explicit reference to some particular edition.

Having frequent occasion to consult the work in its bearing upon the zoology of the West, a subject now undergoing searching scrutiny at many able hands, I have been led to examine the matter with some care, and with the result here presented, which, it is hoped, may tend to place the subject in clearer light. I have examined most of the editions, and am able to give the titles of others not seen.

Probably the best account extant of these books is that contained in Thomas W. Field's "An Essay towards an Indian Bibliography," &c. (New York, 8vo, 1873.) The author, however, includes none of the foreign versions, and omits several others I have seen.—And here I would add that, in the arid wilderness of titles, often imperfect if not erroneous, which compose the average catalogues of books, it is refreshing to meet with such a model piece of bibliography as this masterly work of Mr. Field's.

All of the numerous editions and versions of "Lewis and Clarke" which I have seen or heard of may be traced to one or another of three sources, namely:—

- I. The *Jefferson* Message and Accompanying Documents. (1806.)
- II. The *Gass* Journal. (1807.)
- III. The *Biddle-Allen* History of the Expedition. (1814.)

Of these, the last named alone is the complete, authentic, and authorized account, prepared from the original MSS. of Lewis and Clarke. The *Gass* Journal is a perfectly authentic narrative of the journey, by a non-commissioned officer attached to the party, but is *not* a "Lewis and Clarke." From Jefferson's official communication, which is, of course, exactly what it purports to be, have sprung a number of books to which the names of Lewis and Clarke are more or less prominently attached; all of which are, nevertheless, spurious as far as they claim to

be narratives of the expedition. These three classes of books will be successively considered.

# I.—THE JEFFERSON PRODROME AND THE APOCRYPHA.

On the 19th of February, 1806, the expedition being then still in progress, President Jefferson addressed to Congress a communication, entitled as follows:—

[1806.] *Message | from the | President of the United States | communicat-  
ing | Discoveries | made in exploring | the Missouri, Red River and  
Washita, | by | Captains Lewis and Clark, Doctor Sibley, | and Mr.  
Dunbar ; | with | a Statistical Account | of the | Countries adjacent. |  
— | February 19, 1806. | Read, and ordered to lie on the table. | — |  
City of Washington : | A. & G. Way, printers. | . . . | 1806.  
8vo. pp. 1-171, 3 l. (State Papers.)*

It is necessary to examine this article closely, in order to see how the apocrypha depend upon it. The "message" itself is a curt official letter. Next comes a semi-official letter to the President from Captain Lewis, dated Fort Mandan, April 17, 1805, giving a progress-report of the expedition at that date, &c. "A Statistical View of the Indian Nations inhabiting the Territory of Louisiana\* and the Countries Adjacent to its Northern and Western Boundaries," by Captain Lewis, is the second of the accompanying documents; an elaborate set of statistics of various tribes, with miscellaneous particulars. It is these last, patched together, that constitute the "Statistical View" printed in the various apocrypha. The third paper is Dr. Sibley's "Historical Sketches of the Several Indian Tribes in Louisiana, south of the Arkansa River, and between the Mississippi and the River Grand." These "Sketches" are transferred lodily, with some abridgment and mutilation, to the apocrypha. The fourth article consists of "Observations made in a Voyage commencing at St. Catharine's Landing, on the East Bank of the Mississippi, proceeding downwards to the Mouth of Red River, and from thence ascending that River, the Black River, and the Washita River . . . from the Journals of William C. Dunbar, Esq., and Dr. Hunter." With omission of some meteorological tables appended to the original, this document, like Dr. Sibley's, is introduced into the apocrypha with little change.

The President's message and accompanying documents also appear, without the same caption, and otherwise modified in form, in other official archives of Congress. The same year, 1806, it was again reprinted in New York, as a pamphlet, which I have not seen; the title of which, nearly identical with that of the original, except as relates to the imprint, is kindly furnished by Mr. F. B. Perkins, of the Boston Public Library, as follows:—

[1806.] *Message | from the | President of the United States, | communi-  
cating | Discoveries | made in exploring the | Missouri, Red River and  
Washita, | by | Captains Lewis and Clarke, Doctor Sibley | and Mr. Dun-  
bar ; | with | a Statistical Account | of the | Countries adjacent. | — |  
Read in Congress, February 19, 1806. | — | New-York : | Printed by  
Hopkins and Seymour, | and sold by G. F. Hopkins, No. 118, Pearl-  
street. | — | 1806.*

*One vol. 8vo, pp. 128+1 folded l. not paged.*

\* On Captain Lewis's map, the name "Louisiana" lies across the present northern boundary of the United States.



From this official *prodrome*,\* the earliest available source of much-desired information, books quickly sprung, which, however modified in title or in substance with successive editions, are essentially the same. These are mostly anonymous as to author, compiler, or editor, being clearly publishers' enterprises; and, though containing matter of intrinsic merit and interest for the time, they are all, as just stated, spurious in as far as they pretend to be the narrative of Lewis and Clarke, and therefore properly to be styled the *apocrypha*.—These books consist chiefly of accounts of the Indians, variously compiled from the three sources indicated in the President's message. The titles and captions of some of them are well contrived to make them appear as the work of our authors. The apocrypha were not wholly superseded by the appearance of the genuine narrative in 1814, but continued to be published at least until 1840, though they are now becoming scarce and are seldom if ever quoted. The earliest one of them I have seen (one which, however, purports to be no more than it really is) was printed in London the year following the President's message and accompanying documents, of which it is a literal reprint ("nearly an exact copy," says Field), under a modified title, as follows:—

[1807.] *Travels | in the | Interior Parts of America; | communicating | Discoveries | made in Exploring | the Missouri, Red River and Washita, | by | Captains Lewis and Clark, | Doctor Sibley, | and | Mr. Dunbar; | with | a statistical account | of the | Countries adjacent. | — | As laid before the Senate, | by the | President of the United States. | In February, 1803, | and never before published in Great Britan. | — | London: | Printed for Richard Phillips, 6, Bridge Street, | Blackfriars, | By J. G. Barnard, 57, Snow-hill. | — | 1807.*

*Svo. pp. 1-116, with a folding table. Forming a part, separately paged, of Vol. VI. of Phillips's "Collection of Modern and Contemporary Voyages," &c.*

Of this book, Field remarks, somewhat quaintly, "It is one of a series of travels published by Sir Richard Phillips, bookseller and baronet, who is the only example I recollect of that combination of trade and title."

Two years subsequently, in 1809, two editions of the apocrypha appeared simultaneously in England and America. To judge by their titles, and from what I can learn of the English one, they are very similar, if not identical. I do not know the inside history of these two anonymous books in their mutual relations, nor which has actual priority; but I should suppose that the English was taken from the American, just as the Rees edition of the authentic narrative was from the Biddle-Allen one. As transcribed by Rees, the title is somewhat abbreviated; the fuller title, as given by Field, is as follows:—

\* Among collateral publications bearing on the subject may be noticed the following State Paper—in some evidence against the proverbial ingratitude of republics:—

[1807.] "*Documents accompanying a Bill making compensation to Messieurs Lewis and Clarke, and their companions, presented the 23d January 1807. Washington: A. & G. Way. 1807.*" *Svo. pp. 1-2.*

[Grants of land to the whole party. Captain Lewis was soon after made governor of "Louisiana"; Captain Clarke, general of Louisiana militia and agent for Indian affairs.]

[1809.] "*The Travels of Cap<sup>s</sup> Lewis and Clarke, from St. Louis, by way of the Missouri and Columbia rivers, to the Pacific Ocean; performed in the years 1804, 1805, and 1806, by order of the government of the United States, containing delineations of the manners, customs, religion, &c. of the Indians, compiled from Various Authentic Sources, and original Documents, and a Summary of the Statistical View of the Indian Nations, from the official communication of Meriwether Lewis. Illustrated with a Map of the Country, inhabited by the Western Tribes of Indians.* 8vo, pp. ix and 309. London, 1809."

This publication, which I have not seen, is said by Rees to contain "the principal part of Captain Lewis's Statistical View of the Indian Nations of Louisiana [*i. e.*, of the West at large], together with Dr. Sibley's Account of the Indians on the Arkansaw, &c., and Mr. Dunbar's and Dr. Hunter's Account of the Washita River." Mr. Rees continues: "As far as relates to Lewis and Clarke's Travels, this work is not, however, what it pretends to be, for it contains no further account of them than was given in the above message [*i. e.*, President Jefferson's], and some private letters of Captain Clarke, addressed to his friends before and after his return. But, in other respects, it is of considerable value, the other documents inserted in it being curious, and contained in no other English publication."

The corresponding American edition, in 12mo, of 1809, which is not noticed by Field, but of which I have several copies before me, is as follows:—

[1809.] *The | Travels | of | Capts. Lewis & Clarke, | by order of the | Government of the United States, | performed in the years 1804, 1805, & 1806, | being upwards of three thousand miles, from | St. Louis, by way of the Missouri, and | Columbia Rivers, to the | Pacifick Ocean: | Containing an Account of the Indian Tribes, who inhabit | the Western part of the Continent unexplored, | and unknown before. | With copious delineations of the manners, cus- | toms, religion, &c. of the Indians. | Compiled | From various authentic sources, and Documents. | To which is subjoined, | A Summary of the Statistical View of the Indian | Nations, from the Official Communication of | — | Meriwether Lewis. | — | Embellished with a Map of the Country inhabited by | the Western Tribes of Indians, and five Engravings | of Indian Chiefs. | — | Philadelphia: Published by Hubbard Lester. | . . . | 1809. | Price — 1 dollar 62½ cts. |*

One vol., 12mo, pp. i-xii, 13-300, pll. 5, map, and tail-piece (scroll and pen.) (Copyright dated April 17, 1809.)

The composition of this wretched little meretricious compilation is of the most thoroughly motley character, showing that the art of book-making was highly developed at least as early as 1809. In the first place, the typography of the title-page is ingeniously so arranged as to make it appear, at first sight, that Meriwether Lewis is the author. The title-page is followed by Lester's copyright. Then comes the "recommendation" from President Jefferson, artfully twisted into a recommendation of the book itself. A mutilated version of Jefferson's

"message" succeeds. Then comes the compiler's introduction, consisting of some meditations on the value of geographical knowledge, and a statement, from some person unknown, of the commerce of the Missouri. The running-heads of the pages to p. 153 read, "New Travels among the Indians." This part of the book is meant to pass for Lewis and Clarke's narrative; the anonymous compiler audaciously opens with the now familiar "On the 14th of May, 1804, we embarked from St. Louis," &c.; but it is in no sense what it purports to be. Where the materials came from, I cannot make out; they were not in Jefferson's message and documents, and do not appear to be from Gass, and I do not know what other sources of supply were available at that date. But, at any rate, it is *not* Lewis and Clarke, though some private letters of the latter, doubtless authentic, are introduced (pp. 23-35). A fine snake story is brought in (pp. 39-40): the reptile "was in bulk half as large as a middle-sized man." From p. 119 to p. 153 is an account of the Knisteneaux and Chepewyan Indians, from the pen of A. Mackenzie. Then comes the "Statistical View," pp. 154-178; this is a mutilated compilation of parts of Captain Lewis's paper, furnished to the President. Similarly, the "Historical Sketches," which follow, pp. 179-204, are a mutilated abridgment of Dr. Sibley's paper. Pages 204-228 consist of an account of the origin of the Indians, by "an ingenious traveller." This part of the book likewise has no connection whatever with Lewis and Clarke. Thence to p. 292 are Mr. Dunbar's and Dr. Hunter's "Observations" on the Washita, &c. The volume closes with some anecdotes, one of which is the story of "Master Neddy," copied from William Buchan's "Domestic Medicine," and not having the most remote connection with anything that precedes. Yet this is the book which, with its several offspring, doubtless many thousand worthy American citizens and loyal British subjects have read for "Lewis and Clarke"—and, indeed, it is a very readable book.

We have next to notice two Baltimore editions of the apocrypha, published by Fisher. None of the regular editors of Lewis and Clarke allude to these books, nor are they represented in Field's bibliography. I have before me two editions, of 1812 and 1813; their titles are as follows:—

[1812.] *An | Interesting Account | of the | Voyages and Travels | of | Captains Lewis and Clark, | in the years 1804, 1805, and 1806. | Giving a faithful description of the river Missouri and | its source—of the various tribes of Indians through | which they passed— | manners and customs—soil—climate | —commerce—gold and silver mines—animal and vegetable productions interspersed with very entertaining anecdotes, and a variety of other useful and | pleasing information remarkably calculated to de- | light and instruct the readers—to which is added a | complete dictionary of the Indian tongue. | By William Fisher, Esq. | — | Baltimore. | Printed by Anthony Miltenberger, For the purchasers. | 1812.*

One vol., 12mo, 2 portraits, pp. v-xv, 16-326.

[1813.] *An | Interesting Account | of the | Voyages and Travels | of | Captains Lewis and Clarke, | in the years 1804-5, & 6. | Giving a faithful description of the river Missouri and | its source—of the various tribes of Indians through | which they passed—manners and customs—soil | —climate—commerce—gold and silver | mines—animal and vegetable | productions. | Interspersed | With very entertaining anecdotes, and a variety*

of | other useful and pleasing information, re- | markably calculated to delight and | instruct the readers. | To which is added | A complete Dictionary of the Indian tongue | — | by William Fisher, Esq. | — | Baltimore: | printed and published by P. Mauro, | N<sup>o</sup> 10, North Howard St. | 1813.

One vol., 12 mo, portraits?\* pp. iii-xii, 13-262, with 3 full-page wood cuts.

William Fisher, esq., must have been a bold man, and he may not have been a bad man too. Whereas the compiler, or editor, or whatever he may have been, of the editions of 1809 retired behind an anonym, William Fisher not only stole his production bodily, and gave it another name, but also formally announced himself as the author of the same; for the edition of 1812 is a literal reprint, as nearly as may be, of that of 1809—even to the snake story and Master Neddy. The edition of 1813 is nearly another reprint; the title reads substantially the same, though the typography of the title-page is entirely different. In this edition, Master Neddy is dropped. The edition is notable as the first of this series of apocrypha which was illustrated. The smiling faces of “Captains Lewis and Clarke, returned” greet us; we have a tragic scene of an Indian “destined to death” by the flames; a thrilling view of a man with a bear behind and a precipice in front, &c. William Fisher does not appear to have possessed the copyright of this production.

In the interval between 1813 and 1840 there may have been, and probably were, other editions of the apocrypha; but the following, published by Ells at Dayton, Ohio, 1840, is the only one I have seen or heard of:—

[1840.] The | Journal | of | Lewis and Clarke, | to the Mouth of the Columbia River | beyond the Rocky Mountains. | In the years 1804-5, & 6. | Giving a faithful description of the River Missouri | and its source—of the various tribes of Indians | through which they passed—manners and cus- | toms—soil—climate—commerce—gold and | silver mines—animal and vegetable | productions, &c. | New Edition, with Notes. | Revised, corrected, and illustrated with numerous | wood cuts. | To which is added | a complete dictionary of the Indian tongue. | — | Dayton, O. | Published and sold by B. F. Ells. | John Wilson, printer | . . . | 1840.

One vol., 16mo, pp. i-xii, 13-240, portraits of Lewis and of Clarke, and 14 other full-page woodcuts.

The advertisement of the “proprietor” of this edition says: “The great demand for the Journal of Lewis & Clarke, has induced the republication of the work, with the additions of extensive and interesting notes, and numerous illustrations on wood. We have divided the work into Chapters, with appropriate captions, corrected much that was erroneous in the Topography, and especially in the Nomenclature and Orthography of the Proper Names, and the Philological errors (of which there were many,) have been corrected, where it could be done, without too materially infringing the text.” But this volume, aside from some changes in the general make-up, addition of table of contents, insertion of wood-cuts, and the minor points noted in the advertisement just quoted, is the same as its prototype of 1809, notwithstanding the notable modification of title, by which it attempts to lay still stronger claim to be the authentic “Narrative,” and by which perhaps it acquired

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\*In the copy examined, whatever may have preceded the title-page is torn out.



an undeserved copyright. The running-heads of the pages, throughout the volume, are the words "Journal of Lewis & Clarke." The addition of "a complete dictionary of the Indian tongue," as per the title, is a false claim (as it was in Fisher's case), as this "dictionary" is simply the glossary of Knisteneaux words and phrases which was contained in the editions of 1809. The "notes" added would probably be called "extensive and interesting" only by the publisher. The volume closes with an "appendix," containing some irrelevant "anecdotes," not entirely the same as those of the 1809-1812-1813 editions; Master Neddy being replaced by a story about a "Great African Serpent, killed by Regulus the Roman General." The illustrations are most of them additional to any I have seen elsewhere; Captain Clarke still smiles on us, but his less fortunate companion looks as if he were really meditating suicide.

## II.—THE GASS JOURNALS.

This publication is perfectly authentic, in the sense that it is exactly what it purports to be—a narrative of the expedition, by a known person who accompanied Lewis and Clarke, though it is not, nor does it pretend to be, the journal of his leaders. Patrick Gass was a sergeant of the command, and appears to have been an ignorant, intelligent, and observant person, who kept a diary of his own, in which events of the journey and their impressions upon the writer were recorded from day to day during the whole period. His general good character and the faithful and efficient service he rendered are formally certified by Captain Lewis. The Gass narrative is a plain, straightforward, and connected account. Paul Allen alludes to it, without mention of the writer's name, and with unnecessary depreciation, as the "least minute and valuable" of two journals, the other being kept by a brother sergeant, and, I think, never published. Thomas Rees speaks of it in a way more to my liking, as being "in general, sensible and judicious." It serves as a valuable check upon the narrative of Lewis and Clarke itself in the minutiae of dates, names, places, &c., and on this account may not inaptly be termed a *concordance*.

Gass's work seems to have been entirely superseded by the publication of the regular narrative; at least, I know of no edition later than 1812. I learn altogether of five (and there was probably another) editions of this "concordance," namely: Pittsburgh, 12mo, 1807, and 8vo, 1808; London, 8vo, 1808; Philadelphia, 12mo, 1810 and 1812 (and French version, 1810?). Excepting the French, they only differ from each other in details of typography, and are virtually nothing more than reprints, though some of them are illustrated, the others not. The original edition is as follows:—

1807.] *A Journal | of the | Voyages and Travels | of a Corps of Discovery, | under the command of Capt. Lewis and Capt. | Clarke of the Army of the United States, | from | the mouth of the River Missouri through the | interior parts of North America | to the Pacific Ocean, | during the years 1804, 1805, & 1806. | Containing | An authentic relation of the most interesting transactions | during the expedition,—A description of the country,— | And an account of its inhabitants, soil, climate, curiosities | and vegetable and animal productions. | — | By Patrick Gass, | one of the persons employed on the expedition. | — | With geographical and explanatory notes | by the publisher. | — | [Copy-right*

*secured according to law.] | Pittsburgh, | printed by Zadok Cramer, | for David M'Keehan, Publisher and | proprietor. . . . 1807. |*

*One vol., 12mo, pp. i-viii, 9-262. (No illustrations.)*

There appears to have been another Pittsburgh edition, in 8vo, probably of 1808; the one from which a London edition was reprinted. The title as given by Field differs only from that of the 12mo, 1807, in the punctuation. Field describes it as "8vo. pp. 381. Pittsburgh, printed for David McKeehan; London, reprinted for J. Budd, 1808."

The next edition I know of appeared in Philadelphia, in 1810, as follows:—

[1810.] *A | Journal | of the | Voyages and Travels | of a Corps of Discovery, | under the command of Capt. Lewis and Capt. | Clarke of the Army of the United States, | from | the mouth of the River Missouri through the | interior parts of North America, | to the Pacific Ocean, | During the Years 1804, 1805 and 1806. | Containing | an authentic relation of the most interesting transac- | tions during the expedition,—A description of | the country,—And an account of its inhabi- | tants, soil, climate, curiosities, and ve- | getable and animal productions. | — | By Patrick Gass, | one of the persons employed in the expedition. | — | With | geographical and explanatory notes. | — | [Copy-Right secured according to Law.] | — | Philadelphia: | Printed for Mathew Carey, | No. 122, Market-street. | — | 1810.*

*One vol., 12mo, pp. i-viii, 9-262, with 6 full-page wood ce.*

The title of this edition is substantially the same as that of the foregoing, though the arrangement of the title-page is quite different, as shown by the bars in the preceding paragraphs. The pagination is identical, and, in fact, the edition, as far as the text is concerned, is a mere re-issue, probably from the same plates, of the Pittsburgh 12mo of 1807; though the typography of pp. 9 and 11 is different. To this edition, however, are added six full-page wood-cuts, in which the figures of men, trees, and animals are notable rather for the mathematical regularity of their lines than for any approach to "curves of beauty."

This edition is said to have been re-issued at Philadelphia in 12mo, 1812. I have seen no copy bearing this date. The title, as quoted by Field, is substantially identical; the illustrations are continued. This is spoken of as the "fourth" edition; but if the London 8vo reprint of the Pittsburgh 8vo, 1808, be counted as one, then the Philadelphia 12mo of 1812 is at least the fifth, if not the sixth.

Before proceeding to the consideration of the regular authentic editions, I should notice a French version of a "Lewis and Clarke," known to me only by title, the date of which is given as 1810. Not having seen this book, I cannot say whether it is a version of the apocrypha or of the concordance. The major part of the title reads like the apocrypha, but the rest is more like Gass's Journal, of which, I suppose, this is a version. The title, as given by Quérard, is as follows:—

[1810.] *"Voyages des capitaines Lewis et Clarke, depuis l'embouchure du Missouri jusqu'à l'entrée de la Colombie, dans l'Océan Pacifique, fait dans les années 1805-06, par ordre du gouvernement des États-Unis, contenant le Journal des événements les plus remarquables du voyage, la de-*

*scription des habitants, du sol, les productions animales et végétales, etc.; trad. en français par A.-J.-N. L. (Lallemand). Paris, A. Bertrand, 1810, in-8, avec carte, 6 fr."*

### III.—THE AUTHENTIC NARRATIVE.

[1814.] *History* | of | *The Expedition* | under the command of | *Captains Lewis and Clark*, | to | the sources of the *Missouri*, | thence | across the *Rocky Mountains* | and down the | *River Columbia* to the *Pacific Ocean*. | Performed during the years 1804-5-6. | By order of the | *Government of the United States*. | Prepared for the press | by *Paul Allen, Esquire*. | In two Volumes. | Vol. I [II]. | *Philadelphia*: | Published by *Bradford and Inskip*; and | *Abm. H. Inskip, Newyork*. | *J. Maxwell, Printer*. | 1814.

Two vols., 8vo. Vol. I, pp. i-xxviii, 1-470, maps. Vol. II, pp. i-ix, 1-522, maps. (> Vol. II, Chap. VII, "A general description of the beasts, birds, and plants, &c. found by the party in this expedition," pp. 148-201.)

The editor's preface sets forth (not too fully) the circumstances under which the authentic MSS. of the work were prepared for the press. It had been, it appears, Captain Lewis's design to edit his travels himself. He commenced the work, and was *en route* to Philadelphia to complete it when his intention was frustrated by his tragic death. The papers were then deposited, after considerable delay, in the hands of Nicholas Biddle, who immediately proceeded to collect and investigate all the materials within his reach. The sources of information are thus given by Paul Allen: "Of the incidents of each day during the expedition a minute journal was kept by Captain Lewis or Captain Clark, and sometimes by both, which was afterwards revised and enlarged at the different periods of leisure which occurred on the route. These were carefully perused in conjunction with Captain Clark himself, who was able from his own recollections of the journey, as well as from a constant residence in Louisiana since his return, to supply a great mass of explanations, and much additional information with regard to part of the route which has been more recently explored. Besides these, recourse was had to the manuscript journals kept by two of the sergeants, one of which, the least minute and valuable, has already been published.\* That nothing might be wanting to the accuracy of these details, a very intelligent and active member of the party, Mr. George Shannon, was sent to contribute whatever his memory might add to this accumulated fund of information. From these copious materials the narrative was sketched nearly to its present form, when" circumstances caused the transfer of the unfinished MSS. and accompanying documents to another editor, namely, Paul Allen, under whose superintendence the narrative in its final shape was published. To it is prefixed a "Life of Captain Lewis," by President Jefferson, embodying a certified copy of the official instructions under which he acted.

Thomas W. Field is severe upon Paul Allen, in this style: "At this stage [*i. e.*, when Paul Allen undertook it] of the growth of the history Mr. Biddle from caprice, or business abstraction, abandoned its direc-

\* The allusion is here to Gass's journal. It is a significant fact that no reference is made to the books I have styled the "apocrypha."



tion, when his literary structure was nearly or quite complete. It was thus left for the editor, (whom popular esteem has credited with the labor of forming the work,) only to obtain a sketch of the life of Captain Lewis from President Jefferson, and to place his name on the title page. All of this he states in the Preface, but neglects to name the industrious and judicious editor who wrought the work ready to his hand; yet emblazons his own name in the place of honor on the title." I do not undertake to defend Mr. Allen for suppressing Mr. Biddle's name, in doing which, as well as in refraining from mention of Gass, he evinces a desire to place himself in solitary prominence in connection with the great work; but he certainly gained the right, moral and legal, to appear as the preparer of the work for the press after Mr. Biddle, "from caprice or business abstraction", had abandoned the undertaking.

It is not within the scope of the present article to offer any general commentary or account, historical or critical, either of the nature of the expedition itself, or of the character of the work which was one of its results. The whole matter has passed into history, and the subject become "classic." I have already quoted the chapter of the work which alone bears formally and specially upon zoology, though incidental observations upon natural history are scattered throughout both volumes. In this connection, however, I should not omit to note a paragraph of the editor's preface by which it appears that a separate publication upon the natural-history observations and collections was then contemplated. Mr. Allen says: "The present volumes, it will be perceived, comprise only the narrative of the journey. Those parts of the work which relate to the various objects of natural history, observed or collected during the journey, as well as the alphabets of the Indian languages, are in the hands of Professor Barton, and will, it is understood, shortly appear." Having never seen or heard of any publication by Professor Barton on the subject, I am forced to the conclusion that this *projet* was never carried out. Thus it would appear that the net results of the expedition, as far as natural history is concerned, are contained in the single chapter above cited. This subject will be resumed after examination of the various subsequent editions of "Lewis and Clarke"\* with which we have to do.

During the same year (1814), the work was published in London, under the editorship of Thomas Rees, in 1 vol. 4to, with the following title:—

[1814.] *Travels | to the | Source of the Missouri River | and across the | American Continent | to the | Pacific Ocean. | Performed | by order of the Government of the United States, | in the Years 1804, 1805, and 1806. | — | By Captains Lewis and Clarke. | — | Published from the Official Report, | and | illustrated by a map of the route, | and other maps. | — | London: | Printed for Longman, Hurst, Rees, Orme, and Brown, | Paternoster-Row. | — | 1814.*

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\* The orthography of this name is uncertain. It is written "Clark" on the title page of the present edition, but "Clarke" on that of nearly all the others examined. "Clarke" and "Clark" are both written by President Jefferson in his official communications, "Clarke" by Gass throughout his journal, and by Captain Lewis himself. Referring to the signatures of the private letters introduced in the "apocrypha," I find that the Philadelphia edition of 1809 prints the signatures "Clark," while in the Dayton edition of 1840 the signatures stand "Clarke." The balance of evidence is in favor of "Clarke."



*One vol., 4to, pp. i-xxiv, 1-663, 1 folding and 2 full-page maps. (> Chap. XXIV, "A general Description of the Beasts, Birds, and Plants, &c., found by the Party in this Expedition," pp. 450-489.)*

"The present edition is printed nearly verbatim from the original; the sheets of which were forwarded to this country by the American proprietors: the only liberty that has been taken with the language, has been merely the correction of a few inadvertent grammatical or typographical errors. The American copy contained an Appendix drawn up by Captain Lewis on the State of the Indian Nations; . . . but as the subject is altogether of a local nature, and the observations possess little interest for the British reader, it has been omitted." Besides the whole of the Appendix, which occupies 89 pages of the original, the Life of Lewis and the American editor's Preface are also omitted; in place of the latter being introduced a new preface by the English editor. This preface consists chiefly of a sketch of other explorations in the West, especially Lieutenant Pike's (which Rees had edited in 1811); it also includes President Jefferson's "Message," extract of a letter from Captain Lewis to the President, with bibliographical references to Jefferson's pamphlet of 1806, to the English edition (1809) of the apocrypha already quoted, and to Gass's Journal, which latter is spoken of in more complimentary terms than those used by the American editor. Excepting these points and those mentioned above in quotation-marks, this English 4to edition is identical with the original American one.

It was succeeded the next year by a 3-vol. 8vo reprint, as follows:—

[1815.] *Travels | to the source of | the Missouri River | and across the | American Continent | to | the Pacific Ocean. | Performed by order of | the Government of the United States, | in the years 1804, 1805, and 1806. | — | By Captains Lewis and Clarke. | — | Published from the Official Report, | and illustrated by a map of the route, | and other maps. | — | A new edition, in three volumes. | Vol. I. [II, III.] | — | London : | Printed for Longman, Hurst, Rees, Orme, and Brown, | Paternoster-Row. | 1815.*

*Three vols., 8vo. Vol. I, pp. i-xxvi, 1 l. not paged, 1-411, maps 3. Vol. II, pp. i-xii, 1-434, maps 3. Vol. III, pp. i-xii, 1-394. (> Vol. III, Chap. XXIV, "A general description of the beasts, birds, plants, &c., found by the party in this expedition," pp. 1-73.)*

Except in form, and in some minor details of typography incident to resetting of the type, this is identical with the 4to edition of 1814.

This edition, convenient in form, and otherwise unexceptionable, is a favorite one, perhaps oftener met with, even in this country, than the original of 1814.

It was re-issued under date of 1817, apparently from the same plates; though I observe, on the last two pages of vol. I, a slight discrepancy in the set of the type. If re-issued subsequent to 1817, as may easily have been the case, the fact has not come to my notice. These two English 3 volume 8vo editions of 1815 and 1817 may be quoted without distinction, as the pagination is the same.

Meanwhile, in the year 1815, the work was translated into German and published in that language. The abridged title of a German version, not seen by me, is thus given by Kayser; I regret that I am unable to complete the title:—

[1815.] "*(Lewis und Clarke.) Tagebuch e. Entdeckungsreise durch Nord. Amerika in d. Jahren 1804-6. Aus d. Engl. v. Weyland. Mit 1 Karte.*" <*Neue Bibliothek der wichtigsten Beschreibungen, u. s. w. (Weimar, gr. 8vo.) Bd. I, 1815.*

To judge from the title and date of publication, this is probably a version of the authentic narrative. It is the only German edition of which I have become aware.

The next edition of the authentic narrative is a Dutch version, by Van Kampen, published in three 8vo volumes, at Dordrecht, 1816-18. It is entitled as follows:—

[1816-18.] *Reize | naar | de Bronnen van den Missouri, | en door het vaste land van America | naar de Zuidzee. | Gedaan op last van de Regering der Vereenigde Staten van America, | in de jaren 1804, 1805 en 1806. | Door de Kapiteins | Lewis en Clarke. | Met eene Kaart. | — | Uit het Engelsch vertaald door | N. G. Van Kampen. | — | Eerste [tweede, derde en Laatste] Deel. | \* | Te Dordrecht, | Bij A. Blussé & Zoon. | 1816- [1817, 1818].*

*Three vols. 8vo. Vol. I, 1816, pp. i-xxxvii, 1-398, map. Vol. II, 1817, pp. i-viii, 1-390. Vol. III, 1818, pp. i-xii, 1-335.*

This appears to be a fair and complete version, probably made from the English 3-volume edition of 1815 (Rees' preface being reproduced); the Dutch translator prefixes a preface of his own (Voorberigt van den Vertaler, pp. iii-xviii of vol. I.) Excepting this addition, the work seems to be exactly reproduced in Dutch.

While this Dutch translation was in progress, there appeared an Irish edition at Dublin, in 1817. I have been unable to lay hands on a copy of this edition, in connection with the publication of which I have heard the familiar allusion to "Dublin pirates." The most precise information I have gained respecting it is given by Thomas W. Field, from which it would appear that it is the authentic narrative. Mr. Field says: "Another edition of Biddle's [*i. e.*, "Paul Allen's"] history of Lewis and Clarke's expedition was printed in Dublin, under the same title as the London edition of three volumes, from which it was copied, with the addition on the title-page of,—'With the Life of Captain Lewis, by T. Jefferson, President of the United States of America.' In Two Volumes. Dublin, J. Christie, 1817. 8vo. Vol. I, prel. pp. xxxix.+588. Vol. II, prel. pp. xiv.+643+7 plates and map."

During the period from 1817 to 1842, there were no editions or re-imprints of Lewis and Clarke that I know of. At the latter date, the Messrs. Harper and Brothers, having procured a copyright, made the first issue of a new and modified edition, prepared for them by the Rev. Dr. M'Vickar. There have been a great many (see beyond) successive re-issues of this handy little abridgment, all of which, however, appear to have been printed from the same plates. They are in fact the same edition, though in some of the copies I have seen the maps are omitted. The following title is quoted from the issue of 1868:—

[1842-75.] *History | of | the Expedition | under the command of | Captains Lewis and Clarke, | to | the sources of the Missouri, thence across the Rocky | Mountains, and down the River Columbia to the | Pacific ocean : performed during the | years 1804, 1805, 1806, | by order of the | Govern-*

*ment of the United States.* | Prepared for the press | by Paul Allen, Esq.  
 | Revised and abridged by the omission of unimportant de- | tails, with an  
 introduction and notes, | by Archibald M'Vickar. | In two volumes. | Vol.  
 I. [II.] | New York : | Harper & Brothers, Publishers, | Franklin  
 Square. | 1868.

Two vols. 18mo, some of the issues forming part of Harpers' series, "The Family Library." Vol. I, pp. i-vi, i\*-v\*, vii-li, 53-371, 3 maps. Vol. II, pp. i-x, 11-395, 3 maps. (> Vol. II, Appendix, "Further enumeration and description of the Quadrupeds, Birds, Fishes, and Plants noticed during the Expedition," pp. 339-378.)

By the obliging attentions of the publishers themselves, I have been put in possession of the following memoranda of the dates of the successive issues, most of which consisted of 250 copies : September, 1842; January, 1843; May, 1843; January, 1844; July, 1845; April, 1847; May, 1850; August, 1851; June, 1855; April, 1858; November, 1860; February, 1868; March, 1871 (vol. II); April, 1872 (vol. I); February, 1874 (vol. II); December, 1875 (vol. I)—in all fourteen issues of the whole work, under sixteen different dates.

The advertisement of this edition, dated 1842, fully explains its character, in the following extract: "The work [*i. e.*, the Biddle-Allen edition] being now nearly out of print, it seemed to the publishers a suitable time to put forth an edition of the Journal of Lewis and Clarke pruned of unimportant details, with a sketch of the progress of maritime discovery on the Pacific coast, a summary account of earlier attempts to penetrate this vast wilderness, and such extracts and illustrations from the narratives of later travellers, led by objects of trade, the love of science, or religious zeal, as the limits of the undertaking would allow. [The editor's, M'Vickar's, introduction, pp. vii-li of vol. I, consists of this matter.] The matter of the original journal is indicated by inverted commas, and where portions of it, embracing minute and uninteresting particulars, have been omitted, the leading facts have been briefly stated by the editor in his own words, so that the connection of the narrative is preserved unbroken, and nothing of importance is lost to the reader. . . . The seventh chapter of the second volume [of American edition of 1814], giving an account of the quadrupeds, birds, and plants found on the Columbia and its tributaries, has, to avoid unnecessary interruption of the course of the narrative, been transferred to the appendix."

This, then, is an editorial abridgment, or digest, of the original; faithfully, and, on the whole, judiciously executed. The natural-history chapter, besides being relegated to an appendix, is transposed as to its botanical and zoological portions, the botany coming first in the original, the zoology in the present edition; it is, furthermore, like the rest of the work, abridged at the editor's discretion, the omissions being indicated by asterisks; a new feature, moreover, is introduced, being foot-note references to the pages of the body of the work on which the various species were before mentioned. This is a valuable set of cross-references, for the narrative accounts scattered through the work are often no less important than the formal notices themselves.

*Résumé of the several publications noticed in the foregoing pages.*

I. Jefferson's Message and accompanying documents, 8vo,\* Washington, A. & G. Way, 1806.—The same, 8vo, New York, Hopkins and



Seymour, 1806.—The same, 8vo, London, R. Phillips, 1807.—The same, mutilated, abridged, and with irrelevant interpolation, 8vo, London, 1809.—The same, 12mo, Philadelphia, H. Lester, 1809.—The same, with slight modification, 12mo, Baltimore, W. Fisher, 1812 and 1813.—The same, with slight further alteration, 16mo, Dayton, B. F. Ells, 1840.—8 editions.

II. Gass' Journal, 12mo, Pittsburgh, D. Mc'Keehan, 1807.—The same, "8vo, Pittsburgh, 1808" (not seen by me).—The same, "8vo, London, J. Budd, 1808" (not seen by me).—The same, 12mo, Philadelphia, M. Carey, 1810, and "1812" (latter not seen by me).—The same (?), "8vo, Paris, A. Bertrand, 1810" (French translation, not seen by me).—6 editions.

III. The Biddle-Allen authentic narrative, 2 vols., 8vo, Philadelphia, 1814.—The same, 4to, London, T. Rees, 1814.—The same, 3 vols., 8vo, London, T. Rees, 1815 and 1817.—The same (?), "8vo, Weimar, 1815" (German translation, not seen by me).—The same, 3 vols., 8vo, Dordrecht, A. Blussé & Zoon, 1816–18 (Dutch translation).—The same, 2 vols., 8vo, Dublin, J. Christie, 1817 (not seen by me).—The same, abridged, with notes, 2 vols., 18mo, New York, Harper & Bro., 1842–75.—21 editions.

In all, 35 different imprints of the three series of books, about 20 of which may be considered as *bona fide* different editions.

Having thus traced the history of the numerous "Lewis and Clarkes," authentic, abridged, spurious, or collateral, I proceed to a commentary on the zoological results of the expedition, as far as concerns the mammals and birds, to which the authors' attention was mainly directed.

## PART II.—ZOOLOGICAL.

The contribution to zoology made by Lewis and Clarke, though not extensive, shares the interest which attaches to every result of this unprecedented expedition; and assumes, moreover, great importance, in the fact that to it we owe our first acquaintance with a large number of species. It represented a decided advance upon the knowledge before possessed of this subject. Lewis and Clarke were the real discoverers, and actually the original describers, of many animals with which their names are seldom associated now in our acquired familiarity with the same species under names subsequently bestowed by others. They were not trained naturalists,\* nor naturalists at all, excepting in so far as good observers in any new field, keenly alive to the requirements of the case, become naturalists as a matter of course. Unfortunately for themselves, they imposed no scientific names, which throws them out of the case in questions of nomenclature. But their descriptions, characterized by a straightforward simplicity, and in general accurate, suffice for the identification of most of their species, and many of them are the whole basis of scientific terms afterward introduced into the system. These descriptions of physical characters are often accompanied by notices of habits, of geographical distribution, economic importance, &c. The authors seem to have paid more attention to the mammals and birds than to other classes of animals, and were certainly more successful in presenting them intelligibly. To these two classes, therefore, attention will be here confined.

It is my present purpose to notice in detail the several mammals and birds described by Lewis and Clarke, dwelling specially upon such as were discovered by them, or those upon which species were subse-

\* Thus, "shell-fish" (*Mollusca*) and whales are enumerated as fishes, and bats as birds.



quently established, whether rightly or not, in the recognized system of nomenclature.

It should be observed that attention is not to be restricted to the set of formal general descriptions gathered in the special part of the work above signalized; for scattered throughout the narrative are other accounts sometimes quite as much to the point. Nearly all the animals mentioned are, however, brought together in the chapter specially devoted to this purpose, though there are some notable exceptions.

The writer who imposed most of the names which have been based primarily and exclusively upon Lewis and Clarke was, as will be seen, Mr. George Ord. This was done in the zoological portion of the second American edition of Guthrie's *Geography*,\* second volume, a work which appeared in 1815, thus immediately after the first authentic edition of the narrative. The article in question remained obscure, being seldom if ever quoted, until brought into its proper light by Prof. S. F. Baird, in his studies of American Mammals and Birds (1857 and 1858). About the same time, or shortly afterward, some of Lewis and Clarke's species fell in the way of C. S. Rafinesque, who also based some names, generic and specific, upon their descriptions, and in so doing gave trouble, much as usual. The narrative, becoming at once widely known, has continued to be freely cited to the present day.

In the account with which I continue, four leading editions of the authentic narrative are quoted by pages, and are severally distinguished as follows:—

"Allen" signifies the original 2-vol. American edition, of 1814.

"Rees, 4to," signifies the first English edition, of the same date.

"Rees, 8vo," signifies the second English, 3-vol., 8vo edition, of 1815.

"M<sup>r</sup> Vickar" signifies the last American, 2-vol., 18mo edition, of 1842-'75.

### 1.—Mammals.

Lewis and Clarke divide the quadrupeds of the country from the Rocky Mountains to the Pacific into (1) the domestic and (2) the wild. Of the former only the horse and dog are mentioned. Of (2) are given "the brown, white, or grisly bear, the black bear; the deer, common red deer, the black-tailed deer, the mule deer, the elk, the wolves, the large brown wolf, the small wolf of the plains, the large wolf of the plains, the tyger-cat, the foxes, the common red fox, the silver fox, the fisher or black fox, the large red fox of the plains, the kit-fox, or the small fox of the plains, the antelope, the sheep, beaver, common otter, sea-otter, mink, seal, racoon, squirrels, large gray squirrel, small gray squirrel, small brown squirrel, ground squirrel, braro, rat, mouse, mole, panther, hare, rabbit, polecat or skunk." (Allen, ii. 165.)

#### "Brown, White, or Grisly Bear."

Allen, ii. 165 (cf. op. cit. i. 200, 207, 214, 216, 265, 281; ii. 287, 303, 342, 395).—Rees, 4to, 462 (cf. op. cit. 147, 157, 158, 202, 208, 553, 565, 593, 632).—Rees, 8vo, iii. 25 (cf. op. cit. 273, 284, 292, 296, 362, 388;

\* This book is rare: I have seen but one copy. The title is "A new | Geographical Historical, | and | Commercial Grammar; | and present state of the | several Kingdoms of the World. | Containing, | [then follows summary of contents, &c., too long to quote]. Johnson and Warner. Philadelphia. 1815. 8vo. 2d vol. prel. pp., pp. 1-603, maps. Mr. Ord's zoological matter will be found at pp. 290-361. It consists of compiled nominal lists of vertebrates, followed by a general running account of some of them. Many new species are named, especially of mammals and birds.

iii. 193, 215, 294, 340, 341).—M'Vickar, ii. 340 (cf. op. cit. i. 189, 195, 198, 200, 227, 240; ii. 225, 235, 264, 299).

*Ursus horribilis*, Ord, Gnthrie's Geog. ii. 1815, 291, 299.

*Ursus ferox*, Richardson, Fn. Bor.-Am. i. 1829, 24, pl. 1.

*Ursus candescens*, H. Smith, Griff. Cuv. ii. 1827, 229; v. 1827, 112; plate from Lewis and Clarke's specimen.

Lewis and Clarke's accounts furnish the basis of Ord's name. They are quoted by Richardson as authors of the name *Ursus ferox*; but as I fail to find any such name after diligent search in all the places of the several editions where the species is mentioned (*vide* the quotations above), it seems probable that "*Ursus ferox*" is merely a latin translation of the vernacular. The Grizzly Bear was found to be so numerous and so fierce, especially in the Upper Missouri region, as to form a serious impediment to progress, and an enemy that not seldom endangered the lives of members of the party. The authors carefully distinguish it from the following species, in all its great variety of color, which they are at pains to describe repeatedly, laying special stress upon size and form of the feet and claws, dimensions and general build, inability to climb tress, ferocity, and tenacity of life.

#### "Black Bear."

Allen, ii. 166.—Rees, 4to, 463.—Rees, 8vo, iii. 25.—M'Vickar, ii. 340.

*Ursus americanus*, Pallas, Spic. Zool. xiv. 1780, and of authors.

*Black Bear*, Pennant, Hist. Quad. 1781, No. 174; Arct. Zool. i. 1784, 57.

Referred by the authors to the common species of the United States; sta to inhabit timbered portions of the Rocky Mountains, and borders of the Columbia Plains, as well as the tract thence to the Pacific.

#### "Common Red Deer."

Allen, ii. 166.—Rees, 4to, 463.—Rees, 8vo, iii. 26.—M'Vickar, ii. 341.

*Cervus macrourus*, Rafinesque, Am. Month. Mag. i. 1817, 436.

*Cervus leucurus*, Dougl., Zool. Journ. iv. 1829, 330.

Giving the habitat of this deer to be from the Rocky Mountains to the Pacific, the authors state that it does not appear to differ essentially from that of the United States (*i. e.*, *C. virginianus*), "being the same in shape, size, and appearance. The tail is, however, different, which is of unusual length, far exceeding that of the common deer. Captain Lewis measured one, and found it to be 17 inches long." The two names above quoted have been based upon this deer of the West; Douglas's referring more particularly to the Pacific animal, while Rafinesque's (which has priority) rests upon an uncertain description by Lerye, of an animal from the Missouri region. The great length of the tail ascribed by Lewis and Clarke has been found not to hold in all cases, the tail being usually but 12 or 14 inches long, and thus little more than that of the ordinary *C. virginianus*. Naturalists are now reverting to the original opinion of Lewis and Clarke that the animal cannot be specifically separated from the last named. For those who wish to recognize varietal distinction, the name *macrourus* of Rafinesque is available, having priority over *leucurus* of Douglas. The deer is given as *C. virginianus macrurus* by Dr. Yarrow and myself in a volume now about issuing from the press (December, 1875).

#### "Black-tailed Fallow Deer."

Allen, ii. 166.—Rees, 4to, 463.—Rees, 8vo, iii. 25.—M'Vickar, ii. 341.

*Cervus macrotis* var. *columbianus*, Rich., Fn. Bor.-Am. i. 1829, 255, l. 20.

*Cervus lewisii*, Peale, U. S. Expl. Exped. 1848, 39.

*Cervus richardsonii*, Aud. and Bach., Quad. N. Am. ii. 1851, 211; iii. 1853, 27, pl. 106.

The authors correctly distinguish the Black-tailed Deer of the Pacific slopes from the Mule Deer, and were perfectly right in considering it as a distinct species. It seems to have been first named technically in 1829 by Richardson; it was subsequently dedicated by Peale to Captain Lewis, and afterward rededicated by Audubon and Bachman to Sir John Richardson.

*"Mule-Deer."*

Allen, ii. 167.—Rees, 4to, 463.—Rees, 8vo, iii. 27.—M'Vickar, ii. 341.

*Cervus macrotis*, Say, Long's Exped. R. Mts. ii. 1823, 88.

In most parts of the West, this well-known and wide-ranging species is known chiefly as the "Black-tailed Deer," to distinguish it from the "White-tailed" (i. e., *C. virginianus macrurus*). The Columbian, or true Black-tailed Deer of Lewis and Clarke, having the same vernacular name, unnecessary confusion has always prevailed to some extent, especially among sportsmen and amateur naturalists. There are, however, three perfectly good species of deer in the West, precisely as originally discriminated by Lewis and Clarke, and as here given.

*"The Elk."*

Allen, ii. 167.—Rees, 4to, 464.—Rees, 8vo, iii. 27.—M'Vickar, ii. 341.

*Cervus wapiti*, Barton, Trans. Am. Philos. Soc. vi. 1809, 70.

*Cervus major*, Ord, Guthrie's Geog. 2d Am. ed. ii. 1815, 292, 306.

*Cervus* or *Elaphus canadensis* of authors.

*"Large Brown Wolf."*—"Large Wolf of the Plains."

Allen, ii. 167.—Rees, 4to, 464.—Rees, 8vo, iii. 27, 28.—M'Vickar, ii. 341, 342.

Lewis and Clarke are less fortunate in treating of the wolves, since they separate the single large species which exists into two, on the unsafe ground of color, and unite one of their varieties with the entirely different Coyoté (*C. latrans*). The mistake, however, might readily be made, since the Large Gray Wolf of the Plains, in its usual style of coloration, is almost identical with the Coyoté. No species, fortunately, appears to have been based directly upon Lewis and Clarke's account.

*"Small Wolf of the Plains."*

Allen, ii. 167.—Rees, 4to, 464.—Rees, 8vo, iii. 28.—M'Vickar, ii. 342.

*Canis latrans*, Say, Long's Exped. R. Mts. i. 1823, 163, and of authors generally.

From what has been said, it will appear that Lewis and Clarke insufficiently distinguished this animal from the last, though they were perfectly familiar with it. It is carefully and fully described under the name of the "Small Wolf or Burrowing-Dog of the Prairies" in the body of the narrative (Allen, i. 207; Rees, 4to, 152; Rees, 8vo, i. 283; M'Vickar, i. 194). No species has been based upon their account.

*"Tiger-Cat."*

Allen, ii. 167.—Rees, 4to, 464.—Rees, 8vo, iii. 28.—M'Vickar, ii. 342.

*Lynx fasciatus*, Rafinesque, Am. Month. Mag. ii. 1817, 46.

Under the singularly misleading name of "Tiger-Cat," the Lynx of the Northwest is elaborately described by the authors with minute accuracy. Rafinesque gave it the name of *Lynx fasciatus*, through a misunderstanding of the meaning of Lewis and Clarke, he supposing that they said the "back" was transversely striped, whereas it is evident from the context that they meant the back or inner side of the legs. The mistake is exposed by Baird (M. N. A. 1857, 98). The animal is now generally considered as a local race of the common *Lynx rufus*, though for many years rated as a distinct species.

"Large Red Fox of the Plains."

Allen, ii. 168.—Rees, 4to, 464.—Rees, 8vo., iii. 29.—M'Vickar, ii. 342.

I refrain from any further citation in this case, since it is uncertain whether the actual reference is to the common species, or to the larger and otherwise somewhat different animal called *Vulpes macrourus* by Baird, and *V. utah* by Audubon and Bachman.

"Black Fox."

Allen, ii. 168.—Rees, 4to, 465.—Rees, 8vo, iii. 29.—M'Vickar, ii. 342. *Mustela canadensis*, Schreber, Säug. iii. 1778, 492, pl. 144; and authors. *Mustela pennantii*, Erxleben, Syst. An. 1777, 479; and authors.

Better known under the name of "Fisher," also applied to it by the authors, who describe it sufficiently, and note its agility in climbing. Their use of the term "Black Fox" is to be carefully discriminated from any application of the term to the following variety of *Vulpes fulvus*.

"Silver Fox."

Allen, ii. 169.—Rees, 4to, 465.—Rees, 8vo, iii. 29.—M'Vickar, ii. 343. *Canis argentatus*, Shaw, Gen. Zool. i. 1800, 325. *Vulpes fulvus* var. *argentatus* of modern authors.

A well-known strain of the common species, though it should be noted that the actual reference may have been to the same state of pelage of *V. macrurus*. The authors note its rarity and beauty, and compare it with their "Large Red Fox."

"The Antelope."

Allen, ii. 169.—Rees, 4to, 465.—Rees, 8vo, iii. 430.—M'Vickar, ii. 343. *Antelope americana*, Ord, Guthrie's Geog. 2d Am. ed. ii. 1815, 292, 308.—Doughty's Cab. N. H. ii. 1833, 49, pl. 5 (from Lewis and Clarke's specimen in Phila. Mus.).

*Antilocapra americana*, Ord, Bull. Soc. Philom. 1818, 146, and of most authors.

It is certainly not a little singular that a large ruminant, which in the West yields only to the Buffalo itself in its abundance and the universality of its distribution, should not have been scientifically named until 1815; yet, for all I can discover to the contrary, such is the case. Lewis and Clarke were of course not its discoverers, nor are their accounts the earliest, since, for example, the animal was mentioned by Hernandez; yet the imposition of Ord's name along with several others based exclusively upon these authors makes them virtually the sponsors of the species upon its introduction to the system.



“The Sheep.”

- Allen, ii. 169.—Rees, 4to, 465.—Rees, 8vo, iii. 30.—M·Vickar, ii. 343.  
*Ovis montana*, Ord, Guthrie's Geog. 2d Am. ed. ii. 1815, 292, 309.  
 (Not of authors generally.)  
*Capra montana*, Harlan, Fn. Amer. 1825, 253.  
*Aploceros montanus* of modern authors.

Lewis and Clarke were perfectly well acquainted with the Bighorn or true Rocky Mountain Sheep, as is evident in several places in their Narrative. It is somewhat singular that it should not be included in the formal enumeration, since it inhabits the Rocky Mountains as well as the Upper Missouri region. But the “sheep” here referred to is the animal now known as the Rocky Mountain Goat, as evidenced by their mention of long, white wool and erect, pointed horns. Here, somewhat as in the case of the Antelope, the authors are sponsors of the species, having given one of the earliest, if not the first, perfectly recognizable account.

“The Beaver.”

- Allen, ii. 170.—Rees, 4to, 466.—Rees, 8vo, iii. 31.—M·Vickar, ii. 344.  
*Castor fiber* of early American authors.  
*Castor canadensis*, Kuhl, Beit. Zool. 1820, 64, and most late American writers.

The account is chiefly occupied with the castor of the animal, mode of using it, &c.

“Common Otter.”

- Allen, ii. 171.—Rees, 4to, 467.—Rees, 8vo, iii. 32.—M·Vickar, ii. 344.  
*Lutra canadensis*, J. Sab., App. Frankl. Journ. 1823, 653.  
*Lutra canadensis et californica*, Bd., M. N. A. 1857, 184, 187.  
 Simply mentioned as the same as that of the United States.

“Sea Otter.”

- Lutra marina*, Steller, Nov. Comm. Petrop. ii. 1751, 357, pl. 16.  
*Enhydra marina*, Fleming, Phil. Zool. ii. 1822, 187.

The authors give a fair description of this animal, then known, however, for more than half a century, from the account given by Steller.

“The Mink.”

- Allen, ii. 172.—Rees, 4to, 467.—Rees, 8vo, iii. 33.—M·Vickar, ii. 345.  
*Mustela vison*, Briss., Quad. 1756, 246.  
*Putorius vison*, Gapper, Zool. Journ. v. 1830, 202, and of late authors generally.

“The Seal.”

The description given by the authors does not afford means of identifying the species to which they refer.

“The Raccoon.”

- Allen, ii. 172.—Rees, 4to, 467.—Rees, 8vo, iii. 34.—M·Vickar, ii. 345.  
 ? *Procyon hernandezii*, Wagler, Oken's Isis, xxiv. 1831, 514.

No description is given, and we can only suppose, from the locality, that the actual reference is to this species or variety.

"Large Gray Squirrel."

Allen, ii. 172.—Rees, 4to, 468.—Rees, 8vo, iii. 34.—M'Vickar, ii. 345.  
*Sciurus fossor*, Peale, U. S. Expl. Exped. 1848, 55.  
*Sciurus heermanni*, LeConte, Proc. Acad. Phila. 1852, 149.

As has been remarked by Professor Baird, it is not a little singular that an animal described with such detail by these authors was not named by early writers like Ord, Rafinesque, and Harlan, though other species were so promptly introduced into the system; but I have seen no name for the species earlier than that bestowed by Peale.

"Small Gray Squirrel."

Allen, ii. 173.—Rees, 4to, 468.—Rees, 8vo, iii. 35.—M'Vickar, ii. 345.  
 ? *Sciurus hudsonius* var.  $\beta$ , Rich., Fn. Bor.-Am. i. 1829, 190.  
 ? *Sciurus richardsoni*, Bachm., P. Z. S. 1838, 100.

This animal is said to be common in all timbered portions of the Rocky Mountains. From the description, especially the mention of the black stripe along the sides, it is clearly one of the *S. hudsonius* group, but it is difficult to fix it precisely. As, however, the *S. douglassii* is the one evidently referred to under the name (see below) of "Small Brown Squirrel," we may suppose, upon the principle of exclusion, that by "Small Gray Squirrel" the authors meant the one subsequently named *S. richardsoni* by Dr. Bachman.

"Burrowing Squirrel."

Allen, ii. 173.—Rees, 4to, 468.—Rees, 8vo, iii. 35.—M'Vickar, ii. 346.  
*Arctomys columbianus*, Ord, Guthrie's Geog. 2d Am. ed. ii. 1815, 292, 303 (based on Lewis and Clarke).

*Cynomys columbianus*, Allen, Proc. Bost. Soc. Nat. Hist. 1874, p. —.

*Anisonyx brachiura*, Rafinesque, Am. Monthly Mag. ii. 1817, 45.

*Arctomys brachyura*, Harlan, Fn. Amer. 1825, 304.

*Arctomys lewisii*, Aud. & Bach., Quad. N. A. iii. 1853, 32, pl. 107 (based on a specimen in Zool. Soc. Lond. labeled "*Arctomys brachyura*").

*Cynomys gunnisonii*, Baird, Proc. Acad. Phila. 1855, 334.

Notwithstanding that the authors' description of this animal is one of the most elaborate and extended of the whole series, it has occasioned misunderstanding, and given rise to numerous synonyms. The first author to take up the account seems to have been Ord, who bases his *Arctomys columbianus* upon the animal, and quotes Lewis and Clarke at length. In 1817, Rafinesque, upon a misconstruction of a phrase used by the authors, based his genus *Anisonyx* with the species *A. brachiura*. In treating of *C. gunnisonii*, which he had named in 1855, Professor Baird, in 1857, discussed the applicability of all these names to the Burrowing Squirrel of Lewis and Clarke, bringing the *Arctomys lewisii* of Audubon and Bachman into the same connection. Very recently, in his admirable review of the Scuridae, Mr. J. A. Allen has first collated the full synonymy, identifying the several supposed species here mentioned with the animal of Lewis and Clarke.

"Small Brown Squirrel."

Allen, ii. 174.—Rees, 4to, 469.—Rees, 8vo, iii. 37.—M'Vickar, ii. 347.

*Sciurus douglassii*, Bachm., P. Z. S. 1838, 99.

*Sciurus townsendii*, Bachm. Journ. Acad. Phila. viii. 1839, 63.

*Sciurus belcheri*, Gray, Ann. Mag. N. H. X. 1842, 263.

*Sciurus suckleyi*, Baird, Proc. Acad. Phila. 1855, 333.

The description given, like that of the "Small Gray Squirrel," clearly indicates a form of the *S. hudsonius* group, while the statement that the belly is "pale-red" would seem to fix the species as the same as that afterward successively described under the four different names above quoted.

"Ground Squirrel."

Allen, ii. 175.—Rees, 4to, 469.—Rees, 8vo, iii. 38.—M'Vickar, ii. 347.

? *Tamias townsendii*, Bachm., Journ. Phila. Acad. viii. 1839, 68.

? *Tamias hindsii*, Gray, Ann. Mag. N. H. x. 1842, 264.

? *Tamias cooperi*, Baird, Proc. Acad. Phila. 1855, 334.

The authors do not distinguish this animal from the common species of the United States, and give no description; it is only therefore to be presumed, from the locality, that they had this species of *Tamias* in view.

"Barking Squirrel."

Allen, ii. 175.—Rees, 4to, 469.—Rees, 8vo, iii. 38.—M'Vickar, ii. 348.

*Arctomys ludoviciana*, Ord, Guthrie's Geog. 2d. Am. ed. ii. 1815, 292, 302 (based on Lewis and Clarke).

*Cynomys socialis*, *C. grisea*, Rafinesque, Am. Monthly, ii. 1817, 45.

*Arctomys missouriensis*, Warden's Descr. U. S. v. 1820, 627.

*Arctomys latrans*, Harl., Fn. Amer. 1825, 306.

*Cynomys ludovicianus* of recent authors.

A full and excellent account of this species is given by the authors, who seem to have been the first to describe this species of *Cynomys*, as well as the foregoing one; and upon their account, quoted at length, Ord based his name.

"Sewellel."

Allen, ii. 176.—Rees, 4to, 470.—Rees, 8vo, iii. 39.—M'Vickar, ii. 348.

*Anisonyx rufa*, Rafinesque, Am. Monthly Mag. ii. 1817, 45.

*Apodontia leporina*, Richardson, Zool. Journ. iv. 1829, 335; Fn. Bor.-Am. i. 1829, 211, pl. 18, C., f. 7-14, and of recent authors.

This curious animal, fully and pertinently described by Lewis and Clarke, was soon after named *Anisonyx rufa* by Rafinesque, whose name may require to stand, as it is based entirely upon Lewis and Clarke, though the generic term *Anisonyx* arose in a misunderstanding of his, and rather bears upon *Cynomys* than upon *Apodontia*.

"Braro."

Allen, ii. 177.—Rees, 4to, 471.—Rees, 8vo, iii. 40.—Blairau, M'Vickar, ii. 349.

*American Badger*, Pennant, Arct. Zool. i. 1784, 71.

*Meles taxus*, var. *americanus*, Bodd., Elench. Anim. i. 1784, 136.

*Ursus labradorius*, Gm., Syst. Nat. i. 1788, 102.

*Meles jeffersonii*, Harl., Fn. Amer. 1825, 309 (based on Lewis and Clarke).

Under the term "Braro," evidently a corruption of the French "blaireau," and so corrected in the M'Vickar edition, the authors very fully describe the Badger, already well known, however, by previous accounts, though in 1825 a special name was based by Harlan upon their description.

"The Rat."

Allen, ii. 178.—Rees, 4to, 471.—Rees, 8vo, iii. 41.—M·Vickar, ii. 350—(See also Allen, i. 289; Rees, 4to, 212—Rees, 8vo, ii. 396; M·Vickar, i. 244.)

*Mus cinereus*, Ord, Guthrie's Geogr. 2d Am. ed. ii. 1815, 292 (based on Lewis and Clarke).

*Neotoma cinerea*, Baird, M. N. A. 1857, 499.

*Myoxus drummondii*, Rich., Zool. Journ. iii. 1828, 517.

*Neotoma drummondii*, Rich., Fn. Bor.-Am. i. 1829, 137, pl. 8.

*Neotoma occidentalis*, Coop., MSS.—Bd., Proc. Acad. Phila. 1855, 335; M. N. A. 1857, 496.

The bushy-tailed *Neotoma* of the West is very clearly noted by the authors, who even institute comparisons between it and *N. floridana* of the South Atlantic States, with which Captain Lewis seems to have been also familiar. The description given at the earlier page above quoted is better than that in the formal enumeration. This animal is the basis of *Mus cinereus* of Ord.

"The Mouse."

Allen, ii. 178.—Rees, 4to, 472.—Rees, 8vo, iii. 42.—M·Vickar, ii. 350  
No description; not identifiable.

"The Mole."

Allen, ii. 178.—Rees, 4to, 472.—Rees, 8vo, iii. 42.—M·Vickar, ii. 350.

Not described, nor distinguished from the common mole of the United States, though the actual reference is doubtless to the animal subsequently named *Scalops townsendii* by Bachman.

"The Panther."

Allen, ii. 178.—Rees, 4to, 472.—Rees, 8vo, iii. 42.—M·Vickar, ii. 350.  
*Felis concolor*, Linn., Mantissa, 1771, 522, pl. 2.

"The Hare."

Allen, ii. 178.—Rees, 4to, 472.—Rees, 8vo, iii. 42.—M·Vickar, ii. 42.

*Lepus virginianus*, var., Harl., Fn. Amer. 1825, 310.

*Lepus virginianus*, Rich., Fn. Bor.-Am. i. 1829, 224; not of authors.

*Lepus campestris*, Bach., Journ. Phila. Acad. vii. 1837, 340.

*Lepus townsendii*, Bach., Journ. Phila. Acad. viii. 1839, 90, pl. 2.

The Hare described at length by Lewis and Clarke is one of the very large species called "Jackass Rabbits" in the West; it is also one of those which turn white in winter; and their explicit mention of the white tail seems to fix their species as that which has acquired the synonymy above quoted. In crossing the country, they must have become perfectly familiar with the now *L. campestris*, which is the characteristic species of Dakota and Montana; and, as they make no discrimination of a Pacific-side species different from that of the Missouri plains, it is fair to identify their account as is here done, although they may have actually included in it another species.

"The Rabbit."

Allen, ii. 179.—Rees, 4to, 473.—Rees, 8vo, iii. 44.—M·Vickar, ii. 351.

*Lepus nuttallii*, Bach., Journ. Phila. Acad. vii. 1837, 345, pl. 22.

*Lepus artemisia*, Bach., Journ. Phila. Acad. viii. 1839, 94.



The authors' account is brief and not descriptive; but the indication, coupled with the locality, leaves no doubt of the species they had in view.

"*The Polecat.*"

Allen, ii. 179.—Rees, 4to, 473.—Rees, 8vo. iii. 44.—M'Vickar, ii. 351.

*Viverra mephitica*, Shaw, Gen. Zool. i. 1800, 390.

*Mephites chinga* and *M. americana* of authors.

A short account of this animal, which, as the authors say, is the same as that of other parts of North America.

2.—*Birds.*

"*The Grouse or Prairie-hen.*"

Allen, ii. 180.—Rees, 4to, 473.—Rees, 8vo. iii. 44.—M'Vicar, ii. 351.

*Phasianus columbianus*, Ord, Guthrie's Geog. 2d Am. ed. ii. 1815, 317 (based on Lewis and Clarke).

*Pediocetes columbianus*, Elliot, Proc. Acad. Phila. 1862, 403.

*Pediocetes phasianellus*, var. *columbianus*, Coues, Birds Northwest, 1874, 407.

? *Tetrao phasianellus*, Ord, Guthrie's Geog. 2d Am. ed. ii. 1815, 317 (uncertain).

The authors' account is extended and sufficiently minute to show that they had in view the "Sharp-tailed Grouse," or *Pediocetes phasianellus* of writers who refer to the United States bird. In giving the name "Columbia Pheasant" to this bird (coupled with the technical term "*Phasianus columbianus*"), Ord must not be understood as quoting Lewis and Clarke; for no such name is found in their work: they give the bird under the caption above cited, and the "Pheasants" they speak of are species of *Tetrao* and *Bonasa*. The quotation of "the Columbia Pheasant of Lewis and Clarke" has been copied by several writers, myself among the number, evidently without looking up the original. As describers of the United States *Pediocetes*, Lewis and Clarke have probably priority; though the Arctic form, the true *Tetrao phasianellus* of Linnæus, had long before been recorded by other writers.

"*Cock of the Plains.*"

Allen, ii. 180.—Rees, 4to, 473.—Rees, 8vo. iii. 45.—M'Vickar, ii. 352.

*Tetrao urophasianus*, Bp., Zool. Journ. iii. 1828, 214.

*Centrocercus urophasianus* of modern writers.

It is singular that Ord, in naming so many species of Lewis and Clarke's, should be entirely silent respecting this one, which they describe at length and with particularity, perhaps for the first time. The earliest name I have found for it is that of Bonaparte just given.

"*Large Black and White Pheasant.*"

Allen, ii. 181.—Rees, 4to, 474.—Rees, 8vo, iii. 47.—M'Vickar, ii. 353

"*Small Speckled Pheasant.*"

Allen, ii. 182.—Rees, 4to, 475.—Rees, 8vo, iii. 48.—M'Vickar, ii. 354.

"*Small Brown Pheasant.*"

Allen, ii. 182.—Rees, 4to, 475.—Rees, 8vo, iii. 48.—M'Vickar, ii. 354.

*Tetrao fusca*, Ord, Guthrie's Geog. 2d Am. ed. ii. 1815, 317.

Notwithstanding that the authors give extended accounts of their three kinds of Pheasants, the descriptions are not of a character to render them readily available for identification of the species. The first, the "large black and white" one, would be taken for *Tetrao obscurus*, or its variety *richardsonii*; but the mention of eighteen feathers in the tail, and of "tufts of long black feathers" on the neck, militates against this supposition, rather suggesting *Bonasa*. Nevertheless, the two following species are said to be only "half the size" of this first one, which could only be true if the latter were as large as *T. obscurus*. The descriptions of all three, in fact, seem to have been drawn up from memory, with some confusion of ideas; and, however they may finally be identified, I think such identification likely to remain merely opinionative. The "Small Brown Pheasant" is the only one of the three upon which a specific name has been established, it being the basis of *Tetrao fusca* of Ord. This name has been referred by some late writers with a query to *Tetrao canadensis* var. *franklini*, but I do not see anything in the original account which forbids us to suppose it intended for *Bonasa umbellus* var. *sabinii*. The name of Ord should not be employed as long as the uncertainty continues.

"The Buzzard."

Allen, ii. 183.—Rees, 4to, 475.—Rees, 8vo, 48. M'Vicar, ii. 354.

*Vultur californianus*, Shaw, Nat. Misc. ix. 1797, pl. 301.

*Cathartes californianus* of recent authors in general.

*Vultur columbianus*, Ord, Guthrie's Geog. 2d Am. ed. ii. 1815, 315, (based on Lewis and Clarke).

*Cathartes vulturinus*, Temm., Pl. Color. 1820, 31.

Under the name of "Buzzard" the authors minutely describe the great Californian Vulture, which, though already provided with a name, was renamed by Ord, upon the strength of their description, and subsequently by Temminck, apparently upon some principle like *stet pro ratione voluntas*, for the last-named author was sufficiently aware that there was a prior designation.

"The Robin."

Allen, ii. 184.—Rees, 4to, 476.—Rees, 8vo, iii. 50.—M'Vicar, ii. 355.

*Turdus naevius*, Gm., Syst. Nat. i. 1788, 817, and of authors.

*Turdus aureus*! Pall., Zoog. Rosso-As. i. 1831, 448, No. 87.

*Orpheus meruloides*, Sw. & Rich., Fn. Bor.-Am. ii. 1831, 187, pl. 38.

Described with great particularity and with accuracy. Here given under the common name, which is more frequently used in connection with *Turdus migratorius*; the authors distinguish it from the latter, a little further on, as the "Columbian Robin."

"Crow and Raven."

Allen, ii. 185.—Rees, 4to, 477.—Rees, 8vo, iii. 51.—M'Vicar, ii. 356.

No description is given, and in fact the authors speak of the two birds as if they were one. An allusion to the small size of the Columbia River bird permits the supposition that they may have had *Corvus caurinus* in partial view.

"The Hawks."

Allen, ii. 185.—Rees, 4to, 477.—Rees, 8vo, 51. M'Vicar, ii. 356.

The authors give no recognizable account of the several Hawks they treat of collectively in a single paragraph; though the allusion to the "blue wings" of one of them may be supposed to signify *Circus*.

"*Large Blackbird.*"

Allen, ii. 185.—Rees, 4to, 477.—Rees, 8vo, iii. 51.—M·Vickar, ii. 356.  
Nothing on which to base even a surmise.

"*Large Hooting Owl.*"

Allen, ii. 185.—Rees, 4to, 477.—Rees, 8vo, iii. 51.—M·Vickar, ii. 356.  
May be supposed to refer to *Bubo virginianus*, though there is nothing requiring such identification.

"*Turtle Dove and the Robin.*"

Allen, ii. 185.—Rees, 4to, 477.—Rees, 8vo, iii. 52.—M·Vickar, ii. 356.  
*Zenaidura carolinensis* and *Turdus migratorius*.

"*The Magpie.*"

Allen, ii. 185.—Rees, 4to, 477.—Rees, 8vo, iii. 52.—M·Vicar, ii. 356.  
*Pica hudsonica* of authors.

"*Large Woodpecker or Laycock.*"

Allen, ii. 185.—Rees, 4to, 477.—Rees, 8vo, iii. 52.—M·Vickar, ii. 356.

"Laycock," though repeated in all the editions, is an evident misprint for "Logcock," a common name of *Hylatomus pileatus*.

The "Lark Woodpecker" mentioned without description in the same paragraph is not identifiable, but we may suppose it to be a *Colaptes*, from the resemblance of the black pectoral crescent to that of a *Sturnella*, called Lark by the authors.

"*The Lark.*"

Allen, ii. 186.—Rees, 4to, 477.—Rees, 8vo, iii. 52.—M·Vickar, ii. 356.  
*Sturnella neglecta*, Aud., B. Amer. 8vo ed. vii. 1843, 339, pl. 487.

"*Flycatcher, of two species.*"

Allen, ii. 186.—Rees, 4to, 477.—Rees, 8vo, iii. 52.—M·Vickar, ii. 356.

Under this head, the authors describe two small birds, but not recognizably; I do not even pretend to say to what family they belong.

"*Blue-crested Corvus.*"

Allen, ii. 186.—Rees, 4to, 478.—Rees, 8vo, iii. 53.—M·Vickar, ii. 357.  
*Cyanura stelleri* of authors.

"*Small White-breasted Corvus.*"

Allen, ii. 186.—Rees, 4to, 478.—Rees, 8vo, iii. 53.—M·Vickar, ii. 357.

In the earlier editions the name is as given here; M·Vickar, upon what authority does not appear, has it "*White-crested.*" I do not know what bird is intended by this, unless the authors refer to *Cyanocitta*.

"*The Snipe, &c.*"

Allen, ii. 186.—Rees, 8vo, 478.—Rees, 8vo, iii. 53.—M·Vickar, ii. 357.

Two species are indicated, one of them probably *Gallinago wilsoni*, but neither of them certain.

(No. 17, the next "bird" mentioned by the authors, is the "Leather-winged Bat," an unidentifiable species of mammal.)

"White Woodpecker."

Allen, ii. 186.—Rees, 4to, 478.—Rees, 8vo, iii. 53.—M·Vickar, ii. 356.

Mention of the "red head" of this species would seem to indicate *Melanerpes erythrocephalus*, but as this species scarcely inhabits the country, if at all, the actual reference is more probably to *Picus harrisi*.

"Black Woodpecker."

Allen, ii. 187.—Rees, 4to, 478.—Rees, 8vo, iii. 54.—M·Vickar, ii. 357.

*Picus torquatus*, Wils., Am. Orn. iii. 1811, 31, pl. 20, f. 3.

*Melanerpes torquatus*, Bp., Conspect. Av. i. 1850, 115.

*Celeus torquatus*, Woodh., Sitgreave's Rep. 1853, 90.

*Asyndesmus torquatus*, Coles, Proc. Acad. Phila. 1866, 56.

"*Picus lewisii*, Drapiez."

Described at length and with great particularity. Before the publication of this work, the bird had already been described by A. Wilson from the specimens brought in by Captain Lewis, to whom the species was dedicated, though only by the vernacular name of "Lewis's Woodpecker." According to G. R. Gray, the term "*Picus lewisii*" was, however, subsequently introduced by Drapiez. I have not been able to lay hand on the reference.

In this connection, special attention is directed to a name, *Picus montanus*, established by Ord in 1815, (Guthrie's Geog. 2d Am. ed. ii, 1815, p. 316), and which has usually been quoted as a synonym of this species. Reference to the original, however, will show that it does not belong here at all. Ord quotes Lewis and Clarke (Allen edition, i. 398) as the basis of his species *P. montanus*. Turning to this place, we read, "Among the woods, Captain Clarke observed a species of woodpecker, the beak and tail of which were white, the wings black, and every other part of the body of a dark brown; its size was that of the Robin, and it fed on the seeds of the pine." Now this is an entirely different bird from any mentioned in the formal summary we are here considering. There is much reason to believe, though some terms of the description do not fit exactly, that the bird here meant is the *Picicorvus columbianus*, which has a white tail, black wings, the rest of the body ashy (not unlikely to be called "brown" from recollection), which feeds upon pine-seeds, and the general habits and appearance of which strongly recall a Woodpecker; in fact, the bird has been mistaken for a Woodpecker by some scientific observers at least as late as 1872. At any rate, *Picus montanus* of Ord has nothing to do with *P. torquatus*. Is it possible that a species of *Picus*, with a white tail, remains to be discovered in the forests of the West? For we are instantly reminded, in this connection, of such a bird, described by the Prince Paul of Württemberg, under the name of *Picus leucurus*. But I am of opinion that this name also refers to the *Picicorvus columbianus*.

"Calamut (or Calumet) Eagle."

Allen, ii. 188.—Rees, 4to, 479.—Rees, 8vo, iii. 55.—M·Vickar, ii. 357.

*Aquila chrysaetos*, *melanotos*, *fulva*, *canadensis*, *regia*, &c., of authors.

The Golden Eagle of North America is described in detail by the authors under the above name. Their account is copied, or compiled, with comment, by numerous writers.



*"Large Blue and Brown Herons, or Cranes."*

Allen, ii. 189.—Rees, 4to, 479.—Rees, 8vo, iii. 56.—M'Vickar, ii. 358.  
*Ardea canadensis*, Linn., S. N. i. 1766, 234.  
*Grus canadensis* of authors.

*"Fishing Hawk."*

Allen, ii. 189.—Rees, 4to, 480.—Rees, 8vo, iii. 57.—M'Vickar, ii. 358.  
*Falco* or *Pandion carolinensis* of authors.

*"Blue-crested or King-fisher."*

Allen, ii. 189.—Rees, 4to, 480.—Rees, 8vo, iii. 57.—M'Vickar, ii. 358.  
*Ceryle alcyon* of authors.

*"Gulls."*

Allen, ii. 189.—Rees, 4to, 480.—Rees, 8vo, iii. 57.—M'Vickar, ii. 359.  
 Four kinds are alluded to; none of them described.

*"The Cormorant."*

Allen, ii. 189.—Rees, 4to, 480.—Rees, 8vo, iii. 57.—M'Vickar, ii. 359.  
*Graculus dilophus* of authors.

This identification is permissible, from the authors' remark that the Cormorant is not different from that found on the Potomac River.

*"The Loon."*

Allen, ii. 189.—Rees, 4to, 480.—Rees, 8vo, iii. 57.—M'Vickar, ii. 359.

Two species of "Loon," one of them apparently a Grebe, are noted, but neither of them is recognizably described.

*"White Brant."*

Allen, ii. 190.—Rees, 4to, 481.—Rees, 8vo, iii. 58.—M'Vickar, ii. 359.  
*Anser hyperboreus*, Pallas, Spic. Zool. viii. 1767, pl. 65, and of authors generally.

Very fully described in this place, and also earlier in the narrative (Allen, i. 206, &c.).

*"Brown Brant."*

Allen, ii. 191.—Rees, 4to, 481.—Rees, 8vo, iii. 59.—M'Vickar, ii. 359.  
*Anas*, *Anser*, or *Bernicla brenta* of authors.  
 Fully described, and compared with *B. canadensis*.

*"Pied Brant."*

Allen, ii. 191.—Rees, 4to, 481.—Rees, 8vo, iii. 60.—M'Vickar, ii. 360.  
*Anser albifrons* of American writers.  
*Anser gambeli*, Hartl., R. M. Z. 1852, 7.

Like the other Brant, this species is described at length and with accuracy.

*"Geese."*

Allen, ii. 192.—Rees, 4to, 482.—Rees, 8vo, iii. 61.—M'Vickar, ii. 360.

These are said to be "either the large or small kind"; by the former being evidently meant the *Bernicla canadensis*, while the other refers, it is to be supposed, to *B. hutchensii*. Neither is well described.

“*Swan, large and small.*”

Allen, ii. 192.—Rees, 4to, 482.—Rees, 8vo, iii. 61.—M'Vickar, ii. 360.

By their size and the difference in the voice, the two American species are correctly discriminated by Lewis and Clarke; unfortunately, however, they blunder in the matter by saying that the large species (*i. e.*, the one subsequently called *Cygnus buccinator* by Sir John Richardson) is the same as that common on the Atlantic coast; whereas, it is their other species, here called by them the Whistling Swan, in contradistinction to the Trumpeter, that is found also in the Atlantic States. But this confusion must not be allowed to stand in the light of the main point of this case, which is, that, in 1815, Ord based his *Anas columbianus* exclusively upon the Whistling Swan of Lewis and Clarke, *i. e.*, upon the smaller of the two species, subsequently named *Cygnus americanus* by Sharpless. The blunder of the original authors does not extend to Ord, to whose name *columbianus* should be restored its rightful priority.

“*Duckinmallard.*”

Allen, ii. 193.—Rees, 4to, 483.—Rees, 8vo, iii. 62.—M'Vickar, ii. 360.  
*Anas boschas* of authors.

“*Canvas-back Duck.*”

Allen, ii. 193.—Rees, 4to, 483.—Rees, 8vo, iii. 62.—M'Vickar, 360.  
*Anas vallisneria* of authors.

“*Red-headed Fishing Duck.*”

Allen, ii. 193.—Rees, 4to, 483.—Rees, 8vo, iii. 62.—M'Vickar, ii. 361.  
? *Filigula americana* of authors.

“*Black and White Duck.*”

Allen, ii. 193.—Rees, 4to, 483.—Rees, 8vo, iii. 63.—M'Vickar, ii. 361.  
*Bucephala albeola* of late authors.

“*Black Duck.*”

Allen, ii. 194.—Rees, 4to, 483.—Rees, 8vo, iii. 63.—M'Vickar, ii. 361.  
*Fulica americana*, Gm., auct.

Very fully and accurately described.

“*Divers.*”

Allen, ii. 194.—Rees, 4to, 484.—Rees, 8vo, iii. 64.—M'Vickar, ii. 361.

Under this head the authors describe two species of *Podiceps*, the larger one being perhaps *P. occidentalis*, Lawr., but the description of neither is sufficiently diagnostic.

“*Blue-winged Teal.*”

Allen, ii. 195.—Rees, 4to, 484.—Rees, 8vo, iii. 65.—M'Vickar, ii. 361.

The paragraph beginning with this name goes on to describe a duck, apparently supposed, and intended to be considered, not as a Blue-winged Teal, but as some other species, for which no name is offered. The description, though lengthy, applies exactly to no species with which I am acquainted; but, from its general drift, I should suppose the authors had in view some species of *Fulix*, probably *F. marila*.

## NOTICE OF A VERY LARGE GONIATITE FROM EASTERN KANSAS.

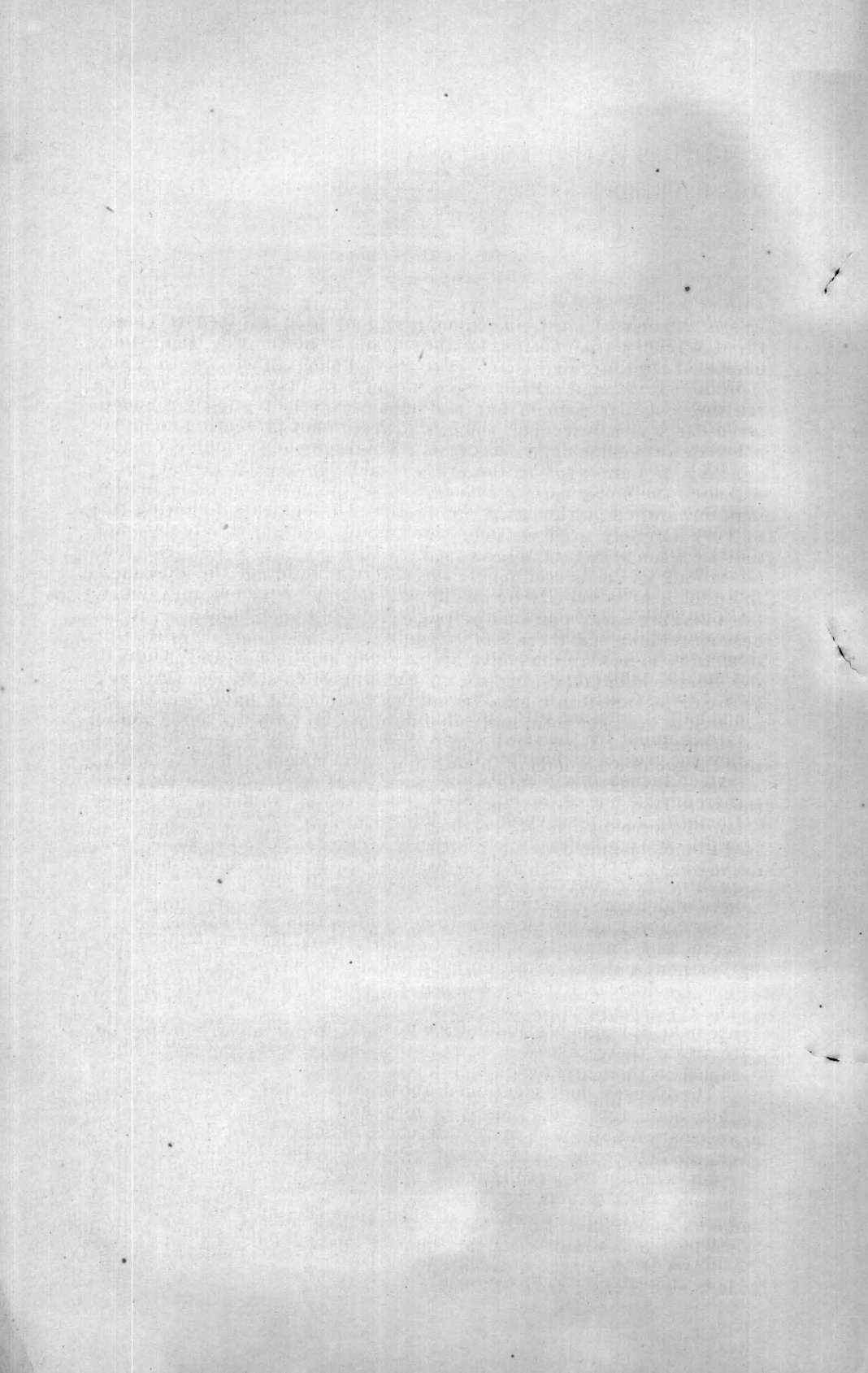
BY F. B. MEEK.

My attention was recently called by Mr. Stevenson, of Dr. Hayden's United States Geological Survey of the Territories, to a ponderous, irregular mass of hard limestone, that had been shipped to General Charles Ewing, from Osage, Eastern Kansas, by the Rev. Paul Ponzi-gliione, of the Osage mission. It contained shells of *Spirifer cameratus*, *Athyris subtilita*, and other forms common in the upper beds of the Coal-Measures of that region; but the object that had attracted especial attention was a brownish, smooth, oval-subglobose body, exposed on one side by breaking the mass from the parent rock.

At a first glance, this oval body seemed to present a startling resemblance to the upper surface of a large human skull. On a closer examination, however, although sutures were visible in it, they were seen to be very different from those of the human cranium. In other words, they were found to be the septal sutures of a gigantic shell of the genus *Goniatites*. As thus seen partly exposed, this shell measures six inches in breadth or convexity by about nine inches in its greater diameter. On breaking away portions of the enveloping rock, however, it soon became evident that there was still another volution outside of that first seen, thus increasing the convexity to about nine inches, and the greater diameter to about eleven inches. Yet this outer volution is septate as far as it can be traced in the rock; and as there must have been at least one-half of another turn, and possibly more, to form the outer non-septate chamber for the reception of the animal, I think we may safely infer that the greater diameter of this shell, when entire, must have been about sixteen inches, and possibly more. So far as I can remember, this would therefore be one of the largest, if not the largest, species of the genus *Goniatites* ever discovered. *G. Marcellensis*, and some other species, are said to have attained to the dimensions of twelve inches in their greater diameter; but these are discoid, and not subglobose shells, and consequently their convexity and entire volume are much less than the shell here under consideration.

So far as I have been able to determine, this shell agrees well in its septa and form with a large *Goniatite* from Kansas, figured by Mr. Worthen and the writer on page 390 of the second volume of the Illinois Geological Reports, and there referred to *G. globulosus*, M. & W. The type-specimens of that species were found in the Upper Coal-Measure near Springfield, Ill., and seem, so far as I am aware, rarely if ever to attain there a size of more than about one to two and one-fourth inches in their greater diameter.

The Kansas shell mentioned above, and that here under consideration, both agree very closely in form and their septa with the Illinois species; but, although mere differences of size are not generally reliable characters for the separation of species, the question naturally suggests itself, whether shells differing so *extremely* in size (the large being found in one district and the small in another) are really specifically the same? Although not fully satisfied that this may not be the case, it seems to me desirable that this huge Kansas shell should be at least viewed as belonging to a distinct variety. Consequently, I would propose to designate it as *G. globulosus* var. *excelsus*.





## FOSSIL ORTHOPTERA FROM THE ROCKY MOUNTAIN TERTIARIES.

BY SAMUEL H. SCUDDER.

*Homœogamia ventriosus*.—The remains upon which this species is based consist of the apical portion of the ventral surface of a cockroach's abdomen found by Mr. T. L. Mead at Castello's ranch, South Park, Colorado. Five segments are seen in natural juxtaposition, showing that the apical portion of the abdomen was very regularly rounded, almost exactly semicircular; the terminal segment presenting no break in the regular continuity of the curve. This segment was ample, broader than long, and probably neither very tumid nor greatly keeled; for in the present perfectly flattened condition of the fossil there is neither break nor folding of the integument; the two segments following this are very strongly arched (the penultimate being semicircular) and greatly contracted at the middle, so that this portion is not less than half as long as the lateral parts; the anterior border of the antepenultimate segment is straight along the middle; the segment anterior to this is also arched, though not strongly, is oppositely sinuate (as are, to a less extent, the segments posterior to it), and also much contracted in the middle, so as to be less than half as long as at the sides; while its predecessor is slightly arcuate in the opposite direction (probably exactly transverse in life), and equal or subequal throughout. All the segments are uniformly, rather abundantly, and very delicately granulate throughout. There is no trace of cerci, but the place where they should occur is too broken to assert that they did not exist externally; still the conformation of this region would lead one to suppose that they must have been excessively minute, and perhaps altogether concealed within the segments, as in *Cryptocercus* Scudd.

Length of fragment, 8<sup>mm</sup>; width of same, 12.25<sup>mm</sup>; length of terminal segment, 3.6<sup>mm</sup>; width of same, 6.3<sup>mm</sup>; length of antepenultimate segment in the middle, 0.6<sup>mm</sup>; at the sides, 1.85<sup>mm</sup>.

I have referred this species to *Homœogamia* with some doubt; on some accounts, it would seem to be more nearly allied to *Polyphaga*, but, as the specimen is too fragmentary to allow of more exact determination, I have preferred to place it in the New World genus, rather than in its close ally, which is restricted to the Old World; possibly it should be referred to neither, but to a new group.

A great many fossil cockroaches have been found, mostly in the Carboniferous formation. Nearly all are described from tegmina. Only a few species have been discovered in the Tertiaries; and one of these, found in Parschlug in Steiermark, has been referred by Heer\* to *Heterogamia*, a name used to include both *Polyphaga* and *Homœogamia*.

*Labidura tertiaria*.—A single fairly-preserved specimen (No. 1725) was found near Castello's ranch, South Park, Colorado, by Mr. Jesse Randall, and brought home by the United States Geological Survey of the Territories. The specimen is a female, as shown by the number of the abdominal segments. The head, which is badly preserved, is of about equal length and breadth behind the labrum, so that as a whole it is

\*Heer, Insekt.Fauna Oening. ii, 1, pl. 1, fig. 1.

longer than broad, but it is slightly narrower than the pronotum, and has large eyes, reaching back nearly to the hind border—characters which are scarcely in keeping with the reference of the insect to *Labi-dura*; with no other genus, however, does it accord so well. The antennæ are too fragmentary to furnish us any clew to their structure, and of the mouth-parts nothing can be determined. The pronotum is of about equal length and breadth, quadrate, the anterior angles bluntly rounded, the posterior border very broadly convex, the margin nowhere elevated; there is a slight but distinct median sulcation, fading posteriorly. The rest of the thorax is of the same width as the pronotum; the tegmina are twice as long as the pronotum, squarely docked at the tip; the folded wings reach more than half as far again beyond the tip of the tegmina, and, in the specimen examined, are partially opened on the right side, so as to show incompletely the peculiar rayed arrangement of the nervules. The legs are short, the femora broadest in the middle, the tibiæ moderately slender and slightly bowed; but the tarsal joints are too obscure to determine their structure; the faintness of the legs probably shows that they were paler than the body, which is of a griseous brown. The joint of the abdomen can readily be distinguished, although a portion of some of them are injured, and especially of the third segment; this renders it impossible to decide certainly whether plications were present on this segment; but there are no signs of any, either on this or on the better-preserved second segment; it would seem as if such plications should be seen, if present, at least on the second segment; for the abdomen is preserved on a partial side-view, and the portion of the second segment where plications are to be looked for is perfectly preserved. The abdomen appears to have been equal as viewed from above, although the greater fullness in depth of the middle joints gives the specimen preserved on a partial side-view a great height in the middle; the last segment is large, scarcely narrowing, and furnished with a pair of stout, straight, tapering, bluntly-pointed forceps as viewed from the side, not so long as the tegmina, and apparently curved inward at the tip. The insect is slightly smaller than the common *L. riparia* (Pall.) Dohrn.

Entire length of specimen, 19.5<sup>mm</sup>; length of head, 2.2<sup>mm</sup>; breadth of same, 1.75<sup>mm</sup>; length of pronotum, 1.9<sup>mm</sup>; breadth of same, 2<sup>mm</sup>; length of tegmina, 3.6<sup>mm</sup>; extent of folded wings beyond tegmina, 2.5<sup>mm</sup>; length of hind femora, 2.75<sup>mm</sup>; of hind tibiæ, 1.75<sup>mm</sup>; of forceps, 2.5<sup>mm</sup>.

Fossil earwigs are not unknown, but have been imperfectly studied. Heer gives woodcuts of two, *Forficula recta*, which he compares with *Forcinella annulipes* (Luc.) Dohrn, and *F. primigenia*, compared with the common earwig, i. e., *Forf. auricularia* Linn.; he also mentions a third, *F. minuta*, compared with *Labia minor* (Linn.) Leach. These all come from the Miocene of Oeningen.\* Long ago, Serres spoke of a species allied to *Forficula parallela* Fabr. and *F. auricularia* Linn. (both the same species), of which many specimens had been found at Aix in Provence.† Perhaps Mr. Oustalet, in his forthcoming memoirs on the fossil insects of Southern France, will acquaint us more perfectly with this insect; but I saw no specimens of *Forficulariæ* in his hands in 1873. One or two species are also reported from Prussian amber. Burmeister says that the Berlin Museum possesses a specimen "having short filiform antennæ, composed at most of sixteen joints, gradually increasing

\* Heer, *Urwelt der Schweiz*, 367, figs. 226-227.

† Serres, *Géognosie des terrains tertiaires*, 225.

in size, and a short, straight ovipositor [forceps]. It is of the size of *Forficula minor*, but is still a larva."\* And Germar writes that, up to 1856, but a single specimen of an earwig had been found in amber, a larva, agreeing so completely with the full-grown larva of *Forf. auricularia* that description and illustration are superfluous.† The full-grown larva of *F. auricularia*, however, has but fourteen, and even the perfect insect but fourteen or fifteen, joints in its antennæ; and the forceps are neither short nor straight, but nearly as long as the abdomen, and incurved at the tip. It would seem probable, therefore, that these authors were writing of different insects, and that Germar overlooked Burmeister's statement. Gravenhorst, also, is said to refer to a German species from amber; but I have not yet been able to examine the reference to it. Finally, Massalongo describes and figures‡ a species from the Tertiaries of Monte Bolca, which he calls *Forficula bolcansis*, and which again he compares to *F. auricularia* Linn. This species, which in point of fact is much nearer *F. albipennis* Muehl. than *F. auricularia*, is even more perfect than ours, and seems to be a true *Forficula*. The same may probably be said of Heer's species, or at least of the two which are figured (none are described); but in these cases we have only a few abdominal joints and the forceps from which to draw any conclusion. It is by no means improbable that the two insects figured by Heer are different sexes of the same species.

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\* Burmeister, Handb. of Entom., Engl. trans., 579.

† Berendt, Org. Reste in Bernstein, ii, i, 33.

‡ Massalongo, Strid. Pal., 15-16, pl. 1, figs. 5-7.





# STUDIES OF THE AMERICAN FALCONIDÆ.

BY ROBERT RIDGWAY.

## MONOGRAPH OF THE POLYBORI.

### INTRODUCTION.

The *Polybori* are a group of American hawks of very peculiar appearance and habits, and without near relatives in any other portion of the world. Feeding largely upon carrion, while many of the species have the head partly denuded of feathers, most authors have assigned them a position near, or even amongst, the Vultures; but recent investigations have proven that, while they are true *Falconidæ*, they are at the same time not only widely different from the American Vultures (a very distinct family—the *Cathartidæ*), but closely related to the Falcons proper, to whose subfamily they belong, instead of that in which the Old-World Vultures are placed.

We have elsewhere demonstrated that the *Falconidæ* are divisible into but two subfamilies, the *Falconinæ* and the *Buteoninæ*, to the former of which belong the true Falcons, besides the genera *Micrastur* and *Herpetotheres*, and the subjects of the present paper; while to the latter belong the Old-World Vultures and all other *Falconidæ*.\*

The characters defining the two primary divisions of the family, and which constitute them separate subfamilies, are more internal than external, so that they can be distinctly diagnosed by the osteological structure alone. The following diagnoses may serve for illustration of these wide differences.

- A.—Scapular process of the coracoid produced forward so as to meet the clavicle. Nasal bones almost completely ossified, the nostril being a small, usually circular, opening, with a conspicuous, usually central, bony tubercle. Inferior surface of the supramaxillary with a prominent median angular ridge. Superciliary process of the lachrymal consisting of a single piece. Subfamily *Falconinæ*.
- B.—Scapular process of the coracoid *not* produced forward, but separated from the clavicle by a wide interval. Nasal bones very incompletely ossified, the nostrils large, without bony tubercle, and frequently with an incomplete septum. Inferior surface of the supramaxillary without median ridge. Superciliary process of the lachrymal usually consisting of two pieces, joined by a cartilaginous hinge.....Subfamily *Buteoninæ*.

The subfamily *Falconinæ* is composed of four well-defined groups, the *Falcones*, *Polybori*, *Micrastures*, and *Herpetotheres*, which are distinguished as follows:

\* See "Outlines of a Natural Arrangement of the Falconidæ," in Bull. No. 4, second series, pp. 225-231, pls. xi-xviii.

- A.—Posterior toe abbreviated, very much shorter than the lateral pair; tarsi and toes covered with small hexagonal scales, larger in front.
- a. Nostril a small, round, or oblique opening, with a bony-rimmed margin and central tubercle.
    1. Superior tomium with a conspicuous tooth, and inferior tomium with a corresponding notch. Superciliary process of the lachrymal elongated, narrow, reaching nearly across the orbit. Posterior margin of the sternum nearly even, with a pair of large oval foramina. One or two outer primaries with their inner webs emarginated near their tips. Group 1, *Falcones*.
    2. Tomia without tooth or notch.\* Superciliary process of the lachrymal abbreviated, reaching only half-way across the orbit. Posterior margin of the sternum with a pair of deep indentations. Three or more outer primaries with their inner webs sinuated near the middle portion..... Group 2, *Polybori*.
    - b. Nostril a large opening without bony-rimmed margin or central tubercle.
      3. Superciliary process of the lachrymal elongated, broad, extending nearly across the orbit. Tomia without tooth or notch. Posterior margin of the sternum as in *Falcones*. Four or more outer primaries with inner webs sinuated near the middle portion..... Group 3, *Micrastures*.
  - B.—Posterior toe elongated, almost equal to the lateral pair. Tarsi and toes covered uniformly with thin, rough, imbricated scales.
    4. Tomia without tooth or notch. Nostril as in *Falcones* and *Polybori*. Superciliary process of the lachrymal elongated, very broad, reaching nearly across the orbit. Posterior margin of the sternum nearly even, entire, and without foramina. Primaries as in *Polybori* and *Micrastures*. Group 4, *Herpetotheres*.

#### Genera of POLYBORI.

- A.—Tarsus  $\frac{1}{2}$ – $\frac{2}{3}$  its length longer than the middle toe; outer toe but little longer than the inner; posterior toe very decidedly shorter than the inner. Inner webs of primaries deeply sinuated. Habits chiefly terrestrial.
- a. Nostril linear, obliquely vertical, its tubercle concealed; anterior outline of the cere vertical and nearly straight.
    1. POLYBORUS.—Nostril linear, obliquely vertical, its posterior end the upper one; situated in the upper anterior corner of the cere. Occipital feathers elongated into a depressed crest.
  - b. Nostril circular, in the middle of the cere, its tubercle exposed; anterior outline of the cere doubly curved.
    2. PHALCOBÆNUS.—Tooth and notch of the tomia of the bill nearly obsolete; lower jaw nearly naked; outer toe not appreciably longer than the inner; posterior toe reaching much beyond the first joint of the middle toe; claws remarkably blunt, slightly curved; posterior face of the tarsus without distinct rows of quadrate scales; upper tail-coverts remarkably developed, covering nearly two-thirds the tail; size large.

\* Though faint indications of these are observable in some genera (*Milvago* and *Phalcoebænus*) in the horny sheath, they cannot be detected in the bones of the bill.

3. *MILVAGO*.—Tooth and notch of the tomia of the bill distinctly indicated; lower jaw normally feathered; outer toe decidedly longer than the inner; posterior toe not reaching the first joint of the middle toe; claws sharp, strongly curved (as in the *Falcones*); posterior face of the tarsus with two distinct rows of quadrate scales. Upper tail-coverts normal, covering about one-third the tail; size small.

B.—Tarsus scarcely longer than the middle toe; outer toe very much longer than the inner, which is but little longer than the posterior one. Inner webs of primaries shallowly sinuated. Habits strictly arboreal.

4. *IBYCTER*.—Nostril circular, near the middle of the cere, its tubercle either concealed or exposed; anterior outline of the cere doubly curved. Tarsus without transverse scutellæ either in front or behind.

### *Geographical distribution.*

The *Polybori* are most numerous in South America, only four of the eleven known species being found north of Panama; and of these, one (*Milvago chimachima*) finds its northern limit in Veragua, while another (*Ibycter americanus*) extends no farther northward than Guatemala and Honduras. The remaining two extend northward only to the limits of the subtropical country, or to about latitude 30°; *Polyborus cheriway* being more or less abundant along the southern border of the United States, from Southern California to Florida, as well as throughout Middle America, thence southward, and also on the islands of Socorro and Tres Marias, off the western coast of Mexico, and in Cuba; *P. lutosus* is restricted to the Guadalupe Islands, off the coast of Lower California, between latitude 28° 45' and 29° 10' north. In South America, the range of the group is much more extensive, every portion of the continent, even to its extreme southern limits, being inhabited by one or more of the species. According to the distribution of these birds, the region inhabited by them may be divided into the following "provinces" and "districts."

A.—NORTHERN PROVINCE—embracing the whole of Middle America north to about 30°, and also that portion of South America comprised by the states of Ecuador, New Granada, Venezuela, and Guiana, and the northern drainage of the Amazon. It comprises—

a. *Continental District*, including the whole excepting the Guadalupe Islands; and

b. *Guadalupe District*, embracing the islands of Guadalupe alone.

B.—SOUTHERN PROVINCE—embracing all of South America south of the Amazon and Ecuador. It comprises—

a. *Atlantic District*, or the entire area drained by the rivers flowing into the Atlantic;

b. *Magellan District*, or the country adjacent to the Straits of Magellan, embracing Tierra del Fuego, Falkland Islands, and the eastern slope of Patagonia;

c. *Southern Pacific District*, or the narrow Pacific slope, from Patagonia northward to Peru; and

d. *Northern Pacific District*, a continuation of the former northward to Colombia.

According to this arrangement, the species are distributed as follows:



Name of species.	Northern Province.		Southern Province.			
	Guadalupe District.	Continental District.	Atlantic District.	Magellan District.	Pacific District.	Colombian District.
<i>Polyborus tharus</i> .....			*	*	*	
<i>lutosus</i> .....	*					
<i>cheriway</i> .....		*				*
<i>Phalcobæus megalopterus</i> .....					*	
<i>carunculatus</i> .....						*
<i>albicularis</i> .....						
<i>Senex anstralis</i> .....			*	*		
<i>Milvago chimango</i> .....			*	*	*	
<i>chimachima</i> .....		*	*			
<i>Ibycter americanus</i> .....		*				*
<i>Daptrius ater</i> .....			*			

### GENUS POLYBORUS, VIEILLLOT.

*Polyborus* VIEILL. Analyse, 1816, 22 [type *Falco brasiliensis* Gmel.=*P. tharus* (Mol.)].  
*Caracara* CUVIER, Reg. Anim. 1817 [same type.]

**Osteology.**—Skull most like that of *Phalcobæus*, but premaxillaries more compressed, dome of the cranium flatter and more horizontal, and the nasal bones and palatines of different form. Nostrils closely approximated in the upper edge of the nasals, oblong and oblique, their upper end being the posterior one. Posterior outline of the palatines nearly truncated, with the postero-lateral outline forming an abrupt angle; mandible with an acute-oblong vacuity posterior to the middle portion. Length of skull, 3.30–3.35 (1.60–1.65); breadth, 1.55–1.60; depth, 1.20–1.25.\*

Posterior margin of the sternum with a pair of widely-separated, very deep, rounded indentations. Tarsus : tibia=3.50 : 4.50.

**Pterylosis.**†—Remiges, 24. Lores, orbital region, cheeks, lower jaw, and chin naked, with very scant fine bristles; the skin brightly colored (red or yellow) in life; entire cere behind and below the nostril, scantily covered with fine hairs. Entire pileum densely covered with well-developed normal feathers, those of the occiput elongated into a tolerably lengthened, depressed crest; feathers of the nape also well developed. Contour-feathers compact. Remiges well developed, the primaries nearly twice the secondaries, hard, stiff, the third to fourth longest, the first shorter than sixth or seventh; inner webs of outer four distinctly, and the fifth just perceptibly, sinuated. Tail about two-thirds the wing, slightly rounded, or nearly even, the webs firm and shafts strong.

**General external features.**—General aspect somewhat vulturine, but bearing and manners almost gallinaceous. Neck and legs very long. Bill very high and much compressed, the commissure very straight and regular, and nearly parallel with the superior outline; cere very narrow, its anterior outline vertical and straight. Nostril very small, linear, obliquely vertical, its upper end being the posterior one; situated in the upper anterior corner of the cere. Feet almost gallinaceous in appear-

\*The number in parentheses denotes the length of the premaxillary alone from the point to the beginning of the frontal.

†Nitzsch (p. 63) says that the distribution of the feather-tracts in the *Polybori* is much the same as in the *Buteones*. *Polyborus* is said to differ from the other genera of the group "in having the dorsal portion of the spinal tract elliptically dilated upon the caudal pit, where it incloses a narrow lanceolate insular space—a structure which I have never met with elsewhere among the Falcons."



ance, the tarsus being almost twice the middle toe in length; outer toe longer than the inner; posterior much the shortest. Claws normal, but rather long, and only slightly curved. Tarsus with large scutellæ in front, the lower four to six forming a single frontal row, continuous with the scutellæ of the top of the toes, the rest arranged in two parallel series of alternating hexagonal, longitudinal scales; those on the posterior face smaller, more nearly quadrate, and arranged in two longitudinal series.

*Species of POLYBORUS.*

**COMMON CHARACTERS.**—*Adult*: Whole pileum, the body and wings in general, and terminal zone of the tail dull black or dark brown. Cheeks, neck, jugulum, tail-coverts, and tail dull white or light isabella-color; nape, interscapulars, and breast with transverse bars of the two colors mixed; tail with narrow transverse bars of grayish.—*Young*: Black replaced by dull brown; transverse bars of the neck and breast replaced by longitudinal stripes. Tail similar.

*Species.*

A.—Rump and tail-coverts white, with or without bars; tail white, with narrow bars of grayish-brown, and a terminal zone of black 2.00 inches or more wide.

1. *P. CHERIWAY*.—Whole body and middle wing-coverts uniform black (*adult*) or brown (*young*); tail-coverts without bars; terminal zone of the tail about 2.50 wide. Wing, 14.60–16.50; tail, 8.80–10.00; culmen, 1.20–1.48; tarsus, 3.20–3.75; middle toe, 1.90–2.10. *Hab.*—Northern Tropical America, from Ecuador and Northern Amazonia to southern border of the United States, including the entire border from Southern California to Florida; Cuba.

2. *P. THARUS*.—Whole body and middle wing-coverts transversely barred (*adult*) or striped (*young*); tail-coverts barred; terminal zone of tail about 2.00 wide. Wing, 16.00–17.70; tail, 10.00–11.00; culmen, 1.20–1.41; tarsus, 3.70–4.20; middle toe, 1.75–2.30. *Hab.*—South America, from Amazonia southward.

B.—Rump and tail-coverts light isabella-color, with broad brown bars; tail light isabella-color, with broad bars of grayish-brown bordered by zigzag, narrow bars of dusky; terminal zone less than 2.00 inches wide.

3. *P. LUTOSUS*.—Lower parts entirely light isabella-color, with transverse bars (*adult*) or longitudinal stripes (*young*) of dark brown, except on throat and cheeks; scapulars plain brown. Terminal zone of tail, 1.00–1.60 wide; wing, 15.00–16.40; tail, 10.50–11.65; culmen, 1.25–1.35; tarsus, 3.50–3.75; middle toe, 1.80–2.10. *Hab.*—Guadalupe Islands.

POLYBORUS THARUS.

SOUTHERN CARACARA.

*Falco tharus* MOL. Sagg. St. Nat. Chile, 1782, 264.—GM. S. N. i, 1788, 254.—LATH. Index Orn. i, 1790, 16; Syn. Supp. ii, 18; Gen. Hist. i, 243.—DAUD. Tr. Orn. ii, 1800, 41.—SHAW, Zool. vii, 1812, 170.

*Polyborus tharus* STRICKL. Orn. Synon. i, 1855, 19 (part).—GURNEY, Cat. Rapt. Norw. Mus. 1864, 17.—SCL. & SALV. Ibis, iv, 1868, 187 (Gregory Bay, Str. Magellan, May–Feb.); P. Z. S. 1869, 252 (Maruria, Venezuela); ib. 634 (Conchitas, Resp. Argent.); Nomencl. Neotr. 1873, 123.—GRAY, Hand List, i, 1869, 17.—RIGW. Pr. A. N. S. Philad. 1870, 145; Pr. Boston Soc. May, 1873. —; in B. B. & R. Hist. N. Am. B. iii, 1874, 177 (foot-note).—HUDSON, P. Z. S. 1872, 534 (Rio Negro, Patagonia).—SHARPE, Cat. Acc. Br. Mus. 1874, 31.

*Falco plancus* GM. S. N. i, 1788, 257.

*Vultur plancus* LATH. Ind. Orn. i, 1790, 8.

*Falco brasiliensis* GM. S. N. i, 1788, 263.—MAX. Beitr. iii, 1830, 190.

*Polyborus brasiliensis* VIG. Zool. Journ. i, 1824, 320.—SWAINS. Zool. Illustr. ser. 2, 1832, pl. 2.—GOULD, Zool. Beag. 1841, 9.—BONAP. Consp. i, 1850, 13.—PELZ. Verh. z.-b. Ges. Wien, 1862, 137; Orn. Novara, 1865, 6 (Chili); Orn. Bras. i, 1871, 293.—SCHLEG. Mus. P.-B. (Polybori,) 1862, 2 (part).

*Circæus brasiliensis* CUV. Règ. An. i, 1829, 328.

*Vultur cheriway*, LATH. Ind. Orn. i, 1790, 8 (not of JACQ., 1784).

*Falco cheriway* LICHT. Verz. Doubl. 1823, 60.

*Aquila cheriway* MEYEN, Beitr. 1834, 66.

*Polyborus vulgaris* SPIX, Av. Bras. i, 1824, 3, pl. 1.—VIEILL. Gal. Ois. i, 1825, 23, pl. 7.—LESS. Tr. 1831, 34.—D'ORB. Voy. Am. Merid. Zool. 1835, 55.—TSCHUDI, F. Per. 1845, 77.—BURM. Th. Bras. ii, 1856, 41.

*Caracara vulgaris* LESS. Tr. Orn. 1831, 34.

*Pandion caracara* G. R. GRAY, in Griff. ed. Cuv. An. Kingd. vi, 1829, 235.

*Caracará*, MARCGR. Hist. Bras. 1648, 211.—AZARA, Pax. Par. i, 1802, 42, No. 4.

*Le Busard du Brésil* BRISS. Orn. i, 1760, 405.

*Plaintive Eagle* LATHAM, Synop. i, 34 (adult); Supp. 4.

*Hab.*—Southern South America, north to Amazonia. Paraguay, Chili, and Patagonia, NAT. MUS.—Tierra del Fuego, Straits of Magellan, Hermit Island, Island of Mexiana, and Rio de Janeiro, SHARPE, l. c.—Pacific coast north to latitude 20° south, *vide* SHARPE, l. c.

#### Descriptions.

*Adult male* (21,850, South America; T. R. Peale).—Pileum and wings brownish-black; middle wing-coverts browner, with indistinct whitish bars; primaries white in the middle (just beyond the coverts), this portion having indistinct washes of grayish, in form of faintly-indicated transverse bars; basal three-fourths of the tail white, with numerous narrow, washed bars of grayish, these becoming more faint toward the base; tail with a terminal zone of black, about two inches broad. Cheeks, chin, and throat soiled white, unvaried; body in general (including neck, breast, sides, abdomen, back, and scapulars) transversely barred with black and white, the white prevailing anteriorly; beneath, the black bars grow gradually wider posteriorly, giving the tibæ and femorals a uniformly blackish appearance; on the back and scapulars also, the black bars exceed the white in width, but they are very sharply defined, regular, and continuous; rump, upper and lower tail-coverts, white, with numerous faint bars of grayish. Under side of the wing black; outer six primaries white in the middle portion, beyond the coverts, this patch extending obliquely across; secondaries rather broadly barred on basal two-thirds with black and white, leaving the terminal third unvaried. Third quill longest; fourth scarcely shorter; second intermediate between fifth and sixth; first a little longer than seventh. Wing, 16.00; tail, 6.50; tarsus, 3.50; middle toe, 1.75.

*Young* (13,923, South America; T. R. Peale).—Forehead, crown, occiput, nape, back, wings, and lower parts dark sepia-brown; feathers of the breast, sides, and abdomen marked centrally with a broad longitudinal stripe of soiled fulvous-white; those of nape and back more indistinctly striped, and variegated irregularly at ends with the same; wing-coverts passing terminally into pale brownish; secondaries obscurely barred with the same. Cheeks, chin, and throat unvariegated soiled white; tibial feathers with shaft-stripes of pale fulvous. Rump, tail-coverts, and tail as in adult.

#### Remarks.

Several specimens from Buenos Ayres (Conchitas; Wm. H. Hudson) and one from Paraguay (59,236; T. J. Page, U. S. N.) have the black

of the lower part of the abdomen and flanks quite continuous. There is never, however, in South American specimens, an approach to the peculiar characters *P. cheriway*, as defined.

*List of specimens in United States National Museum.*

Catalogue No.	Corresponding No. of.	Original No.	Sex and age.	Locality.	When collected.	From whom received.	Nature of specimen.
13923	.....	.....	Young	South America	.....	Exploring expedition	*S.
13924	.....	.....	Adult	do	.....	do	S.
13925	.....	.....	♂	do	.....	do	S.
13926	2	3	Adult	Patagonia	.....	do	S.
13929	.....	.....	Adult	Chili	.....	Lieutenant Gilliss	S.
21850	.....	.....	♂ adult	South America	.....	do	S.
48802	.....	4	.....	Chili	.....	National Museum, Chili	†M.
48803	.....	4	.....	do	.....	do	S.
59238	.....	2	.....	Paraguay	.....	Captain Page	S.

\*S—Unmounted skin. †M—Mounted skin.

*Other specimens examined.*

Mus. Boston Soc. Nat. Hist., 4; Mus. Philad. Acad. Nat. Sci., 3; Am. Mus. N. Y., 3—total, 19.

*Measurements.*

Sex.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	No. of specimens.
♂	16.00–17.20	10.00–11.00	1.20–1.30	3.70–3.90	1.75–2.15	2
	17.70	10.00	1.41	4.20	2.30	1
	15.50	10.00	1.30	3.65	1.90	Smallest of 4

POLYBORUS CHERIWAY.

NORTHERN CARACARA.

*Falco cheriway* JACQ. Beitr. 1784, 17, tab. 4.—GM. S. N. 1788, 254, No. 40 (*Juv.*).

*Polyborus cheriway* CABAN. in Schomb. Reise Guiana, iii, 1848, 741.—BREWER, Pr. Boston Soc. vii, 1860, 305 (Cuba).—SHARPE, Cat. Acc. Br. Mus. 1874, 33.—GURNEY, Ibis, Jan. 1875, 95 (Brazil).

*Polyborus brasiliensis* AUDUB. B. Am. fol. 1831, pl. 161; octav. ed. i, 1839, 21, pl. 4 (nec FIG. 1824 ex GM. 1788).—BREWER, Pr. Boston Soc. vii, 1860, 305 (Cuba).—TAYLOR, Ibis, vi, 1864, 79 (Trinidad).—ALLEN, Bull. Mus. Comp. Zool. ii, 1871, 337 (Florida).

*Polyborus vulgaris* AUD. Orn. Biog. ii, 1834, 350 (nec SPIX, 1824).—BREWER, Pr. Boston Soc. vii, 1860, 305 (Cuba).

*Polyborus tharus* CASS. B. Cal. Tex. &c. 1854, 113 (nec STRICKL. 1855 ex MOL. 1782); B. N. Am. 1858, 45.—BREWER, N. Am. Oöl. i, 1857, 58, pl. xi, figs. 18, 19; Pr. Boston Soc. vii, 1860, 305 (Cuba).—HEERMANN, Pacif. R. R. Rep. vii, 1857, 31.—SCLATER, P. Z. S. 1857, 210 (Orizaba).—OWEN, Ibis, iii, 1861, 67.—GURNEY, Cat. Rapt. Norw. Mus. 1864, 17 (part).—DRESSER, Ibis, 1865, 329 (Texas).—COUES, Pr. A. N. S. Philad. 1866, (Arizona).—SCL. & SALV. P. Z. S. 1870, 838 (coast of Honduras).

*Polyborus auduboni* CASS. Pr. A. N. S. 1865, 2 (Texas and Mexico).—LAWR. Ann. N. Y. Lyc. ix, 1868, 132 (Costa Rica).—COOPER, Orn. Cal. i, 1870, 492.—RIDGW. Pr. A. N. S. Philad. Dec. 1870, 145.—GUNDL. J. für Orn. 1871, 357.—ORTON, Am. Nat. v, 1871, 624 (Quito Valley).—GRAYSON, Pr. Boston Soc. 1871, 9 (Tres Marias).—SCL. & SALV. Nom. Neotr. 1873, 123.

*Polyborus tharus* var. *auduboni* COUES, Key, 1872, 220.—RIDGW. Pr. Boston Soc. 1873, 11; in B. B. & R. Hist. N. Am. B. iii, 1874, 178.—LAWR. Mem. Bost. Soc. ii. 1874, (biography).

*Hab.*—Middle America and adjoining portions of North and South America, from southern border of United States to Ecuador and Guiana. Louisiana, Texas, and Lower California, NAT. MUS.—Florida, AUDUBON et AUCT.—Puna Island, Guayaquil, Ecuador, NAT. MUS.—Venezuela (Valencia) and British Guiana, SHARPE, l. c.—Brazil, GURNEY, l. c.



*Descriptions.*

*Adult male* (12,016, Texas; Captain McCall).—Forehead, crown, occiput and nape, wings, scapulars, rump, belly, thighs, and anal-region continuous deep dull black; chin, neck, jugulum, breast, and tail-coverts (upper and lower) soiled white. Breast with numerous cordate spots of black, these growing larger posteriorly, and running in transverse series; back with transverse bars of white, which become narrower and less distinct posteriorly. Basal two-thirds of tail white, crossed by thirteen or fourteen narrow transverse bands of black, which become narrower and more faint basally; outer web of lateral feather almost entirely black; broad terminal band of the tail uniform black (2.40 inches in width); third, fourth, fifth, and sixth primaries grayish just beyond the coverts; this portion with three or four transverse bars of white. Middle portion of primaries beneath faintly barred with white and ashy; the barred portion extending obliquely across. Third quill longest, fourth a little shorter, second shorter than fifth; first 3.60 inches shorter than longest. Wing, 16.70; tail, 9.60; tarsus, 3.40; middle toe, 2.10.

*Adult female*.—Plumage similar; white more brownish; abdomen with indication of bars. Wing, 15.50; tail, 8.70; tarsus, 3.30; middle toe, 2.20.

*Young* (42,130, ♀, Mirador, Mexico; Dr. C. Sartorius).—Black of adult replaced by dingy dark brown, this darkest on the hood; white and dusky regions gradually blended, the feathers of the breast being whitish, edged (longitudinally) with brown. No trace of the transverse bars, except on the tail, which is like that of the adult. Bill whitish, bluish, or purplish at the base; cere white; feet ashy-white; claws black.

*List of specimens in United States National Museum.*

Catalogue number.	Corresponding No. of—	Original number.	Sex and age.	Locality.	When collected.	From whom received.	Nature of specimen.
41329	.....	.....	Adult..	Monterey, Mexico .....	.....	Lieutenant Conch .....	♂
42448	1	.....	.....	Calcasieu Pass, La. ....	..... 1854	G. Würendmann .....	♂
7994	.....	.....	.....	Mexico .....	Sept. 30, —	Jno. Gould .....	♂
9136	.....	.....	.....	Texas .....	.....	Maj. W. H. Emory .....	♂
9137	.....	.....	.....	New Mexico .....	.....	Dr. T. C. Henry .....	♂
12016	.....	.....	.....	Texas .....	.....	Captain McCall .....	M.
16928	.....	.....	.....	Cape St. Lucas .....	Sept. 18, —	J. Xantus .....	♂
17220	.....	2476	.....	do .....	Dec. 2, 1859	do .....	♂
17221	.....	2473	.....	do .....	Nov. 25, 1859	do .....	♂
17222	.....	2472	.....	do .....	do .....	do .....	♂
29454	.....	4043	.....	Lower California (San José) ..	do .....	do .....	♂
29527	.....	2841	.....	Costa Rica (San José) .....	do .....	do .....	♂
33206	.....	136	.....	do .....	do .....	Berlin Museum .....	♂
37471	.....	136	.....	Yucatan (Merida) .....	Jan. 19, 1864	J. Carniol .....	♂
37572	.....	142	.....	do .....	Jan. 20, 1865	José Salazar .....	♂
39171	.....	555	♂ juv.	do .....	Feb. 2, 1865	do .....	♂
39172	.....	341	♂ juv.	do .....	June 9, 1865	do .....	♂
40955	.....	.....	.....	do .....	Mich. 31, 1865	do .....	♂
40986	.....	.....	.....	Nicaragua (Chimandega) .....	do .....	Professor Hopkins .....	♂
42130	.....	.....	.....	do .....	do .....	F. Hicks .....	♂
46795	.....	210	♀ juv.	Mexico (Mirador) .....	do .....	Dr. C. Sartorius .....	♂
46796	.....	849	.....	Texas (Laredo) .....	Jan. 10, 1867	Dr. H. B. Butcher .....	♂
46797	.....	848	.....	do .....	do .....	do .....	♂
47562	.....	.....	.....	Costa Rica (San José) .....	Aug. 30, 1866	J. Carniol .....	♂
51321	.....	.....	.....	Mexico (Mazatlan) .....	Dec. —, 1867	F. Bischoff .....	♂
51322	.....	.....	.....	do .....	do .....	do .....	♂
51323	.....	.....	.....	do .....	do .....	do .....	♂
51324	.....	.....	.....	do .....	do .....	do .....	♂
51325	.....	.....	.....	do .....	Mar. —, 1868	do .....	♂
52826	.....	.....	.....	do .....	do .....	do .....	♂
52826	.....	661	.....	do .....	do .....	do .....	♂
54034	.....	42	.....	Ecuador (Guyaquil) .....	do .....	Col. A. J. Grayson .....	♂
59038	.....	4457	♂ ad.	Cape St. Lucas .....	do .....	Dr. Destruge .....	♂
59039	.....	2507	♀ juv.	do .....	do .....	J. Xantus .....	♂
59940	.....	50	.....	Guyaquil .....	do .....	do .....	♂
59941	.....	.....	.....	Cape St. Lucas .....	do .....	Will. Coll. Lye .....	♂
	.....	.....	.....	do .....	do .....	J. Xantus .....	♂



*Other specimens examined.*

Mus. Boston Soc., 2; Philad. Acad., 4; Comp. Zoology, 1; G. N. Lawrence, 1; R. Ridgway, 2—total 44.

*Measurements.*

Sex.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	Specimens.
♂	14.60-16.50	9.00-10.00	1.20-1.43	3.20-3.60	1.90-2.00	6
♀	14.75-16.00	8.80-10.00	1.20-1.45	3.55-3.75	2.00-2.10	8

*Fresh measurements.*

No.	Total length.	Expanse.	Remarks.
4122	23.50	47.25	Bill very light olive; feet yellow.
16928	23.50	53.00	
17220	22.50	50.50	
17221	22.70	50.00	
17222	23.00	51.00	
29454	24.00	48.00	Iris yellow.
33206	23.50	44.00	

## POLYBORUS LUTOSUS.

## GUADELUPE CARACARA.

*Polyborus Lutosus* RIDGWAY, n. s.

*Hab.*—Guadelupe Islands, Lower California [E. PALMER].

SP. CH.—Wing, 15.00-16.40; tail, 10.50-11.65; culmen, 1.25-1.35; tarsus 3.50-3.75; middle toe, 1.80-2.10.

*Adult.*—Pileum, lesser wing-coverts, secondaries, primary-coverts, alula, terminal portion of primaries, entire lining of the wing (including axillars), and terminal band on the tail (1.00-1.60 wide) blackish-brown, sometimes almost black; auriculars, cheeks, and throat dirty whitish or light isabella-color. Rest of the plumage marked with transverse bars of brownish-black or dark brown, and brownish-white or light isabella-color; the bars most regular on the lower surface (and often the upper tail-coverts), where they extend uninterruptedly from the fore neck to the crissum, the bars of the two colors being about equal in width, the dark ones fainter on the crissum, narrower and more distant on the fore neck; on the middle and greater wing-coverts, they are similar to those on the abdomen; on the interscapulars, the dark ones are much wider than the light ones, and nearly black; on the scapulars, dark brown prevails, the lighter bars being almost obliterated. The basal half or more of the outer five or six primaries are isabella-white, transversely mottled, or raggedly barred, with grayish and dusky, the shafts clear yellowish-white. Tail, except dusky terminal band, marked with ragged transverse bars of brownish-gray and isabella-white, of equal widths; the bars of the two colors separated by a narrower zigzag bar of dusky.

*Young.*—Remiges and rectrices the same as in the adult, but the terminal band of the tail narrower and less sharply defined; pileum and lesser wing-coverts dark brown, the feathers with lighter brown edges (these sometimes worn off); back and scapular dull grayish-brown, the latter plain, the former usually slightly variegated with lighter borders and tips to the feathers. Lower parts light grayish-brown, with longi

tudinal dashes of dirty whitish; upper tail-coverts dull grayish-brown tipped with dirty whitish, and sometimes barred with the same, the feathers with darker shaft-streaks; lower tail-coverts very indistinctly marked in much the same manner. Auriculars, cheeks, and throat plain dirty whitish, as in the adult.

*Chick*.—General color light isabella-color, or brownish white, with an umber-brown patch over the scapula, and connected with one over the radius and ulna; pileum uniform umber-brown.

### Remarks.

These specimens form part of a very interesting collection made by Dr Edward Palmer, a collector of the National Museum.

In the adult plumage, all the contour-feathers have distinctly black shafts, especially on the lower surface and upper tail-coverts; on the tibiae and anal-region, the dark bars are smaller and more faint than elsewhere, and incline to a sagittate form; the feathers of the lining of the wing are sometimes narrowly tipped with light isabella-color or tawny brown, and the transverse bars are faintest and most confused on the upper portion of the rump. In both adult and immature stages, there is considerable variation, but all within the limits of the above diagnosis.

This species resembles the *P. tharus* much more than *P. cheriway*; but it is, nevertheless, so very distinct as not to need actual comparison. The tail is entirely different in its markings, the darker bars being much wider than the light ones (twice as wide) on the middle feathers, while each is bordered with a narrower zigzag bar of dusky; the lighter markings are, moreover, light isabella-color, instead of white, as in *P. tharus*, in which white forms the ground-color, over which cross very narrow bars of grayish-brown. The rump and upper tail-coverts are very indistinctly barred, brown being the prevailing color; while in *P. tharus* this region is white, narrowly barred with grayish-brown. The ground-color of the lower parts is light isabella-color, with imperfect, more or less sagittate, bars of brown, whereas in *P. tharus* these portions are black, crossed with narrow, regularly-transverse bars of brownish-white. The throat is light isabella-color, while in *P. tharus* it is white. Numerous other differences might be mentioned; but they are too numerous. Briefly, the more conspicuous differences between the three species may be contrasted as follows:—

- P. LUTOSUS.—*Scapulars plain dusky brown. Tibiæ and flanks light isabella-color, barred with dark brown. Wing-coverts (middle and greater) marked with wide bars of brown and pale isabella-color, of equal width. Tail-coverts and rump with broad bars of light isabella-color and grayish-brown. Tail with broad bars of pale isabella-color and grayish-brown, separated by zigzag lines of dusky. Abdomen isabella-color, with small sagittate bars of dark brown.*
- P. THARUS.—*Scapulars barred grayish-white and black. Tibiæ and flanks nearly uniform blackish-brown. Wing-coverts brown, narrowly barred with whitish. Tail-coverts and rump white, with narrow bars of grayish-brown. Tail white, with narrow bars of brownish-gray. Abdomen blackish-brown, with transverse bars of whitish.*
- P. CHERIWAY.—*Scapulars plain brownish-black. Tibiæ and flanks plain black. Wing-coverts plain blackish. Tail-coverts and rump plain white without bars. Tail as in P. tharus. Abdomen plain black.\**

\* The characters in *italics* are those common to the adult and young plumages.

## List of specimens in United States National Museum.

Nat. Mus. No.	Coll. No.	Sex and age.	Date (1875).	Wing.	Tail.	Culmen	Tarsus.	Middle toe.	Remarks.
69980	22	— juv.	.....	15.75	11.25	1.30	3.70	1.95	No. 66989: "Eye brown; legs and cere dead white, with a bluish tinge." No. 66990: "Legs light yellow; cere, &c., salmon-color."
69981	30	♀ juv.	.....	15.50	11.25	1.30	3.50	1.90	
69982	31	— ad.	.....	16.00	10.80	1.35	3.70	2.00	
69983	32	— ad.	.....	15.50	10.65	.....	3.60	1.90	
69984	18	♀ ad.	May 10	16.40	11.65	1.30	3.65	2.10	
69985	25	— juv.	.....	16.10	11.25	1.25	3.65	2.00	
69986	17	— juv.	.....	15.80	10.75	1.25	3.60	2.05	
69987	23	— ad.	May 10	15.75	11.00	1.30	3.50	1.90	
69988	27	— juv.	.....	15.50	10.50	1.30	3.65	1.90	
69989	21	♂ juv.	.....	15.00	10.50	1.25	3.55	1.80	
69990	20	♂ juv.	.....	15.50	11.00	1.30	3.65	2.05	
69991	33	♂ juv.	.....	15.50	10.60	1.30	3.60	1.95	
69992	26	— ad.	.....	15.80	11.00	1.30	3.50	1.95	
69993	24	♀ ad.	.....	15.50	10.60	1.25	3.60	2.00	
69994	29	— juv.	.....	15.50	11.00	1.30	3.75	1.90	
69995	19	— ad.	.....	15.75	11.00	1.25	3.60	1.90	
69996	48	— pull.	May 10	.....	.....	.....	.....	.....	
69997	48	— pull.	do	.....	.....	.....	.....	.....	
69998	48	— pull.	do	.....	.....	.....	.....	.....	
69999	34	— pull.	April 11	.....	.....	.....	.....	.....	

## GENUS PHALCOBÆNUS, LAFRESNAYE.

a. *Phalcobænus*.

*Phalcobænus* LAFR., in d'Orb. Dict. iii, 1843, 151. [Type, *Aquila megaloptera* MEYEN.]

β. *Senex*.

*Senex* J. E. GRAY, in Jard. & Selby Ill. Orn., n. s. 1839, pl. 24. [Type, *Falco australis* GMEL.]

*Ætriorchis* KAUP, Class. Säug. Vog. 1844, 124. [Same type.]

*Helotriorchis* REICH. Av. Syst. Nat. 1850, pl. xcvi. [Same type.]

**Osteology** (of *P. australis*\*).—Compared with that of *Polyborus*, the skull is quite similar, but is relatively both broader than higher, and the nostrils entirely different, being circular and central. Premaxillary much less compressed throughout; frontal less turgid anteriorly, more inflated, and with a deep median valley posteriorly; lachrymals relatively and absolutely much smaller; intermastoid width of the skull much greater; posterior outline of the palatines gently rounded. Length of skull, 3.60 (1.90); breadth, 1.80; height, 1.30.

**Pterylosis**.—Wing large, the primaries stiff and rather narrow, with hard shafts; third or fourth quill longest; outer four or five with inner webs sinuated (almost emarginated on the outer); remiges, 25 (in *P. megalopterus*). Tail about three-fifths the wing, very slightly rounded or almost even, the feathers broad, with firm webs and strong shafts. Plumage in general full and rather soft (in the young very soft and downy); loreal and maxillary regions more or less naked, with scattered bristles; tibial plumes well developed.

**General external characters**.—General form and appearance of *Polyborus*. Bill less compressed, and culmen more gradually curved, the tip shorter; tomia very slightly lobed, and with the notch and tooth obsolete. Nostril circular, central, and rimmed. Tarsus  $1\frac{1}{2}$  to  $1\frac{3}{4}$  times the length of the middle toe; lateral toes about equal; the anterior toes all webbed, the outer well developed, the inner very slight;

\* Of this genus, we have only the skull of this single species.



claws very slight curved, remarkably blunt, light-colored. Tarsi covered chiefly with hexagonal scutellæ, its lower portion with a frontal series of about 3-6 large transverse plates, the posterior face with a longitudinal series of scales rather larger than the smaller ones in front.

The genus *Phalcoænus* comprises two well-marked subgenera, distinguished as follows:

- a. Frontal feathers (of adult) recurved, very soft, lanceolate; loral and maxillary regions naked; fore neck feathered. In the adult, the abdomen, anal region, crissum, upper tail-coverts, and lining of the wing white; secondaries and tail tipped with white; other parts deep black ..... *Phalcoænus*.
- β. Frontal feathers pointed backward (normally), stiff and lanceolate; lower jaw and lores densely covered with strong bristles; fore neck naked. In the adult, abdomen and anal region ochraceous; crissum and upper tail-coverts black; lining of the wing and tibæ black mixed with ochraceous; breast and nape longitudinally streaked with dingy whitish; secondaries not tipped with white..... *Senex*.

#### *Species of PHALCOÆNUS.*

##### A.—*Skin of lower jaw developed into a slightly pendant wattle.*

1. *P. CARUNCULATUS*.—Jugulum and breast black, with broad, longitudinal streaks of white. Wing, 14.70; tail, 9.00; culmen, 1.25; tarsus, 2.80; middle toe, 1.60. *Hab.*—Ecuador and New Granada.

##### B.—*Skin of lower jaw not developed into a wattle.*

2. *P. MEGALOPTERUS*.—Jugulum and breast black, without white streaks. Wing, 14.20-16.00; tail, 9.20-10.00; culmen, 0.95-1.20; tarsus, 3.05-3.60; middle toe, 1.50-1.70. *Hab.*—Chile, Bolivia, and Peru (Pacific slope).
3. *P. ALBIGULARIS*.—Jugulum and breast white. Wing, 15.00; tail, 9.30; culmen, 1.65; tarsus, 3.10. *Hab.*—Patagonia (Santa Cruz).

#### PHALCOÆNUS MEGALOPTERUS.

*Aquila megaloptera* MEYEN, Beitr. 1834, 64, pl. 7.

*Milvago megalopterus* GOULD & DARW. Zool. Beagle, 1841, 13.—GRAY, List. B. Br. Mus. 1848, 30; Hand-List, i, 1869, 5.—STRICKL. Orn. Syn. i, 1855, 21.—SCL. P. Z. S. 1858, 549 (Ecuador).—SCL. & SALV. P. Z. S. 1868, 569 (Peru); ib. 1869, 155 (Tinta, Peru); Nom. Neotr. 1873, 122.

*Polyborus megalopterus* CAB. & TSCHUDI, F. Per. 1845, 16, 78.—LAFR. R. Z. 1849, 99.—SCHLEG. Mus. P. B. (Polybori) 1862, 4.

*Phalcoænus megalopterus* BONAP. Consp. i, 1850, 13.—GURNEY, Cat. Rapt. Norw. Mus. 1864, 24.—RIDGW. Cat. Falc. Mus. Boston Soc. 1873, 10.

*Ibycter megalopterus* SHARPE, Cat. Acc. B. M. 1874, 36.

*Phalcoænus montanus* d'ORB. Voy. Am. Merid. Ois. 1835, 51, pl. 2; Synop. Av. Mag. Zool. 1838, 2.—BRIDG. P. Z. S. pt. 11, 103; Ann. N. H. xiii, 499.—LAFR. R. Z. 1845, 91.

*Milvago montanus* DARW. Voy. Beagle, Birds, 1841, 13.—GRAY, Gen. fol. 1844, sp. 5.—PELZ. Verh. z.-b. Ges. Wien, 1862, 135.

*Polyborus montanus* TSCHUDI, Consp. Wieg. Arch. 1844, 263; F. P. 1844, 16, 78.—LAFR. R. Z. 1849, 99.

*Milvago crassirostris* PELZ. Sitz. Akad. Wien, xlv, 1862, 7; Orn. Novara, 1865, 3, pl. 1.

*Hab.*—Pacific slope in Chile, Bolivia, and Peru.



*Descriptions.*

*Adult*.—Feathers of the pileum recurved, narrow, obtuse, and of velvety texture; those of the neck (all round) lanceolate, acute; tibial plumes well developed, fluffy. Colors deep black and pure white, in well-defined, large uniform areas, as follows: Abdomen, anal-region, crissum, flanks, tibiae, upper tail-coverts, lining of the wings, tips of the outer three or four primaries, of all the secondaries (forming a narrow bar), tips of the tail-feathers (forming a wide band), and bases of the rectrices and remiges, pure white. Other portions carbonaceous-black, becoming smoky-grayish or fuliginous on the throat and chin, but with a faint bluish-green gloss on the nape and back, and very sharply defined posteriorly, with a convex outline against the white of the abdomen, etc. Bill white, dusky olive-plumbeous basally; cere and naked loreal and maxillary regions reddish in life; iris — ? feet very pale (pale yellow in life?); claws colored like the bill.

*Young*.—Feathers of the pileum recurved only on the frontlet, and with those on the neck soft velvety and blended. The black replaced with brown (varying from sepia through chocolate to almost a chestnut shade), and the white with ochraceous. Basal portion of the primaries pale ochraceous, finely mottled with dusky; tail-feathers ochraceous for their whole length, edged with sepia, the middle ones nearly uniformly of the latter color.

*Remarks.*

A specimen in very young plumage (No. 1623, museum of Wesleyan University, Middletown, Conn.) corresponds with the above description, taken from examples in the museum of the Philadelphia Academy, and has the larger wing-coverts as well as the remiges terminated by deltoid spots of ochraceous. In the immature plumage, the light and dark areas are not separated so definitely as in the adult, while the whole plumage is of a totally different texture, being remarkably soft and downy.

Another specimen in the collection of the Wesleyan University (No. 1620), in transition dress, is somewhat peculiarly plumaged. The feathers have the texture of the adult stage, those of the entire pileum being recurved, and those on the neck lanceolate and pointed; but the colors are those of the young stage, with a few scattered feathers of the new molt corresponding with the same in the complete livery. The tail is like that of the young stage, except that there is a sharply-defined terminal band of ochraceous white (narrower than in the adult), preceded by a continuous dusky one, whose basal edge blends gradually into the umber-brown, which forms the general hue of the tail; the medial portion of each feather (comprising nearly the whole of the inner web anterior to the terminal and sub-terminal bands) is deep ochraceous; the primary-coverts are tipped and irregularly banded with whitish, while the feathers of the flanks are tipped with the same; the upper tail-coverts are scantily spotted with brown.

This specimen exhibits a plumage exactly intermediate between that of the youngest and most adult stages, and was probably acquired after the first molt.

*List of specimens in United States National Museum.*

Catalogue number.	Corresponding No. of—	Original number.	Sex and age.	Locality.	When collected.	From whom received.	Nature of Specimen.
48804	.....	5	♂ ad.	Chili .....	June, 1864	National Museum of Chili.....	M.
48805	.....	5	♀ ad.	Chili .....	Sept., 1865	National Museum of Chili.....	M.

## Other specimens examined.

Boston Soc., 2; Mus. Comp. Zool., 1; American Mus., N. Y., 1; Mus. Wesleyan Univ. Middletown, Conn., 7—total 11.

## Measurements.

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.		Locality.
1618, Wesleyan University.....	15.50	10.00	1.20	3.45	1.50	Adult.	Chili?
1615, Wesleyan University.....	15.60	9.70	1.05	3.50	1.55	..do...	Do.
1619, Wesleyan University.....	15.25	9.00	.....	3.05	1.65	..do...	Do.
1616, Wesleyan University.....	14.60	9.00	1.05	3.15	1.70	..do...	Do.
1622, Wesleyan University.....	14.85	9.00	.....	3.05	1.60	..do...	Do.
1620, Wesleyan University.....	14.60	9.20	0.95	3.05	1.70	Jun...	Do.
1623, Wesleyan University.....	13.00	8.50	.....	3.15	1.45	..do...	Do.

The sexes compare in measurements as follows:

Sex.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	No. of specimens.
♂.....	14.50	8.90	1.00	2.90	1.55	1
♀.....	14.75-15.75	9.25-10.00	1.15	3.25	1.70	2

## PHALCOBÆNUS ALBOGULARIS.

*Polyborus albogularis* GOULD, P. Z. S. 1837, 9.

*Milvago albogularis* GOULD & DARW., Voy. Beag. Birds, 1841, 13, pl. 1 (adult).—GRAY, Gen. B. fol. 1844, sp. 4; Hand List, i, 1869, 5.—STRICKL. Ora. Syn. i, 1855, 22.—SCL. Ibis, 1861, 23.—SCL. & SALV. Nom. Neotr. 1873, 122.

*Ibycter albigularis* SHARPE, Cat. Acc. B. M. 1874, 37.

*Phalcobænus megaloptera* BONAP. Conspr. i, 1850 13.

*Hab.*—Patagonia.

## Description.

“Not quite adult (type).—Above brownish-black, with several rufous-brown feathers on the sides of the neck (the remains of young plumage); feathers of crown slightly recurved; all the quills tipped with white; upper tail-coverts white; tail brown, white at base and at tip; under surface of body entirely white, with one black plume on the throat, and the sides of the body irregularly marked with black, which occupies the most part of the inner and a great deal of the outer web of the feathers; under wing-coverts white; primaries white at immediate base, with broad black bars. Total length, 21 inches; culmen, 1.65; wing, 15.6; tail, 9.3; tarsus, 3.1.”—(SHARPE, l. c.)

## PHALCOBÆNUS CARUNCULATUS.

*Phalcobænus carunculatus* DES MURS, R. et. M. Zool. 1853, 154.—GURNEY, Cat. Rapt. Norw. Mus. 1864, 25.

*Milvago carunculatus* SCL. P. Z. S. 1860, 81; Ibis, 1861, 19, pl. 1.—ORTON, Am. Nat. v, 1871, 624 (Quito Valley)—GRAY, Hand List, i, 1869, 5.—SCL. & SALV. Nom. Neotr. 1873, 122.

*Ibycter carunculatus* SHARPE, Cat. Acc. B. M. 1874, 38.

*Milvago megalopterus* SCL. P. Z. S. 1858, 555 (not of Meyen).

*Hab.*—“Highlands of Ecuador and New Granada.”—(SHARPE, l. c.)

“Adult.—Above glossy black, the feathers of the head recurved; rump and upper tail-coverts pure white; quills black; both primaries

and secondaries broadly tipped with white; tail black, with a broad terminal band of white; entire breast black, each feather with a large tear-shaped drop of white along the center; under tail-coverts, vent, and thighs pure white, as also are the under wing-coverts and axillaries; bare skin of throat and face wrinkled and deep orange-color, as also the cere; irides hazel. Total length, 19.5 inches, culmen, 2, wing, 15.5, tail, 8.8; tarsus, 3.2.—(SHARPE, l. c.)

Specimens examined, 1, in Mus. Philad. Acad. Nat. Sciences.

### PHALCOBÆNUS (SENEX) AUSTRALIS.

- Falco australis* GM. S. N. i, 1783, 259.—LATH. Ind. Orn. i, 1790, 16; Gen. Hist. i, 1821, 241.—DAUD. Tr. Orn. ii, 1800, 56.—SHAW, Zool. vii, 1812, 91.  
*Senex australis* GRAY (J. E.) Jard. & Selby Ill. Orn. n. s. 1839, sub pl. 24.—GURNEY, Cat. Rapt. Norw. Mus. 1864, 20.  
*Milvago australis* GRAY Cat. Acc. B. M. 1848, 30.—STRICKL. Orn. Syn. i, 1855, 21.—ABBOTT, Ibis, 1861, 150.—PELZ. Verh. z.-b. Ges. Wien, 1862, 136.—SCL. & SALV. Nom. Neotr. 1873, 122.  
*Ibycter australis* KAUP; Arch. f. Naturg. xvi, 1850, 41.—SHARPE, Cat. Acc. B. M. 1874, 38.  
*Polyborus australis* BONAP. Consp. i, 1850, 13.—SCHL. Mus. P.-B. Polybori, 1862, 3.  
*Ætriorchis australis* BONAP. Rev. et Mag. Zool. 1854, 11.  
*Morphnus novæ-zealandiæ* CUV. Reg. An. i, 1817, 318.  
*Falco novæ-zealandiæ* TEMM. Pl. Col. i, 1823, pls. 192, 224.—GARN. Ann. Sc. Nat. vii; Isis, 1832, 181.  
*Polyborus novæ-zealandiæ* VIG. Zool. Journ. i, 1824, 336.—LESS. Man. i, 1828, 88.—DARW. Journ. Adv. & Beag. 1839, 66.—BONAP. Consp. i, 1850, 13.  
*Circæus novæ-zealandiæ* CUV. Reg. An. i, 1829, 328.  
*Ætriorchis novæ-zealandiæ* KAUP, Class Säug. Vög. 1844, 124.  
*Circæus antarcticus* LESS. Tr. 1831, 49.  
*Polyborus brasiliensis* KING, Voy. Beag. i, 1839, 532 (not of Vig. 1824, ex Gm. 1788).  
*Milvago leucurus* DARW. & GOULD, Voy. Beagle, Birds, 1841, 15 (ex Forst.).—GRAY, Hand List, i, 1869, 5.  
*Milvago pezoporos* GOULD, Voy. Beagle, 1841, 13.  
*Vultur plancus* FORST. Descr. Anim. 1844, 321 (not of Lath. 1790).  
 ? *Falco ambustus* GM. S. N. i, 1783, 252.  
*Vultur ambustus* LATH. Ind. Orn. i, 1790, 8.  
*Gypæus ambustus* DAUD. Tr. ii, 1800, 26.  
*Spizæus ambustus* BONN. et VIEILL. Enc. Méth. iii, 1823, 1254.  
*Polyborus ambustus* STRICKL. Orn. Syn. i, 1855, 19.  
 ? *Tawny Vulture* BROWN, Ill. Zool. 1766, pl. 1.  
*Statenland Eagle* LATH. Gen. Synop. i, 1781, 40.

*Hab.*—Tierra del Fuego (NAT. MUS.).—Falkland Islands (SHARPE).

### Descriptions.

Wing, 15.00–16.70; tail, 9.00–11.00; culmen, 1.20; tarsus, 3.00–3.35; middle toe, 2.00.

*Adult.*—General color dull black, the feathers of the neck and breast marked with medial lanceolate streaks of dull white, these broader on the breast and narrower on the nape; inner side of the tibiæ and adjacent portion of the anal region ochraceous-rufous; lining of the wing mixed with the same. Tail with a terminal band of white, about 1.00 inch wide.

"Bill yellowish, bluish horn-color at base; cere and feet of a bright lemon-yellow; iris dark brown. Total length, 25. inches."—(SHARPE.)

*Young.*—"Above smoky-brown, clearer on the wings; head and neck blackish, the sides of the latter rufous-ochre, with brownish margins to the feathers; the feathers of the nape and crown with narrow and indistinct fulvous tips; quills brown, primaries clear ochre at the base; upper tail-coverts and tail ochraceous-brown, deeper brown on the external margins; under surface of the body smoky-brown, with rufous-brown



centers to the breast-feathers, not very distinct; bill horn-brown, yellowish at tip of lower mandible; cere and feet slate-color. Total length, 24.5 inches; culmen, 1.25; wing, 16.5; tail, 10.5; tarsus, 3."—(SHARPE.)

#### Remarks.

According to Gould and Darwin (l. c.), the sexes differ greatly in size and color, the male having the bill *black*, cere *white*, tarsi *gray*, and colors browner, while in the female the bill is *ash-gray*, the cere and feet *dutch-orange*.

The above description of the adult is from the specimen in the National Museum. Sharpe mentions also shaft-streaks of white on outer upper tail-coverts and minute white tips to the feathers of the abdomen, neither of which features exist in the specimen before us, which, however, has a central, broadly-lanceolate spot on each of the primary coverts, white markings at base of inner webs of outer primaries, and narrow, white tips to the same—features not mentioned by Mr. Sharpe.

#### List of specimens in United States National Museum.

Catalogue number.	Corresponding No. of—	Original No.	Sex and age.	Locality.	When collected.	From whom received.	Nature of specimen.
13928	P. 3	C. 4	—ad.	Tierra del Fuego.....	.....	United States exploring expedition.	M.

#### GENUS MILVAGO, SPIX.

*Milvago* SPIX, Av. Bras. 1824, 12 [type, *Polyborus chimachima* VIEILL].—GURNEY, Cat. Rapt. Nor. Mus. 1864, 26.

#### GENERIC CHARACTERS.\*

*General external features.*—Bill much as in *Phalcobænus*, but tomtia with the indentations more distinct. Feet slender, the tarsus about one and a half times the middle toe; outer toe just appreciably longer than the inner; claws normal, sharp, but rather short. Tarsus covered with four longitudinal rows of very regular hexagonal scutellæ, the three lower plates of the interno-anterior series twisted to the front, and appearing as a continuation of the plates on the top of the toes.

*Pterylosis.*—Head normally feathered, but the feathers of the gular region loose-webbed. Remiges, 23. Tracts as in *Ibycter* (*Daptrius*), "but stronger in all its parts, and the spinal tract different, having a remarkably short fork, with its limbs broad and strongly divergent. The posterior portion reaches this fork with its most anterior sparse feathers."—(NITZSCH.) Wing long, the remiges well developed; second to fifth quill longest; first equal to or shorter than the sixth; inner webs of outer four sinuated (three deeply and one slightly). Tail rather long (about two-thirds the wing), very slightly rounded, the feathers rather narrow.

\**Osteology.*—What is most probably the skeleton of one of the species of *Milvago* possesses the following characters: Skull most like that of *Ibycter americanus*, but frontal with a very deep median valley anteriorly and suddenly much inflated posteriorly; nostril more regularly circular and more completely rimmed, its tubercle more exposed. Length of skull, 2.30 (1.00); width, 1.15; depth, 1.00. The sternum differs from that of both *Ibycter* and *Polyborus* in possessing a pair of very deep double indentations. It measures 1.60, 1.10, 0.90, 0.50. Tibia : tarsus = 2.70 : 2.00.



*Relationships.*—This genus is of extreme interest, from the fact that it approaches more nearly than any other of the group to the *Falcones*. The general external resemblance to the falconine genus *Hieracidea* is very close indeed; the different emargination of the primaries being the chief distinction.

*Species of MILVAGO.*

*Common characters.*—Tail transversely mottled, and more or less distinctly barred with dusky and white (the latter predominating), becoming uniformly dusky terminally in a broad, well-defined zone; tail-coverts white; base of the primaries mottled with whitish.

1. *M. CHIMANGO.*—Wing, 10.30–11.20; tail, 6.30–8.50; culmen, 0.65–0.80; tarsus, 2.10–2.45; middle toe, 1.25–1.50. Tail grayish-white, becoming pure white basally; its surface finely mottled, the mottling assuming the form of transverse bars toward the base and on the inner webs; terminal zone dusky grayish-brown, not well defined. Primary coverts whitish, barred with dusky or grayish. *Adult*: General color grayish-brown, with a faint fulvous or cinnamon cast, paler, less grayish, and obscurely barred with grayish-white beneath. *Young*: Above dusky brown, the feathers tipped with whitish; beneath transversely mottled with brown and ochraceous, the latter on the tips of the feathers. *Hab.*—Southern South America, from Tierra del Fuego north to latitude 20° south on the Pacific coast, and to Rio on the Atlantic.

2. *M. CHIMACHIMA.*—Wing, 10.70–11.80; tail, 7.20–8.50; culmen, 0.75–0.92; tarsus, 1.85–2.20; middle toe, 1.35–2.50. Tail ochraceous-white, crossed by narrow dark bands of coarsely-mottled grayish and dusky—sometimes of nearly uniform dusky—the subterminal zone brownish-black, and well defined. Primary-coverts blackish, unbarred. *Adult*: Head, neck, and entire lower parts immaculate pale ochraceous; upper parts uniform brownish-black, the feathers indistinctly lighter at the tips; primary-coverts broadly tipped with grayish-white. *Young*: Head, neck, and lower parts brownish-black, longitudinally striped with ochraceous-white; upper parts dusky, the secondaries obscurely barred with reddish-ochraceous or dull rusty. *Hab.*—South America generally, south to Paraguay (latitude 20° south), north to Veragua.

MILVAGO CHIMANGO.

*Polyborus chimango* VIEILL. N. D. v, 1816, 260; Enc. Méth. iii, 1824, 1182.—D'ORB. Voy. Am. Mérid. Ois. 1835, 60; Synop. Av. Mag. Zool. 1838, 3.—DARW. Journ. Resid. 1839, 64.—TSCHUDI, Cons. Av. Wieg. Archiv, 1844, 262; Fauna Peruana, 1845, 79.—SCHLEG. Mus. P.-B. Polybori, 1862, 6.

*Haliaeetus chimango* LESS. Tr. 1831, 43.

*Caracara chimango* D'ORB. Voy. Am. Mérid. Ois. 1835, 60.

*Milvago chimango*. DARW. Voy. Beag. Birds, 1841, 14.—GRAY, Gen. B. 1844, i, pl. 5 (adult); List, Acc. Br. Mus. 1848, 29; Hand List, i, 1869, 5.—KAUP, Mus. Senck. 1845, 262.—HARTL. Syst. Ind. Azara, 1847, 1.—PEALE, U. S. Expl. Exp. 1848, 61.—BONAP. Cons. p. i, 1850, 13.—STRICKL. Orn. Synon. i, 1855, 20.—PELZ. Verh. z.-b. Ges. Wien, 1862, 136; Orn. Novara, 1865, 6 (Chili); Orn. Bras. 1871, 392.—GURNEY, Cat. Rapt. Norw. Mus. 1864, 26.—SCL. & SALV. P. Z. S. 1868, 143 (Conchitas, Resp. Argent. resident); Ibis, iv, 1868, 187 (Str. Magellan; Dec.); P. Z. S. 1869, 252 (Lake of Valencia, Venez.); Nom. Neotr. 1873, 122.—HUDSON, P. Z. S. 1872, 534 (Rio Negro, Patagonia).—RIDGW. Pr. Boston Soc. May, 1873, 10.

*Ibycter chimango* KAUP, Arch. f. Naturg. xvi, 1850, 41.—SHARPE, Cat. Acc. B. M. 1874, 41.

*Aquila pezopora* MEYEN. Beite. 1834, 62, pl. 6.—BONAP. Cons. p. i, 1850 (sub *Milvago*).

*Milvago pezoporus* DARW. Zool. Beag. Birds, 1841, 13.—BRIDG. P. Z. S. pt. 11, 109; Ann. Nat. Hist. xiii, 499.—STRICKL. Orn. Syn. i, 1855, 20.

*Hab.*—Southern South America, from Tierra del Fuego northward to 20° south latitude on the Pacific side and to the Tropic of Capricorn on the Atlantic coast.

*List of specimens in the United States National Museum.*

Catalogue number.	Original number.	Sex and age.	Locality.	When collected.	From whom received.
13930	5	.....	Patagonia .....	.....	United States Exploring Expedition.
13931	5	.....	Chili .....	.....	Do.
13932	5	.....	do .....	.....	Do.
13933	.....	♀ ad.	do .....	.....	Do.
13934	5	.....	do .....	.....	Do.
20933	.....	.....	Uruguay .....	.....	Capt. T. J. Page.
20939	97	.....	Paraguay .....	.....	Do.
45691	.....	.....	Buenos Ayres .....	.....	W. H. Hudson.
48806	6	ad.	Chili (Santiago) .....	February, 1866	National Museum of Chili.
48807	6	ad.	do .....	do .....	Do.
48808	6	juv.	Chili (Valdivia) .....	.....	Do.
49524	1	.....	Buenos Ayres .....	.....	W. H. Hudson.
50939	.....	.....	Brazil .....	.....	Señor Don F. Albuquerque.
66517	.....	.....	Buenos Ayres .....	.....	Burmeister.

*Other specimens examined.*

Mus. Boston Soc., 2; Philad. Acad., 3; Am. Mus., N. Y., 1; other sources, 3—total, 23.

*Measurements.*

Sex.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	No. specimens.
♂	11.70–11.80	7.50–8.50	0.75–0.80	2.20–2.30	1.45	4
♀	10.90–11.40	6.70–7.10	0.71–0.75	2.10–2.45	1.25–1.50	2

Of three specimens with sex undetermined, the smallest measures as follows: Wing, 10.30; tail, 6.30; culmen, 0.65; tarsus, 2.20; middle toe, 1.36.

**MILVAGO CHIMACHIMA.**

*Polyborus chimachima* VIEILL. N. D. v. 1816, 259.—D'ORB. Voy. Am. Mer. 1835, 63; Synop. Av. Mag. Zool. 1838, 3.—SCHL. Mus. P.-B. Polybori, 1862, 5.

*Haliaetus chimachima* LESS. Tr. 1831, 43.

*Milvago chimachima* GRAY, Gen. 1841, 2; fol. ed. 1844, sp. 1, pl. 5, fig. 3; List Acc. B. M. 1848, 29; Gen. & Subgen. 1855, 2; Hand List, i, 1869, 5.—KAUP, Mus. Senck. 1845, 262.—HARTL. Syst. Ind. Azara, 1847, 1.—CABAN. Schomb. Reis. Guian. iii, 1848, 741.—BONAP. Consp. i, 1850, 12.—STRICKL. Orn. Syn. i, 1855, 19.—PELZ. Verh. z.-b. Ges. Wien, 1862, 137; Orn. Nov. 1865, 6 (Brazil); Orn. Bras. 1871, 2, 392.—GURNEY, Cat. Rapt. Norw. Mus. 1864, 27.—SALV. P. Z. S. 1870, 214 (Veragua).—RIDGW. Cat. Falcon. Mus. Boston Soc. May, 1873, 10.—SCL. & SALV. Nom. Neotr. 1873, 122.

*Ibycter chimachima* KAUP, Arch. f. Naturg. xvi, 1850, 41.—SHARPE, Cat. Acc. B. M. 1874, 39.

*Falco crotophagus* MAX. Reis. Bras. i, 1820, 297; ii, 199.

*Falco degener* ILLIG. Mus. Berol.—LICHT. Verz. Doubl. 1823, 61.

*Polyborus degener* VIG. Zool. Journ. i, 1824, 336.—STEPH. Zool. xiii, 1826, pt. 2, 11.—LESS. Man. i, 1831, 88.

*Milvago ochrocephalus* SPIX, Av. Bras. i, 1824, 12, pl. 5.—KING, Zool. Journ. iii, 424; Voy. Beag. i, 532.—GRAY, Gen. 1844, 2.—PEALE, U. S. Expl. Exp. 1848, 61.—BURM. Th. Bras. ii, 1856, 36.

*Polyborus ochrocephalus* JARD. Ill. Orn. pl. 2.—SWAINS. Classif. B. i, 1831, 310.

*Haliaetus ochrocephalus* CUV. Règ. An. i, 1829, 327.

*Gymnops strigilatus* SPIX, Av. Bras. i, 1824, 10, pl. 4.

*Chimachima* AZARA, Pax. Par. i, 1802, 50.

*Hab.*—Tropical America, from the frontier of Paraguay (latitude 28° south) through Brazil and Colombia to Veragua.

*List of specimens in the United States National Museum.*

Catalogue number.	Corresponding No. of.	Original number.	Sex and age.	Locality.	When collected.	From whom received.	Nature of specimen.
13871	4	6	—	Brazil	—	United States Exploring Expedition	S.
16529	—	101	—	do	—	Capt. T. J. Page	S.
20938	—	42	♂ juv.	Paraguay	March, 1860	do	M.
20940	—	53	♀ ad.	do	do	do	M.
59048	—	—	—	do	do	do	S.
62133	—	2567	♀ ad.	Veragua (Calobre)	—	O. Salvin	S.

*Other specimens examined.*

Mus. Philad. Acad., 8; Amer. Mus., N. Y., 2; Boston Soc., 4; Mus. Comp. Zool., 2; G. N. Lawrence, 2—total, 24.

*Measurements.*

Sex.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	No. specimens.
♂	10.50–11.80	7.30–8.30	0.75	1.85–2.05	1.35–1.40	3
♀	11.10–11.50	7.75–8.10	0.88–0.92	2.10–2.20	1.50	5

GENUS IBYCTER, Vieillot.

*a. Ibycter.*

*Ibycter* VIEILLOT, Analyse, 1816, 22 [type, *Falco americanus* Bodd.].—GURNEY, Cat. Rapt. Norw. Mus. 1864, 29.

*Ibiacter* KAUP, 1845, (*vide* Gray).

*β. Daptrius.*

*Daptrius* VIEILLOT, Analyse, 1816, 22 [type, *D. ater* Vieill.].—SUNDER. Disp. Acc. Hemeroharp. 1874, 39.

*Gymnops* SPIX, Av. Bras. i, 1824, 11 [type, *G. fasciatus* Spix = *D. ater*, juv. ?].

*Ibycter* AUCT.—GURNEY, Cat. Rapt. Norw. Mus. 1864, 29.—SHARPE, Cat. Acc. 1874, 34.

*Osteology* (of *I. americanus*).—Skull most like that of *Phalcobænus*\* (*australis*), but anterior half of the premaxillary relatively much smaller, the posterior half large, broad, and highly arched; nostril nearly circular, imperfectly rimmed; lacrymals narrower, more pointed.† Length of skull, 2.80 (1.15); breadth, 2.45; height, 1.10–1.20. Sternum, 2.20–2.60, 1.35–1.40, 1.15–1.25, 0.50–0.60; posterior margin with two deep indentations, these sometimes connected with a pair of foramina.

*General external features.*—General form and appearance very similar to that of the buteonine genera *Rostrhamus* and *Cymindis*, the tarsi being unusually short, the remiges greatly developed, and the tail long and broad. Bill much as in *Milvago*, but cere larger, and the irregularities of the tomia less distinct. Nostril circular, imperfectly rimmed, the

\* Should we be correct in our supposition that the bones described under the head of *Milvago* as probably of that genus, then we should say that *Ibycter* is very much more like *Milvago* in its cranial characters; but there is a possible suspicion that they may belong to *Ibycter* (*Daptrius*) *ater*.

† The palatines are wanting in the only specimens before us.



tubercle not conspicuously exposed. Tarsus scarcely longer than middle toe; outer toe very much longer than the inner; posterior toe about three-fourths as long as the inner. Web well developed. Scutellæ of the tarsus small, irregularly hexagonal, scarcely larger in front; top of toes with a continuous series of transverse scutellæ. Claws normal, long, and sharp.

*Pterylosis*.—Remiges, 22, unusually developed, but the primaries much larger than the secondaries; fourth or fifth quill longest; first intermediate between eighth and tenth; outer five with inner webs very shallowly sinuated.\* Tail long and broad, much rounded. Plumage generally compact and lustrous, but soft and downy on the posterior lower parts. Loral, orbital, and gular regions naked, the skin brightly colored (deep red in life); crop naked, though the space is concealed by the overlying feathers.†

This genus is the most aberrant one of the group, and differs from all its associates in its very ærial and arboreal habits, its very short tarsi, long toes, especially the outer and posterior ones, and in the shallow sinuation of the inner webs of the primaries. Indeed, it resembles so closely, in most of these points, the genus *Rostrhamus*, that without an examination of its skeleton one would hardly hesitate to place it next that genus.‡ The examination of its cranium and the coracoid apparatus, however, shows plainly that it has no real affinity to that genus; but that, on the contrary, it is strictly polyborine.

The two subgenera of *Ibycter* are not very strongly marked, and may be barely defined by the following diagnosis:

- a. Size large. Bill slender, the tip much produced; gonys barely convex, nearly horizontal. Bare superciliary region very narrow. *Ibycter*.
- β. Size small. Bill thick, the tip only slightly produced; gonys strongly convex, decidedly ascending terminally. Bare superciliary region very wide ..... *Daptrius*.

## IBYCTER AMERICANUS.

### RED-THROATED IBYCTER.

*Falco americanus* BODD. Tabl. Pl. Enl. 1783, 25.

*Ibycter americanus* GRAY, Gen. App. 1849, 1; List B. B. M. 1848, 28; Gen. and Subgen. 1855, 2; Hand List, i, 1869, 5.—STRICKL. Orn. Syn. i, 1855, 22.—SCL. P. Z. S. 1857, 15; 1858, 449.—SCHL. Mus. P.-B. Polybori, 1862, 9.—PELZ. Verh. z.-b. Ges. Wien, 1862, 134; Orn. Bras. 1871, 2, 392.—SCL. & SALV. P. Z. S. 1864, 368 (Panama); ib. 1870, 838 (coast of Honduras).—GURNEY, Cat. Rapt. Norw. Mus. 1864, 29.—LAWR. Ann. N. Y. Lye. ix, 1868, 132 (Costa Rica).—SALV. P. Z. S. 1870, 214 (Veragua).—RIDGW. Cat. Falc. Mus. Bost. Soc. May, 1873, 11.—SCL. & SALV. Nom. Neotr. 1873, 122.—SHARPE, Cat. Acc. B. M. 1874, 35.

*Falco aquilinus* GM. S. N. i, 1788, 280.—TEMME, Tab. Méth. 1836, 2.

*Circæetus aquilinus* CUV. Règ. An. i, 1817, 317.

*Ibycter aquilinus* VIG. Zool. Journ. i, 1824.—STEPH. Zool. xiii, 1826, pt. 2, 10.—GRAY, Gen. B. 2; ed. 2, 2; fol. i, 1844, 9, sp. 1.—KAUP, Mus. Senck. 1845, 262.—CABAN. Schomb. Reis. Guian. iii, 1848, 742.—BONAP. Consp. i, 1850, 12.—CASSIN, P. A. N. S. Philad. 1860 (Turbo and Truando, N. G.; notes on habits and voice).

\* Very much as in the buteonine genera *Cymindis* and *Rostrhamus*.

† According to Nitzsch, the pterylosis of *I. (Daptrius) ater* is very similar to that of the *Buteones*; but all the tracts are narrow, the outer branch of the inferior tract broader and quite free, with a strong hook at the end, the dorsal portion of the spinal tract short, the anterior half sparsely feathered, posteriorly densely feathered. The remiges are 22 in number.

‡ Schlegel (Mus. P.-B. Polybori, 1862, p. —) places the species of *Rostrhamus* in *Ibycter*!



- Gymnops aquilinus* SPIX, Av. Bras. i, 1824, 11.  
*Polyborus aquilinus* LESS. Man. Orn. i, 1828, 88.  
*Falco formosus* LATH. Ind. Orn. i, 1790, 38; Gen. Hist. i, 1821, 260 (*vide* SHARPE, l. c.).—SHAW & NODD. Nat. Misc. xii, pl. 435.—SHAW, Zool. vii, 1812, 159.  
*Ibyster formosus* PELZ. Verh. z.-b. Ges. Wien, 1832, 134; Orn. Bras. 1871, 2, 392.—SCL. & SALV. Nom. Neotr. 1873, 122.  
*Falco nudicollis* DAUD. Traité, ii, 1800, 79, 177.  
*Milvago nudicollis* BURM. Th. Bras. ii, 1856, 37.  
*Ibyster leucogaster* VIEILL. Gal. Ois. 1825, pl. 6.—SWAINS. Classif. ii, 1837, 209.—LESS Traité, 1831, 33.—BONAP. Consp. i, 1850, 12.  
*Aigle d'Amérique* BUFF. Pl. Enl. i, 417.  
*Red-throated falcon* LATH. Synop. i, 1781, 97.

*Hab.*—Tropical America, north to Guatemala and Honduras, south to Eastern Brazil and Ecuador. Veragua and Para (SHARPE).

#### Descriptions.

Wing, 13.70–16.60; tail, 9.80–11.70; culmen, 0.90–1.20; tarsus, 2.05–2.60; middle toe, 1.70–2.05.

*Adult.*—Uniform glossy black, with a dull reflection of bluish-green; feathers on the sides of the neck edged with grayish-white beneath the surface. Abdomen, tibiae, and crissum immaculate pure white. Bill deep maize-yellow, the base and cere more olivaceous; naked skin of throat, etc., deep red; feet coral-red; claws black. (Colors of fresh specimens.)

#### Remarks.

Two specimens from "Brazil," in the American Museum at Central Park, New York, labeled "*Pileatus* MAX," seem to be larger and more brightly-colored than the average of more northern examples; but the differences are very slight. They measure as follows: Wing, 14.70–16.60; tail, 11.70; culmen, 1.08–1.20; tarsus, 2.30–2.60; middle toe, 1.95–2.05. They probably correspond with *I. formosus* PELZ. (*ex* LATH.)—(See Sharpe, l. c. 36, foot-note.)

#### List of specimens in the United States National Museum.

Catalogue No.	Original No.	Sex and age.	Locality.	When collected.	From whom received.	Nature of specimen.
16805	.....	.....	Panama Railroad	.....	J. McLeannan	M.
17786	.....	.....	New Granada (Truando)	.....	A. Schott	
17787	.....	.....	New Granada	.....	do	
17788	.....	.....	do	.....	do	
17789	.....	.....	do	.....	do	
41253	.....	♀ ad.	Costa Rica	June 6, 1865	J. Carmiol	
50602	.....	— ad.	Ecuador (Guayaquil)	.....	A. Destrugé	
53161	.....	— ad.	Costa Rica	May —, 1868	M. L. Calleja	
54020	.....	♂ ad.	Panama	.....	J. McLeannan	
54021	.....	♀ ad.	do	.....	do	
62134	2717	— ad.	Chiriqui	.....	O. Salvin	
64933	564	— ad.	Costa Rica	.....	W. M. Gabb	
64934	609	♂ ad.	do	.....	do	
64935	304	— ad.	do	.....	do	
64936	608	♂ ad.	do	.....	do	
64937	610	♀ ad.	do	.....	do	
67861	115	♂ ad.	Costa Rica (Talamanca)	.....	do	
67878	137	♂ ad.	do	.....	do	

## Other specimens examined.

Mus. Philad. Acad., 2; New York, 2, Boston Soc., 3; G. N. Lawrence, 3; R. Ridgway, 1—total, 29.

## IBYCTER (DAPTRIUS) ATER.

## BAND-TAILED IBYCTER.

- Daptrius ater* VIEILL. Anal. 1816, 22; Nouv. Dict. xvi, 1819, 387; Gal. Ois. 1825, pl. 5.—VIG. Zool. Journ. i, 1824, 319, 336.—STEPH. Zool. xiii, pt. 2, pl. 32.—LESS. Tr. Orn. 1831, 32.—GRAY, Gen. 1840, 2; ed. 2, 1841, 2; fol. ed. 1844, sp. 2.—KAUP, Ueb. Falk. Mus. Senck. 1845, 262.—CABAN. Schomb. Reis. Guian. iii, 1848, 742.
- Ibycter ater* SWAINS. Class. i, 1837, 308; ii, 209.—R. SCHOMB. Verz. Fauna Br. Guian. 1840, 742.—GRAY, Gen. 1844, i, 9, pl. 5, f. 1; List B. B. Mus. 1848, 29; Hand List, i, 1869, 5.—BONAP. Consp. i, 1850, 12.—STRICKL. Orn. Syn. i, 1855, 23.—PELZ. Verh. z.-b. Ges. Wien, 1862, 135; Orn. Bras. 1871, 2, 392.—SCHL. Mus. P.-B. Polybori, 1862, 7.—GURNEY, Cat. Rapt. Norw. Mus. 1864, 29; Ibis, Jan. 1875 (description of young).—SCL. & SALV. Nom. Neotr. 1873, 122.—SHARPE, Cat. Acc. B. M. 1874, 35.
- Ibycter (Daptrius) ater* RIDGW. Pr. Boston Soc. May, 1873, 11.
- Falco aterrimus* TEMM. Pl. Col. i, 1823, pls. 37 (adult) and 342 (young).
- Gymnops aterrimus* SPIX, Av. Bras. i, 1824, 11.
- Circæus aterrimus* CUV. Règ. An. i, 1828, 328.
- Daptrius aterrimus* LESS. Man. Orn. i, 1828, 75.
- Milvago aterrimus* BURM. Th. Bras. ii, 1856, 39.
- Daptrius striatus* DUMONT, Dict. Sc. Art. Caraçará,—?—VIEILL. Nouv. Dict. H. N. xvi, 387 (juv.).
- † *Gymnops fasciatus* SPIX, Av. Bras. i, 1824, 10, pl. 4 (young).
- Circæus fasciatus* CUV. Règ. An. i, 1828, 338.
- Pandion fasciatus* GRAY, in Griff. ed. Cuv. Birds i, 1829, 41.
- Caracara fasciata* LESS. Tr. Orn. 1831, 35.
- Ibycter fasciatus* GRAY, Gen. B. fol. i, 1844, 9; Hand List, i, 1869, 5.—STRICKL. Orn. Syn. i, 1855, 33.—SHARPE, Cat. Acc. B. M. 1874, 34 (foot-note).
- Pandion strigilatus* GRAY, in Griff. Cuv. i, 1829, 42.

*Hab.*—Amazonian district, reaching into Ecuador on the west, British Guiana on the north, and extending along Eastern Brazil as far south as latitude 30° south (SHARPE).

## Description.

Wing, 11.75–12.70; tail, 7.80–8.00; culmen, 0.75–0.80; tarsus 1.90–2.00; middle toe, 1.40–1.45.

*Adult.*—Uniform glossy black, with a bluish reflection. Tail with a basal (exposed) zone of white. Bill yellow; orbital region and feet red.

*Young.*—Similar, but black duller, more purplish, and white at base of tail more extended (covering about the basal two-thirds), and crossed with several incomplete black bars or rows of black spots, these decreasing in width and continuity toward the base.

## Remarks.

Mr. Gurney's remarks in the Ibis (January, 1875), on the plumage of the young of this species are important, and we shall therefore quote that portion of them bearing directly on the question of *I. fasciatus*, (Spix). Mr. Gurney says that in the young bird, "the white caudal band extends over the upper two-thirds of the tail, and is crossed by five successive transverse black bars, increasing in breadth from the top downward, the uppermost bar being about a quarter of an inch in depth, and the lowest nearly half an inch, causing the general appearance of the tail to bear a marked resemblance to the tail of the adult of *Ibycter chimachima*. The remainder of the plumage of this specimen is of a paler and more purplish black

than in the adult bird, except some portions of the back and breast, which seem to have been recently molted, and to have thus assumed the ordinary adult coloration. A specimen resembling the above in the markings of the tail is figured in Temminck's 'Planches Coloriées' (pl. 342). It seems probable that *Ibycter fasciatus* Spix is merely the immature bird of *I. ater* in the plumage above described. In a very adult bird from Quito, in the Norwich Museum, the pure white caudal band is varied by two isolated black spots, which I have no doubt are the remains of the black transverse bars which cross this portion of the tail in the young bird. A similar stage of plumage, but with more numerous black spots, is figured in the 'Planches Coloriées' (pl. 37), (p. 95)."

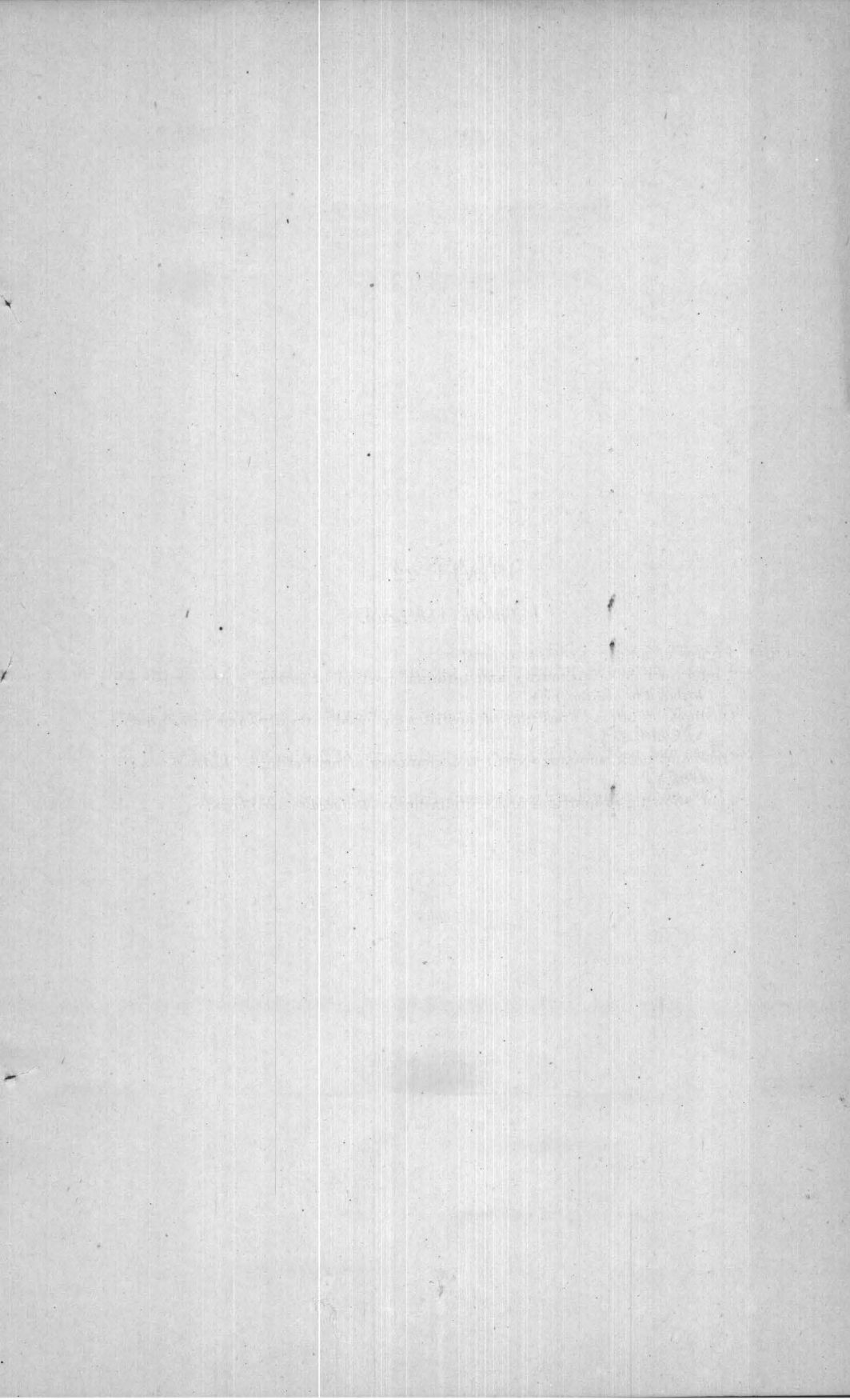
#### APPENDIX.

The *Ibycter gymnocephalus* of d'Orbigny was based upon specimens seen but not obtained by its describer at Cochabamba, Bolivia. It is probably identical with *I. "formosus"* Pelz. ex Lath. (= *I. americanus*), in which case the following is to be added to the synonymy of *I. americanus*.

*Ibycter gymnocephalus* D'ORB. Voy. Am. Mérid. 1835, 50; Synop. Av. Mag. Zool. 1838, 2.—STRICKL. Orn. Syn. i, 1855, 24.—GRAY, Gen. App. 1842, 1; Hand List, i, 1869, 5.—SHARPE, Cat. Acc. B. M. 1874, 34 (foot-note).







## PLATE 22.

(*Polyborus cheriway.*)

- Fig. 1. Figure of adult. [*Greatly reduced.*]
2. Under surface of primaries and terminal portion of lateral half of the tail.  
[*Reduced to one-fourth.*]
  3. Outlines of bill and position of nostril, as viewed laterally and from above.  
[*Natural size.*]
  4. Head and neck, showing extent and character of feathering. [*Reduced to one-fourth.*]
  5. Foot, showing proportions and scutellation. [*Reduced to one-fourth.*]

Fig. 1.

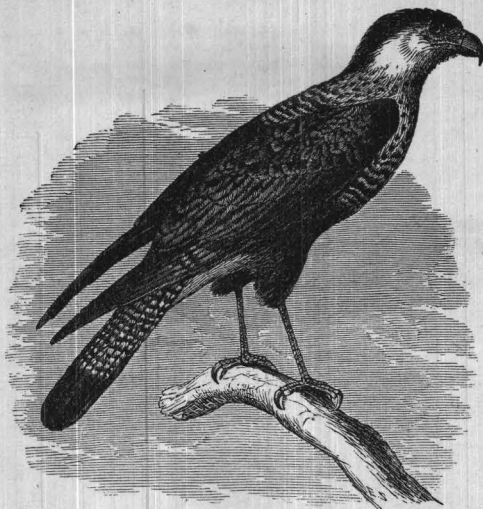


Fig. 2.

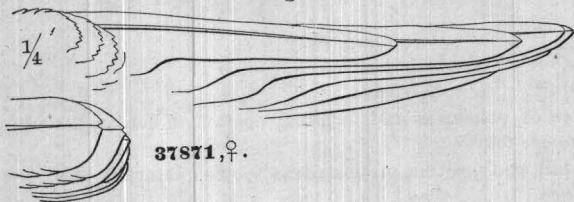


Fig. 4.



Fig. 3.

NAT. SIZE.

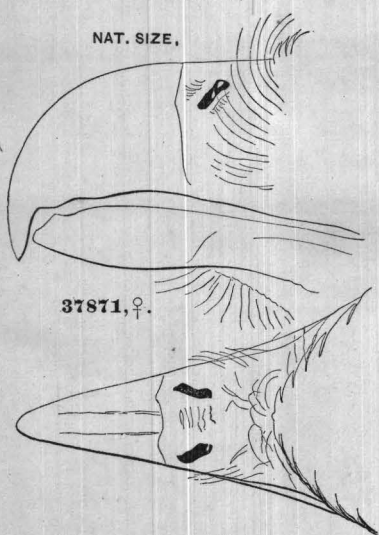
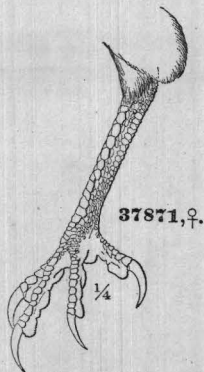
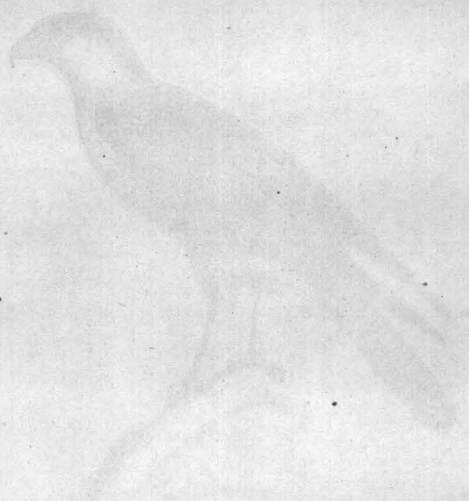
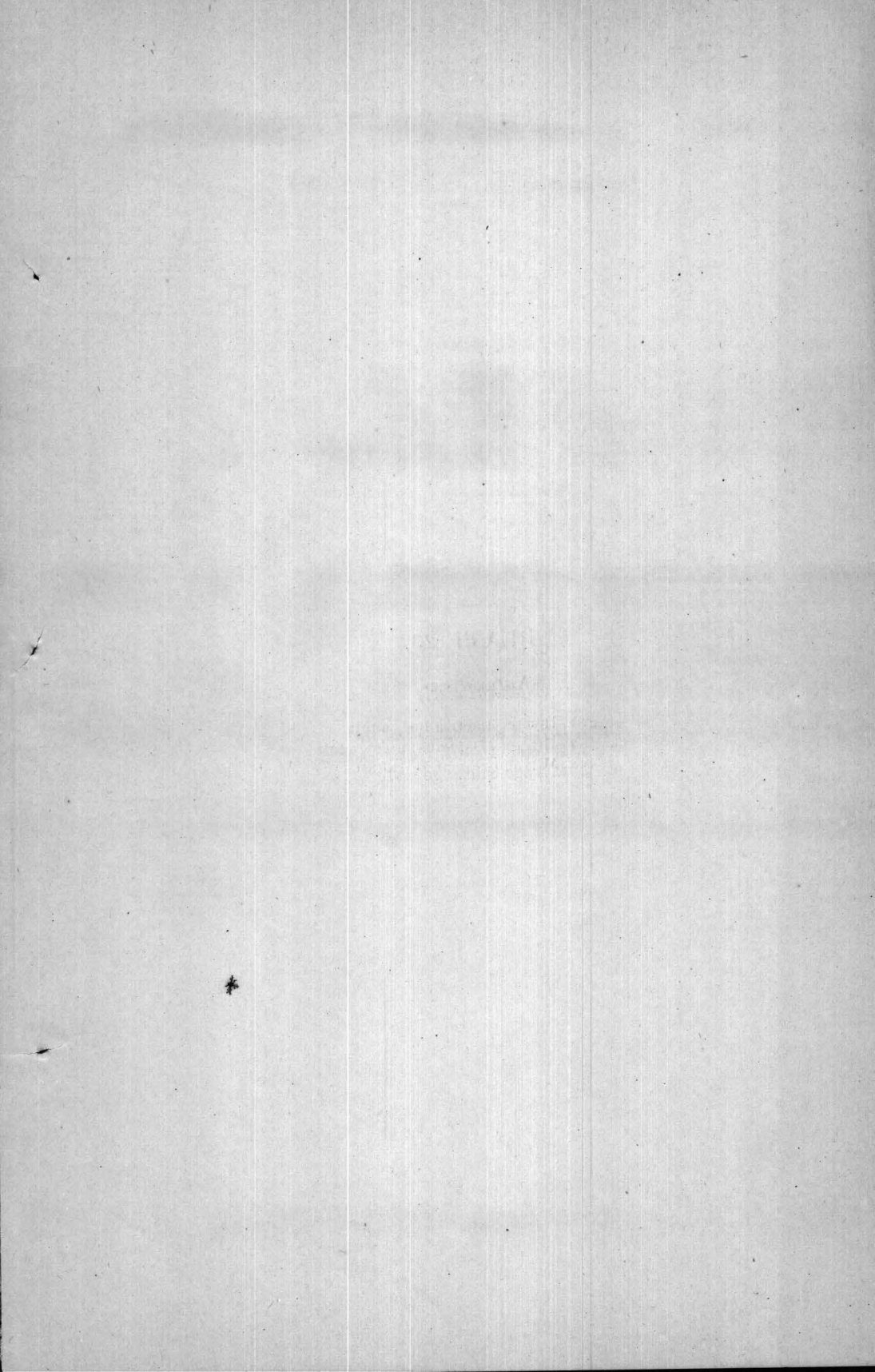


Fig. 5.









## PLATE 23.

*(Natural size.)*

- Fig. 1. *Ibycter americanus*; adult.
- 2. *Ibycter (Daptrius) ater*; adult.
- 3. *Milvago chimango*; adult.

Fig. 1.

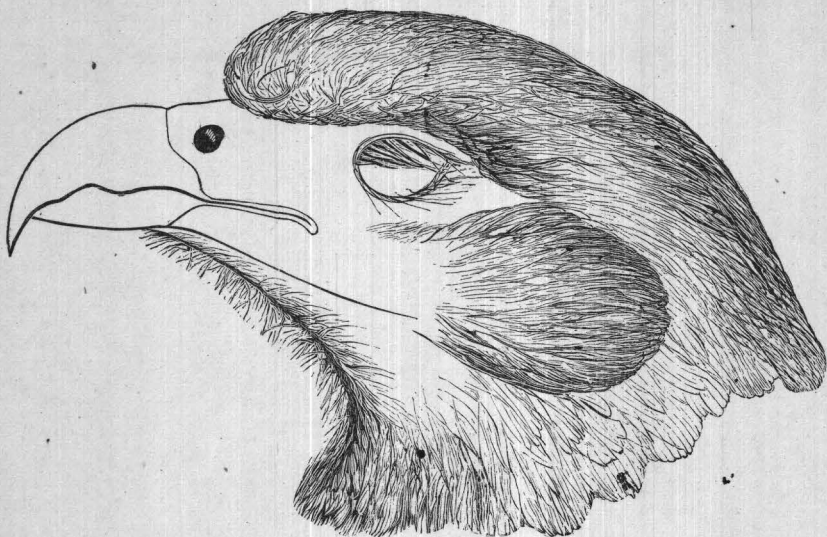


Fig. 2.

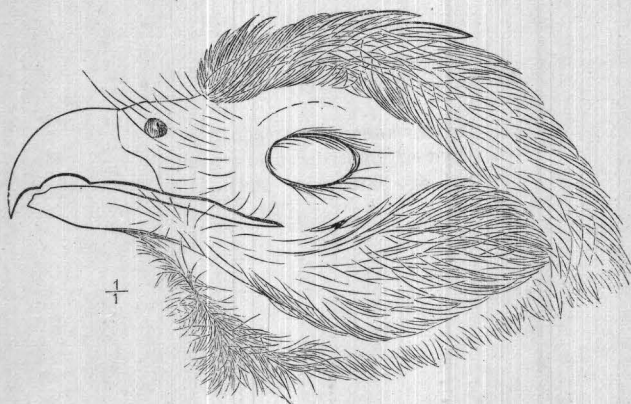
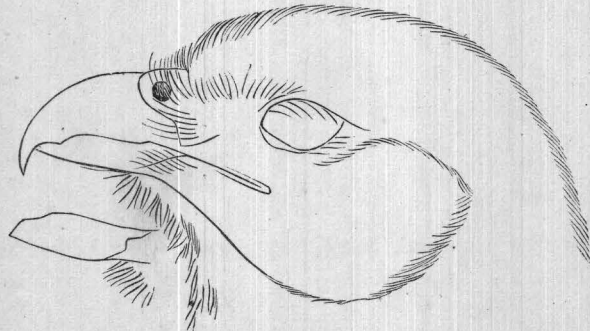
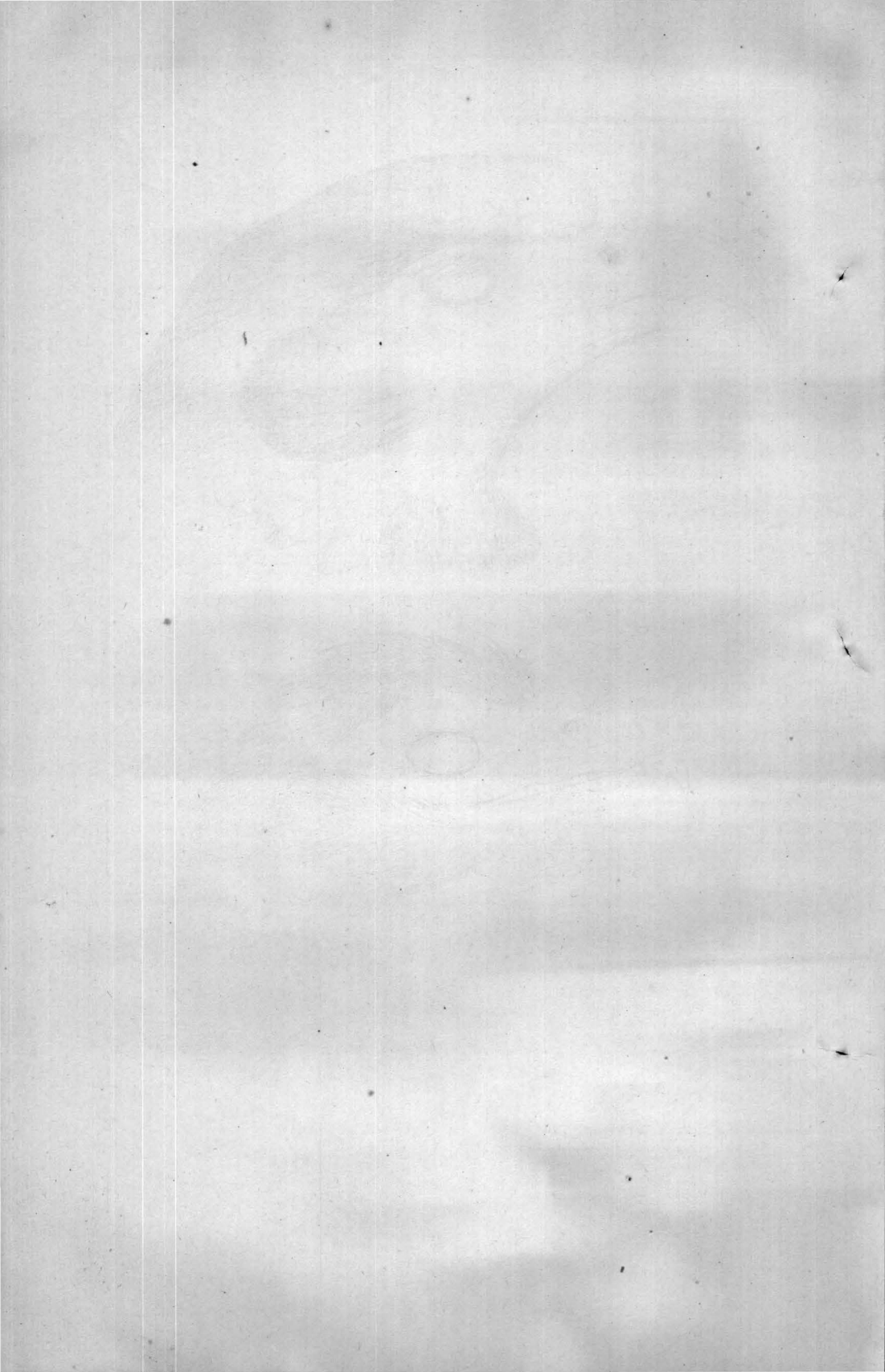
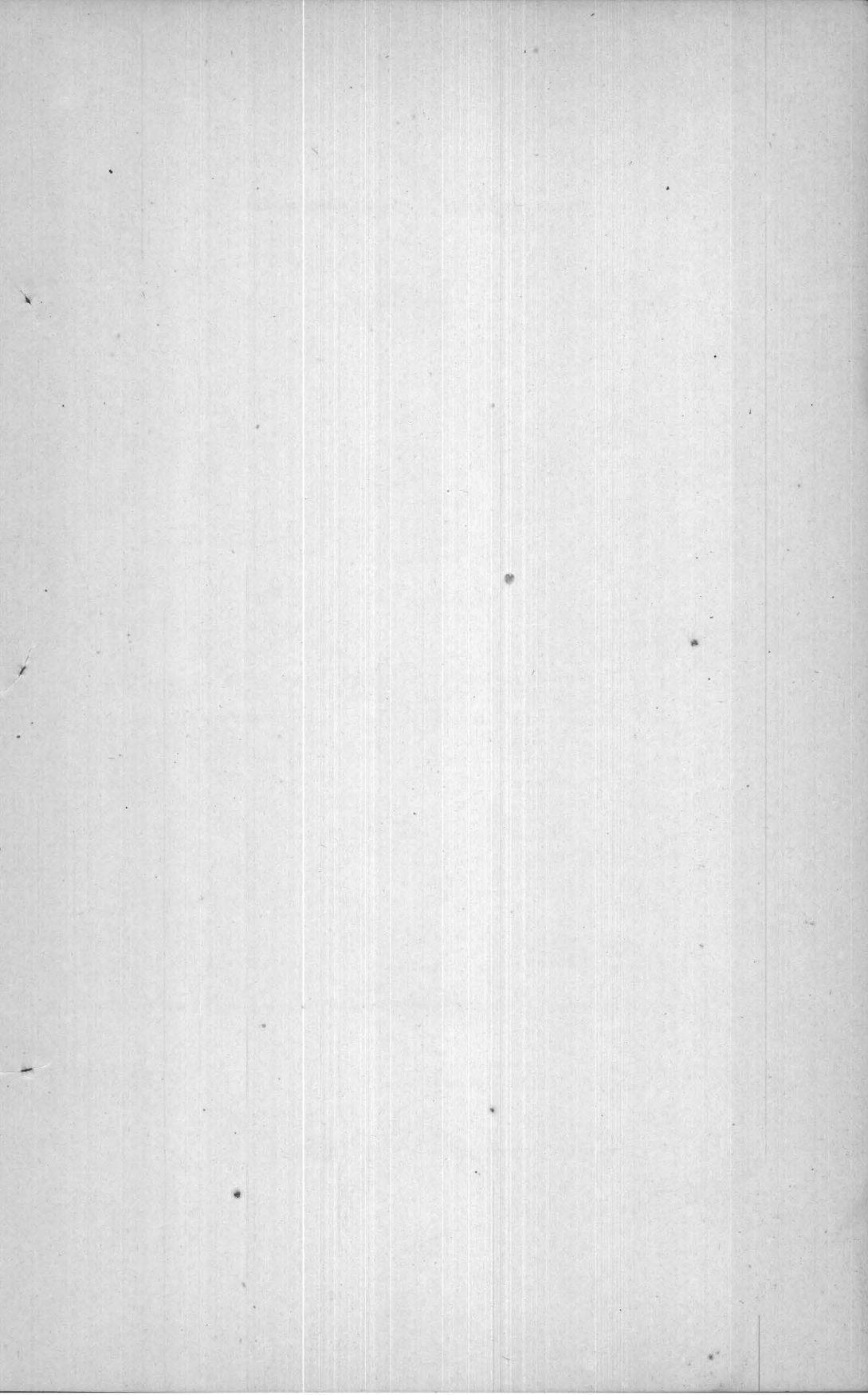


Fig. 3.









## PLATE 24.

(*Natural size.*)

- Fig. 1. Supramaxillary, nasals and lachrymal of *Phalcobæus* (*Senex*) *australis*.  
2. Coracoid apparatus of *Ibycter americanus*.  
3. Coracoid apparatus of [*Rostrhamus sociabilis* (the Buteonine form most like *Ibycter* in external form).  
4. Sternum of *Milvago* (*chimachima* ?).  
5. Sternum of *Ibycter americanus*.  
6. Sternum of *Polyborus tharus*.

Fig. 1.

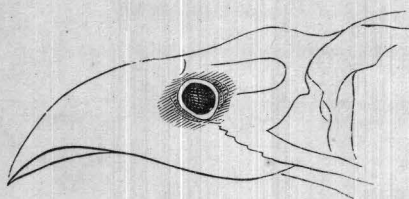


Fig. 2.

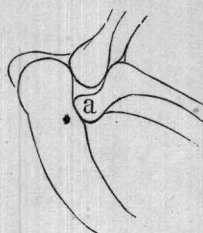


Fig. 3.

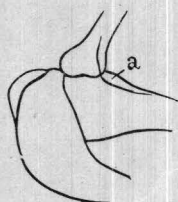


Fig. 4.

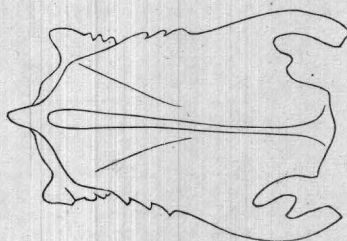


Fig. 5.

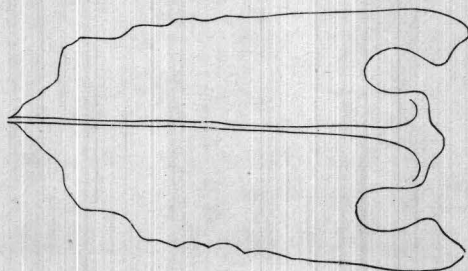
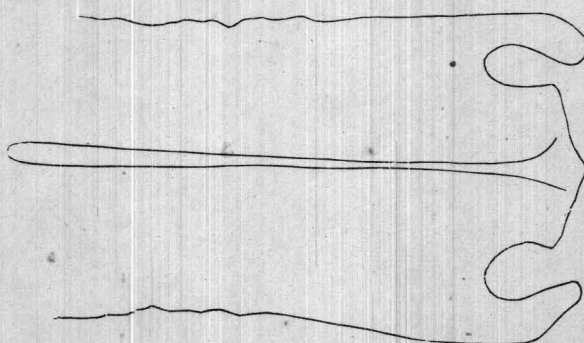
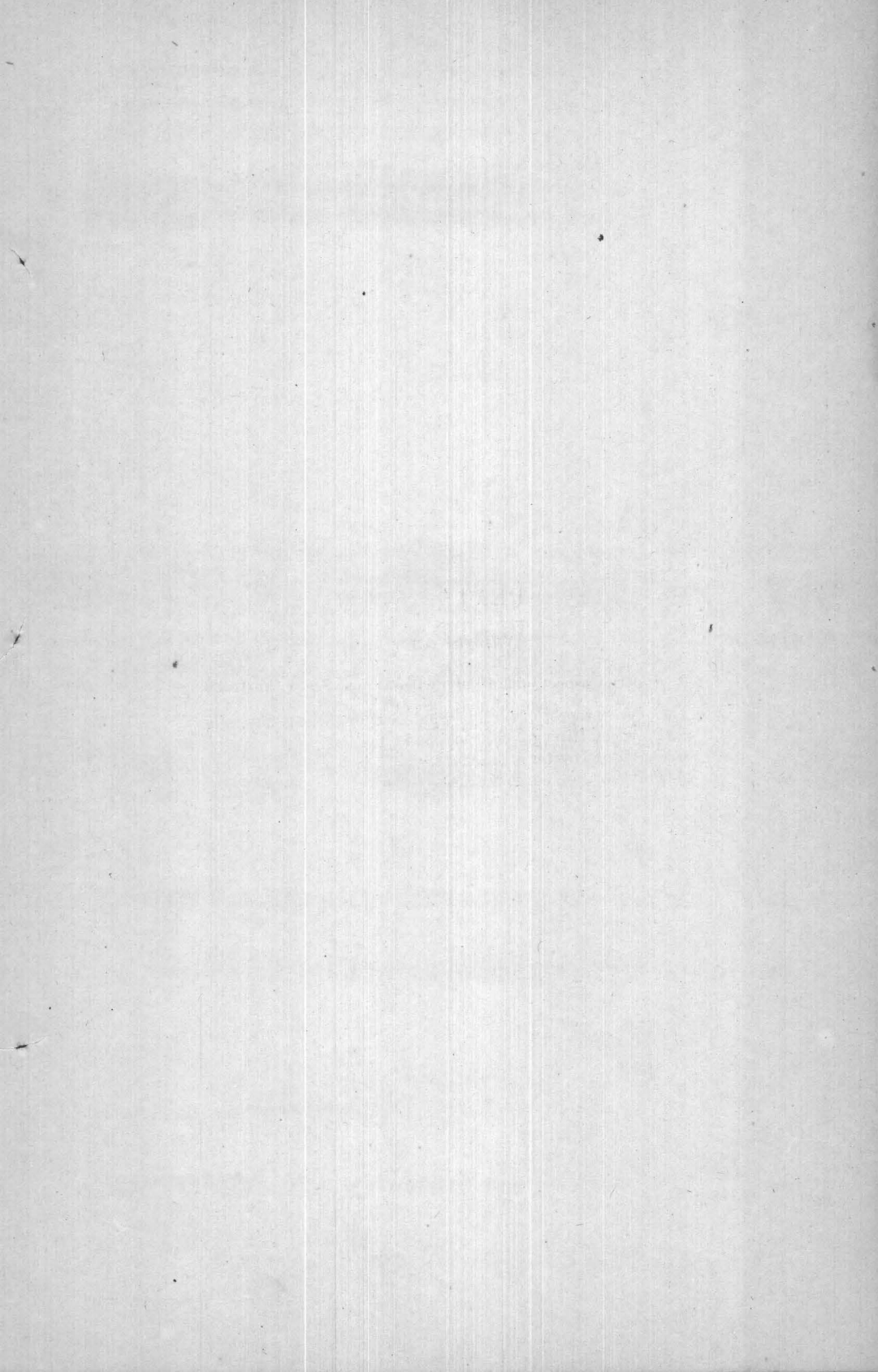


Fig. 6.









## PLATE 25.

(*Natural size.*)

- Fig. 1. Superior aspect of skull of *Phalcobænus* (Senex) *australis*.  
2. Pelvis of *Milvago* (*chimachima* ?).  
3. Pelvis of *Ibycter americanus*.  
4. Pelvis of *Polyborus tharus*.

Fig. 1.

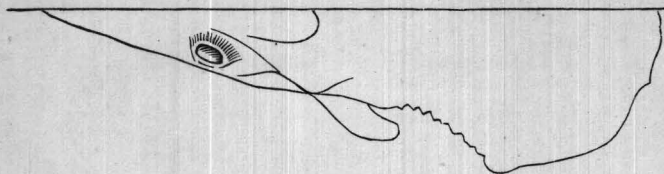


Fig. 2.

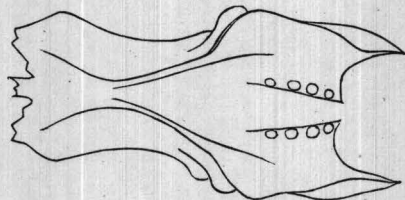


Fig. 3.

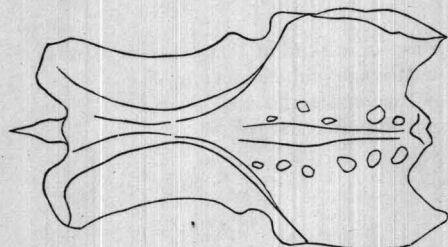
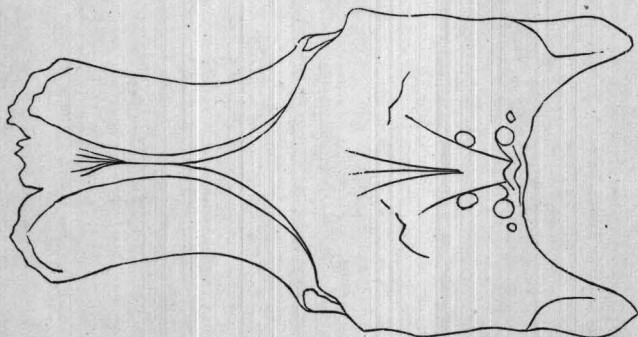
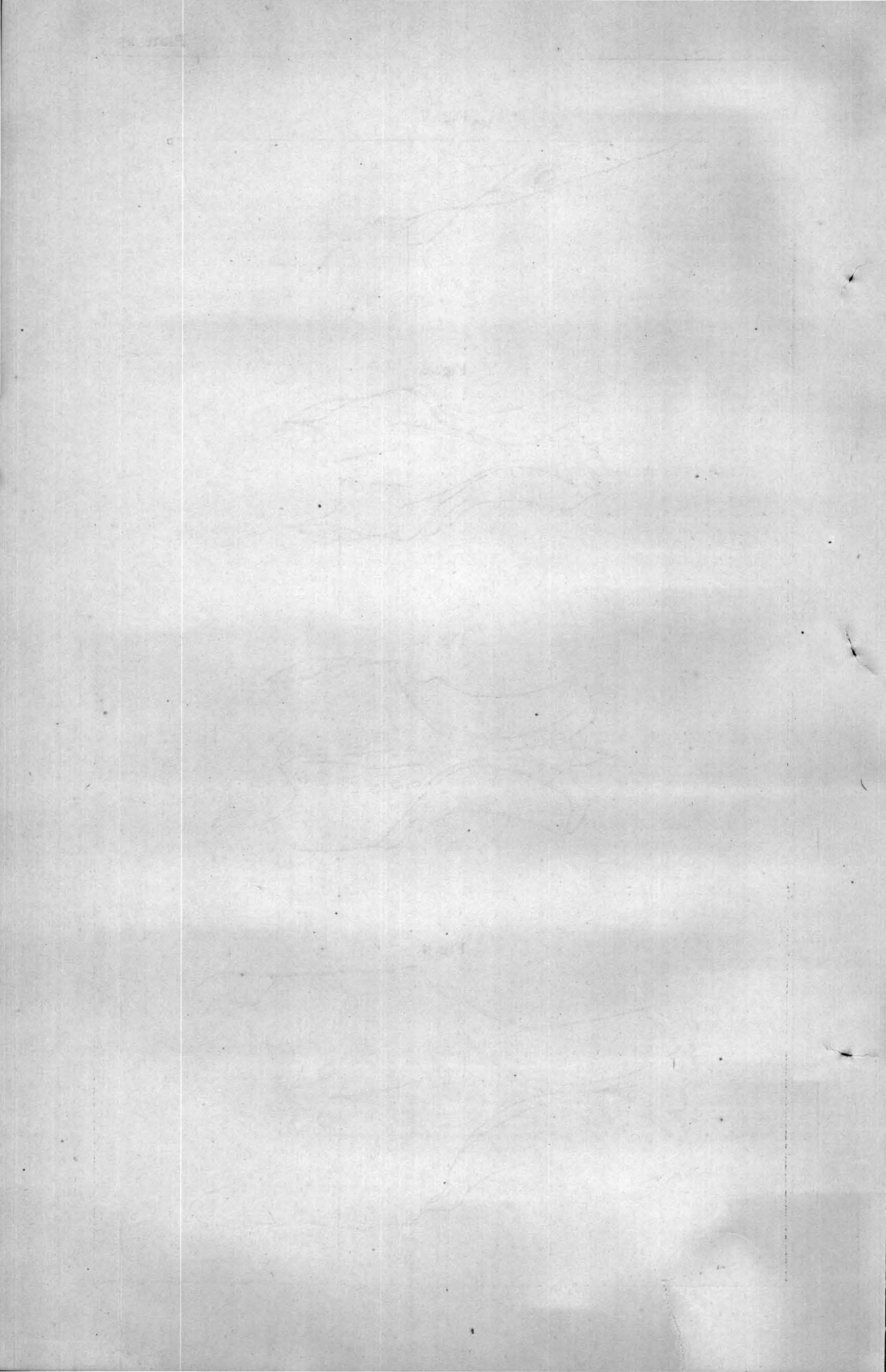
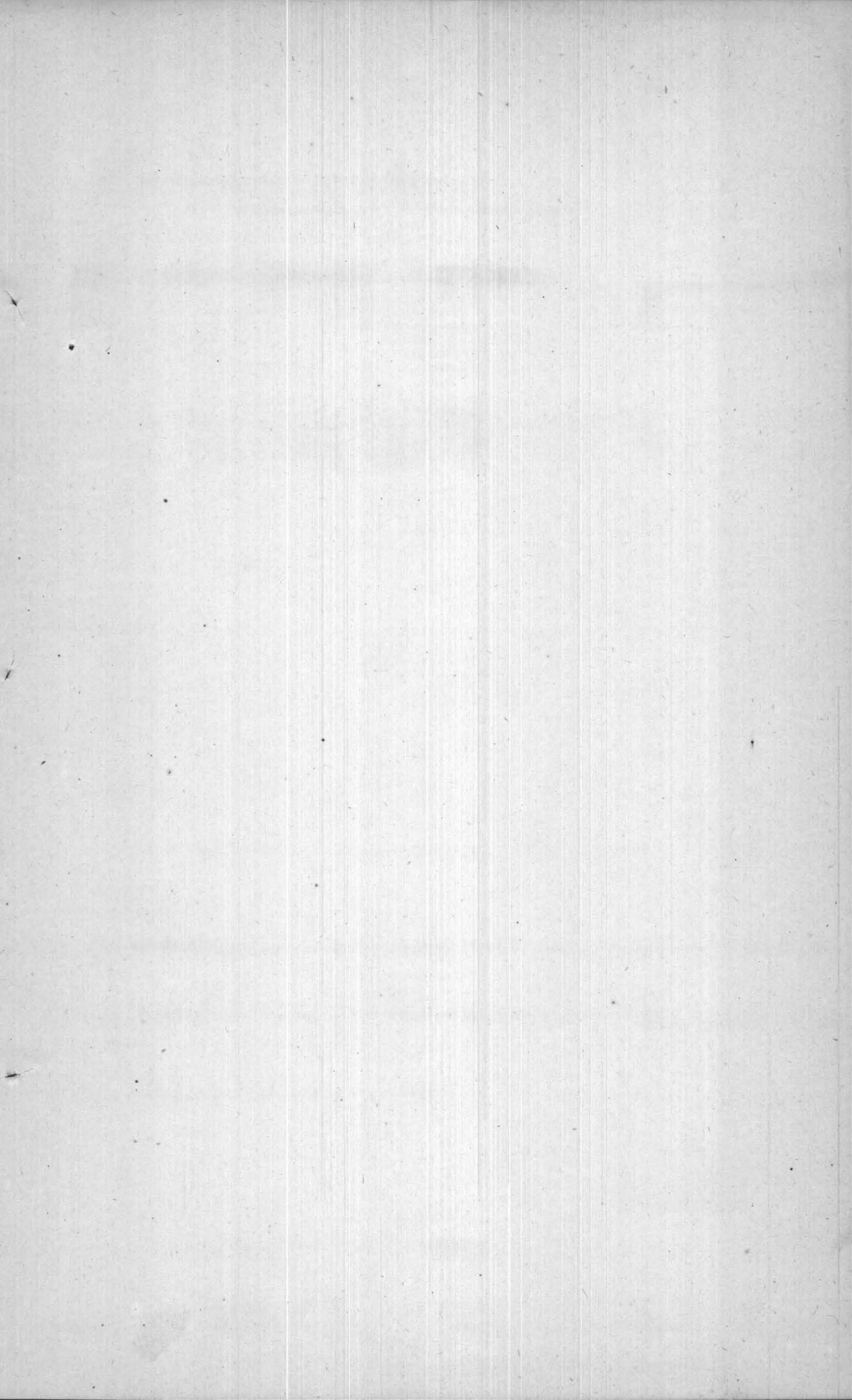


Fig. 4.









## PLATE 26.

- Fig. 1. Foot of *Ibycter americanus*. [*Natural size.*]  
2. Under surface of primaries of *Milvago chimango*. [*Reduced one-half.*]  
3. Under surface of primaries, and terminal portion of rectrices of one side, of  
*Phalcobæus megalopterus*. [*Reduced one-half.*]

Fig. 1.

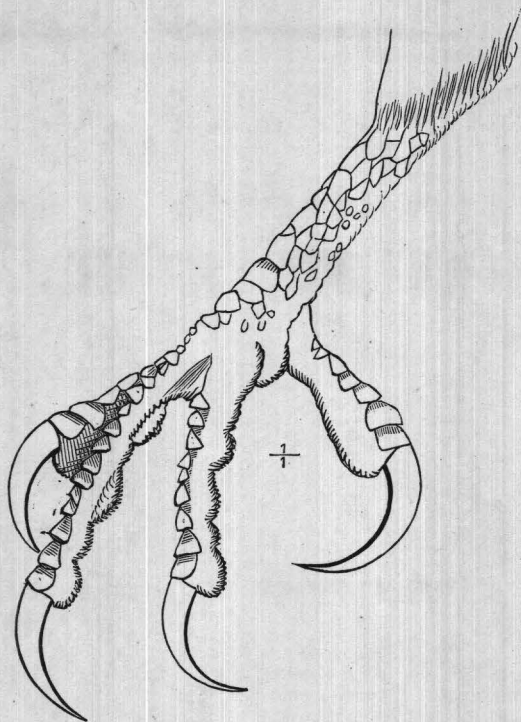


Fig. 2.

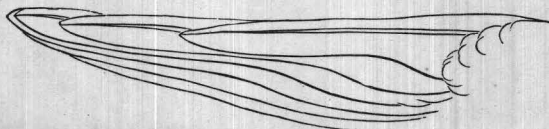
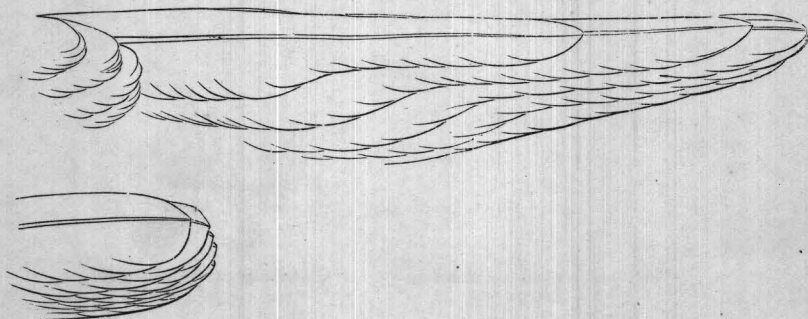


Fig. 3.







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DEPARTMENT OF THE INTERIOR.

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BULLETIN

OF

THE UNITED STATES

GEOLOGICAL AND GEOGRAPHICAL SURVEY

OF

THE TERRITORIES.

F. V. HAYDEN,

U. S. GEOLOGIST-IN-CHARGE..

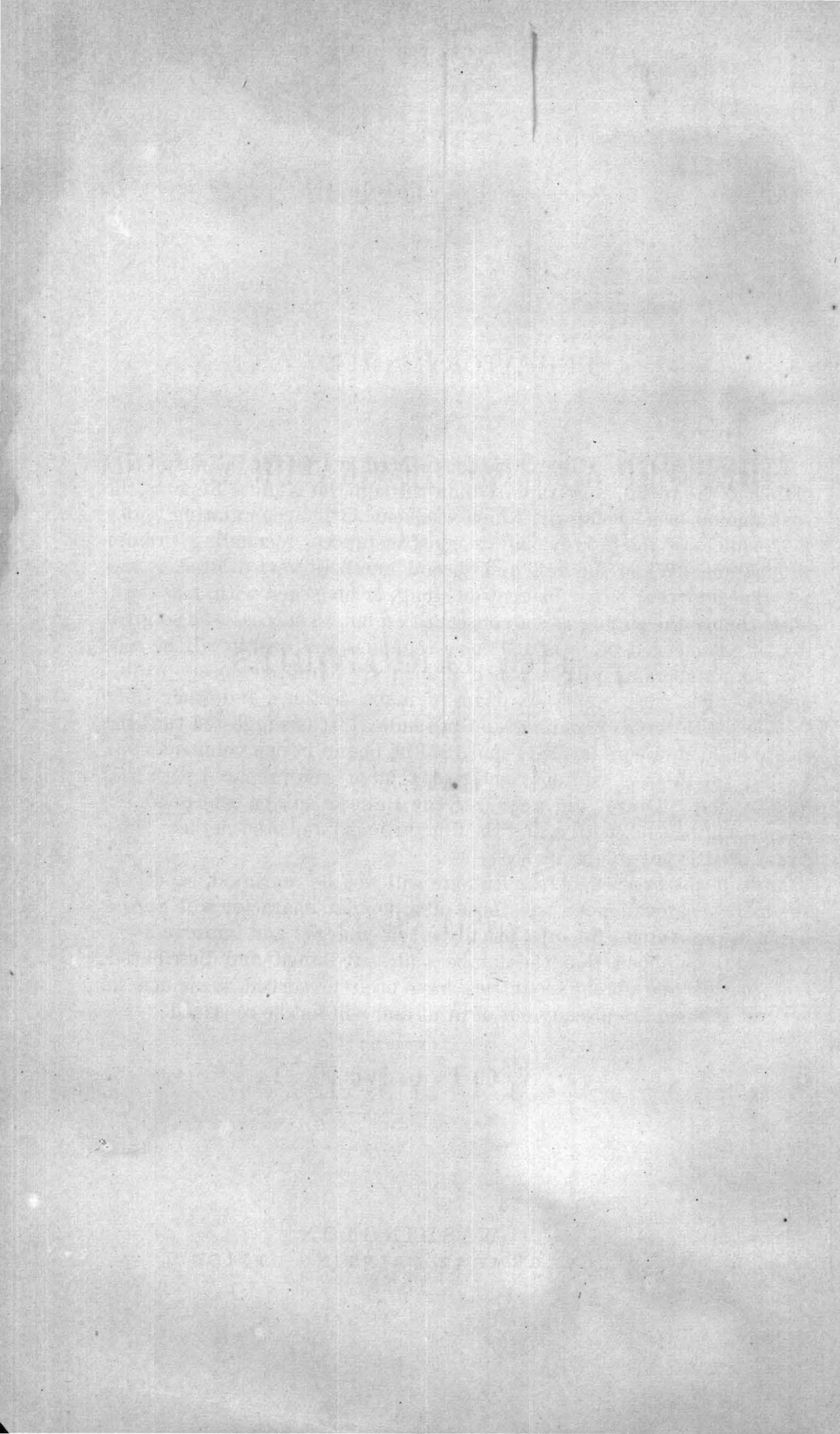
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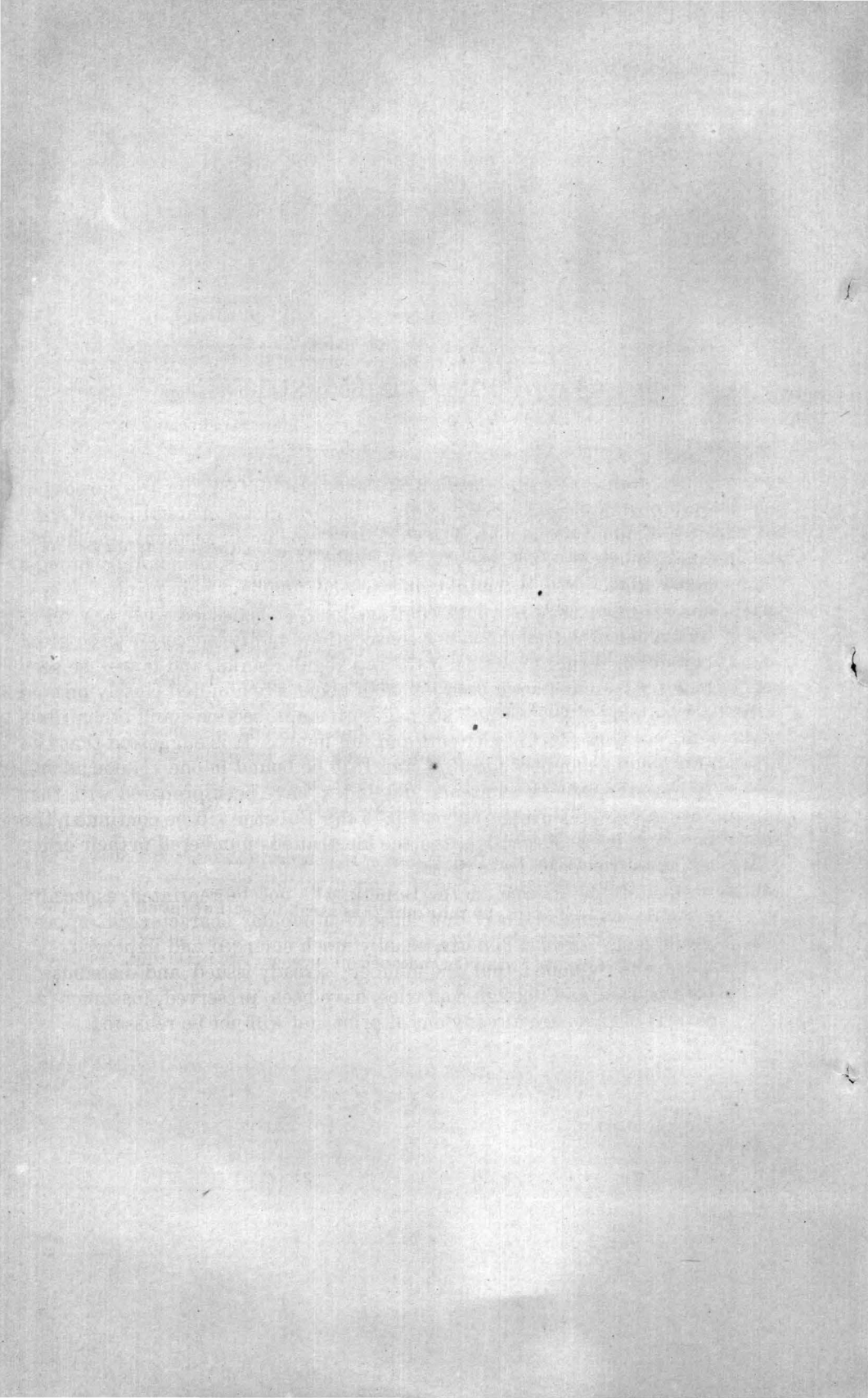
## PREFATORY NOTE.

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The Bulletin of the Survey was commenced in 1874 for the purpose of giving to the world, more rapidly than through the Annual Reports, the vast amount of new material which was constantly accumulating under the auspices of the Survey, and, in most instances, demanding prompt publication. When the first and second numbers were printed, it was not expected that it would continue long, or be issued with any regularity, hence the paging is not consecutive; but its success was so great that it commenced the year 1875 as a regular serial, and it will be seen that six numbers have been issued of about five hundred closely-printed octavo pages, with twenty-six pages of maps, sections, and other illustrations, with table of contents and full index. It is suggested that the entire eight numbers for 1874 and 1875 be bound in one volume as vol. I; and the table of contents and index have been prepared with that idea in view. During the year 1876 the Bulletin will be continued, the paging will be consecutive, and the illustrations numbered in their order so far as it is possible to do so.

Most of the articles in the Bulletin will not be reprinted, especially the more technical ones; but those of a popular character will appear again in the Annual Reports, usually much enlarged and improved.

It is to be hoped that the numbers already issued and distributed, both in this and foreign countries, have been preserved, inasmuch as several of them are already out of print and will not be re-issued.



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