

A DISCUSSION OF THE PACIFIC RAILROAD REPORTS AS ISSUED IN THE QUARTO EDITION

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THE VOLUMES CONSIDERED in these pages contain the findings of those who participated, both in field and in laboratory, in the first systematic examination by the United States government of the immense area extending from the Mississippi River to the Pacific Ocean and from Canada on the north to Mexico on the south, and which, in the half century from 1803 to 1853 had become part of our national domain.

The only official expeditions yet to have crossed the region, those of Lewis and Clark and of Frémont, had acquired, everything considered, some interesting scientific facts, but these were inadequate when it became necessary to determine "the most practicable and economical route" for a railroad.

For the factor of practicability, concerned with such matters as grades, distances, and weather conditions, demanded trained topographers, astronomers and meteorologists; while the factor of economy, interlocked to be sure with the practicable, but even more intimately related to a railroad's construction and maintenance as well as to the subsistence of prospective settlers along its line of march, necessitated knowledge, in terms of identification, of rocks, minerals, soils, timber, plants and all forms of animal, bird, fish and reptilian life, as well as estimates of their abundance and availability. Such facts could only be supplied by geologists, mineralogists, botanists, zoologists and others proficient in the natural sciences, at that time a covering term for all that related to the systematic study of nature as a whole, whether animal, vegetable or mineral.

On earlier official expeditions the government had demonstrated little enthusiasm when asked to include men interested in such matters. Now the expert knowledge which only they could supply had become vital and the Smithsonian Institution and its members were called upon to provide instructions in the technicalities of field collecting — the making of the specimens and the keeping of the records upon which the reports of the scientists must of necessity be based — and to enumerate the equipment necessary for its accomplishment. This they did, wholeheartedly, even specifying red pencils and stressing the importance of adding tartar emetic to all alcohol — "besides adding to its preservative powers, [this] will remove any temptation to drinking it on the part of unscrupulous persons."

Because the expeditions were to cross the trans-Mississippi West at, or near, four widely separated parallels of north latitude, a comprehensive coverage was assured as far as natural history collections were concerned and the scientific reports, some including fine plates, which eventually were appended to those descriptive of the routes and which were written by such authorities as S. F. Baird, W. P. Blake, J. S. Newberry, J. Torrey.

Asa Gray and many others, constituted and still must be regarded as invaluable records.

Although publications dealing with special aspects of the surveys never fail to mention that important scientific work was accomplished, they do not elaborate upon the statement. Long interested in collectors — often ignored to the point of anonymity — I determined, with the optimism of ignorance, to “run through” the series of reports, twelve volumes in thirteen, and see what could be learned of the men upon whose accomplishments in the field the scientific edifice was erected. The great quarto edition, occupying three to four feet of standing room, has been characterized as “monumental,” “sumptuous” — it has been stated¹ that its publication cost the government over one million dollars, the surveys themselves four hundred and forty-five thousand — and, although its pristine magnificence is no longer in evidence, its very dimensions may have contributed to my confidence that the content would be well organized, clearly presented and easily digested. This did not prove to be the case and any “running through” was reduced to a walk and eventually a full stop, for, with a mental preference to understand one thing before proceeding to another, I was soon “bogged down” in the fine points of military terms and distinctions, as well as in far deeper swamps.

It finally became clear that, before attempting any study of the reports, three preliminary tasks must be faced: first, the government documents in which they were issued must be understood; second, the content of all volumes of the series must be analysed in order to be able to cite accurately from their pages; and, third, a satisfactory means of locating the data contained in the analyses must be devised. These tasks were completed for my own enlightenment and convenience. But, convinced that anyone approaching the reports for the first time must be faced with similar needs to mine, it is possible that my findings may have a wider usefulness. I shall comment upon what these three tasks involved before turning to their solution which constitutes my paper proper.

(1) The issues of the quarto edition have been enumerated before now. But because enumerations vary greatly in form of presentation, it was necessary to compare and to check, one against the other, a number of authoritative bibliographies in order to feel certain that an accurate and complete picture had been obtained — a slower task than the brevity of my summary might indicate.

Especially helpful to this end were the presentations contained in Mr. George Leslie Albright's “Official explorations for Pacific railroads 1853–1855,” issued in 1921 (*University of California Publications in History*, Volume X), in a *Catalog of books represented by Library of Congress printed cards*, published in 1948 (Ann Arbor, Michigan, Volume 154, 634–635), and in Professor Howard Taft's *Artists and illustrators of the Old West 1850–1900*, published in 1953 (Charles Scribner's Sons, New York). Another volume, the *Checklist of United States public documents* (edition

¹ See Taft, H., *op. cit.* this page, (5 & fn. 13).

3. 1: 1274–1275), published in 1911, which distinguishes all numbered Congressional Documents by Serial Set and Serial Number, served as a final check. These authorities are occasionally referred to in my paper.

(2) Examining the quarto edition for the first time, problems inherent in its makeup became apparent immediately. I mention some of the more baffling:

There is no index covering the content of the entire series, and understandably so. For, with the exceptions of Volumes VIII, IX and XI, none has pages numbered consecutively throughout — Volumes II and X, for examples, have seven sets of page numbers each — and it is therefore necessary, and I believe always will be necessary, to “leaf through” a volume to locate an included report. Although page numbers in individual reports are for the most part clear, seemingly endless blank or only occasionally numbered pages, in front or back matter especially, are, at best, an annoyance if one needs to cite therefrom.

Because it had been impossible, obviously, to assemble on time for a waiting printer, the great amount of material due from widely scattered sources, reports are not always present where a volume’s table of contents indicates and subsidiary papers, usually scientific, are not always found in proximity to the report to which their content relates. A note on an inserted page or an easily overlooked footnote states that such and such a paper will appear later, although when or where is not predicted. Only by time-consuming search through later volumes — involving in all instances the “leafing through” procedure already mentioned — can matter delayed in publication be located; it should be added that, when found, it is usually referred to its appropriate place in an earlier volume!

And what is true of belatedly published papers is also true of matter elucidating the content of reports, whether this be in the form of plates of all sorts, of maps, of profiles, etc. Such material is usually enumerated in a report’s list of illustrations, but checking often proves that certain items are lacking, or missing at the point indicated. To enumerate the discrepancies in illustration-content existing in the many issues of any one volume — they appear to have been dictated by the convenience, or perhaps necessity of a volume’s compiler — was clearly impossible. One could not hope to do more than supply the total number included in the report under scrutiny and, when such existed, their numerical captions.

Attempts to record the whereabouts of a report’s scattered but affiliated content, textual and illustrative, resulted in the analyses contained in this paper. That they were essential became evident when cross-references necessitated accurate citation. Furthermore, although analyses could not do away with the broken pagination of the volumes, an irremediable problem, they could lessen some of the other difficulties inherent in the makeup of the series; for to be able to ascertain, within the compass of a few pages, the content of its volumes, would certainly be far more convenient than to search repeatedly through the ponderous tomes themselves.

Two other matters related to the compilation of the volumes had best

be mentioned here — others will be referred to at appropriate places in my analyses.

The first concerns dates of publication. The printers were obliged to proceed with their tasks; consequently the year supplied on the main title page of a given volume may be earlier than one recorded on an included letter, report, etc. When, in my analyses, later years than those which appear on the title pages are recorded, they are based on this internal evidence and merely represent the year before which, it may be assumed, a given volume could not have been issued. For one example see under Volume II.

To scientists dates of publication can be immensely important. Dr. I. M. Johnston's paper, "Publication dates for botanical parts of the Pacific Railroad Reports" (*Journal of the Arnold Arboretum*, Volume XXIV, 237-242, 1943), assigns, on the strength of records found in old letters, contemporary publications and the like, "Reasonably exact dates to the various botanical reports, accurate in most cases to within a month or two." Dr. Johnston also takes into consideration the first, or octavo edition of the reports, an issue not discussed in this paper. (See my *fn.* 3.) His conclusions are summarized in tabulated form at the end of his paper.

Only in rare instances do the authors of scientific reports included in the quarto series mention the publication date of their papers. When they do so the fact is noted in my analyses.

The second matter relates to the manner in which certain illustrations are incorporated in the volumes. Because of the great number contained in Volume XI the unfortunate results are especially apparent and my comments are confined to that volume, although to a lesser degree the criticism is applicable wherever similar illustrations are included.

Volume XI is, in text, perhaps the most generally useful in the entire series of *Pacific Railroad Reports*. It is regrettable, therefore, that its associated and very fine maps, profiles, panoramic views, etc., representing the graphic results of the topographers' arduous task, should have been included in a manner which makes their manipulation impossible and is destructive of the illustrations themselves. Most are extremely large and many-times-folded. Bound tightly in with and outbalancing the text which constitutes the first half of the volume, to unfold them, to keep any single one spread out for study or any two for comparison, and to execute the even more difficult refolding without tearing, are all impossibilities. Yet, because none bears any exterior notation, they must be opened to full size for identification — the placement of the beautifully lettered and explicit captions seems to have been selected to that very end! Even in copies of Volume XI which have obviously stood unused, many of the illustrations have already disintegrated along their exposed, uneven folds; lack of dusting or the reverse may have been responsible, or possibly the paper was not suitable in the first place. Had they been mounted on linen (see *fn.* 4), visibly captioned to conform to the enumeration found in the volume's "Contents," and supplied loose in a container, their usefulness would have been assured and their life expectancy prolonged; as issued,

they symbolize endless labor and much money spent to little purpose. It is possible that in some instances these valuable records might still be mounted although in others it could not be done now.

(3) The *Ann Arbor Catalog*, cited on p. 39, supplies two synopses which serve as guides to the content of the quarto edition. The first, "Contents (Outline)," condenses into some 15 lines the routes described in its volumes, usually according to the parallels which they followed. The second, "Contents (By authors)," supplies an alphabetical list of the men who contributed reports, and then records, for the most part by a descriptive term, the subject matter of their papers, followed by the volume or volumes in which they are to be found. Presumably intended to supplement each other, these synopses presuppose a very great familiarity with the content of the series and, in my opinion, are not sufficiently explicit to offer much assistance to anyone approaching the reports for the first time. Moreover, necessitating frequent reference to the volumes themselves, they present many of the already mentioned difficulties inherent in the edition's makeup.

The "Alphabetical index of authors" which concludes this paper supplies, I believe, a more complete roster of contributors than does the somewhat similar list of the *Catalog*. And, when used in conjunction with my analyses, it provides, without reference to the volumes themselves, the precise association of every report as well as an outline of that report's entire subject matter and the pagination thereof. In possession of these facts one should be sufficiently informed to be able to turn immediately to the appropriate volume as well as to the information sought in any given report.

REPORTS OF EXPLORATIONS AND SURVEYS TO ASCERTAIN THE MOST PRACTICABLE AND ECONOMICAL ROUTE FOR A RAILROAD FROM THE MISSISSIPPI RIVER TO THE PACIFIC OCEAN ²

An enumeration of the Congressional Documents containing the reports. An analysis of the content of the twelve volumes, in thirteen, of the quarto edition in which the reports were issued in final form. An alphabetical index of authors to be used in conjunction with the analyses.

CONGRESSIONAL DOCUMENTS CONTAINING THE REPORTS

Although a few of the *Pacific Railroad Reports* enumerated below were issued in an octavo edition,³ the revised, complete and authoritative

² Present on the title-page of every volume in the series as well as on the title-pages of included reports, this is inconveniently long for repeated citation and is usually shortened to *Pacific Railroad Reports*, an abbreviation which G. K. Warren used as early as 1859 in his table of contents of Volume XI, [5].

³ The *Checklist of United States public documents* states, "Some of the . . . reports first appeared in 8° in House Document 129, 33d Congress, 1st session, in serial nos. 736, 737, and 739. Serial no. 738, the projected v. 3 of this edition, was never printed." See p. 39.

reports, the ones usually cited and the ones most often found in libraries, were prepared under the direction of the War Department and were issued for both Senate and House of Representatives in a quarto edition of twelve volumes, in thirteen, under the long descriptive title cited above.

The quarto edition is found as follows:

Volumes I through XI: *33d Cong., 2d Sess., Senate Ex. Doc. No. 78* [Serial Nos. 758 through 768 ⁴]; *33d Cong., 2d Sess., House Ex. Doc. No. 91* [Serial Nos. 791 through 801].

Volume XII: *35th Cong., 3d Sess., Senate Ex. Doc. No. 46* [Serial No. 992 ⁵]; *36th Cong., 1st Sess., House Ex. Doc. No. 56* [Serial Nos. 1054, 1055 ⁶].

All the issues cited above are numbered Executive Documents and are included in the Serial Sets.

There are, in addition, two printings, one of Volume XI, one of Volume XII, which lack document numbers and are not included in the Serial Sets. These are:

Volume XI: *36th Cong., 2d Sess., Senate Ex. Doc.*⁷

Volume XII: *36th Cong., 1st Sess., Senate Ex. Doc.*⁸

There may be variations in these unnumbered issues, related primarily to such matters as the date of publication on a volume's title-page, their illustration-content or illustration-placement and so on, but as far as text is concerned, all issues, whether numbered or unnumbered documents, appear to be accepted as the same.

AN ANALYSIS OF THE CONTENT OF THE THIRTEEN VOLUMES OF THE QUARTO EDITION

Volume I — 1855

33d Cong., 2d Sess., Senate Ex. Doc. No. 78 [Serial No. 758 ⁹]

The title-page of *Pacific Railroad Reports*, Volume I, is dated 1855. No included matter bears a later date.

Some parts, certainly, of the reports must have been issued for the Senate in this octavo, unillustrated, and preliminary edition; for example: *33d Cong., 1st Sess., Senate Ex. Doc. No. 52* [Serial No. 698]. See Albright (45, *fn.* 1; 160), and Taft (255, *fn.* 13).

⁴ Taft (255, *fn.* 2) records: ". . . The maps in the Senate Serial Set (768¹ and 768²) of volume 11 are mounted on linen . . . requiring two books (parts 1 and 2) to contain them." It has not been possible to locate a copy of Volume XI with mounted maps in the libraries of Boston or of Cambridge and the issue must be rare.

⁵ Taft (255, *fn.* 4) states: "This volume (Serial No. 992) duplicated in a single book the material in Serial Nos. 1054, 1055 [see below] but is designated on the title page as 'Supplement to Volume 1'". Card 2 of the *Ann Arbor Catalog* notes that this "Supplement to vol. I," was issued in 1859, W. A. Harris, printer.

⁶ The two volumes of this issue are distinguished on the respective title-pages of *Pacific Railroad Reports* as Volume XII. Book I, Volume XII. Book II.

⁷ The title-page records that this was printed in Washington by George W. Bowman and is dated 1861. The maps are bound in with the text. See Taft (255, *fn.* 2).

⁸ The title-page records that this was printed in Washington by Thomas H. Ford and is dated 1860. As in *House Ex. Doc. No. 56* its two parts (Book I and Book II) are bound separately, making two volumes. See Taft (255, *fn.* 3).

⁹ Because my analyses have been based upon a mixed set of the quarto edition, the

"Contents of Volume I," [iii], lists five papers. The subject matter of the first four, distinguished here as (1) through (4), is enumerated in the "Index to Report of the Secretary of War and Office Reports," [v]–viii, and that of the fifth, (5) below, in the "Alphabetical Index to Governor Stevens's Report," [637]–651. Page numbers run consecutively in (1) through (4); in (5) they are independently numbered.

The title-pages of (1) through (5) read respectively:

- (1) Report of the Secretary of War on the several railroad explorations. [1]–35.

For reprintings of portions of this report *see* "Explanatory note" quoted under Volume III, *fn.* 18.

- (2) An examination by direction of the Hon. Jefferson Davis, Secretary of War, of the reports of explorations for railroad routes from the Mississippi to the Pacific, made under the orders of the War Department in 1853–'54, and of the explorations made previous to that time, which have a bearing upon the subject: by Capt. A. A. Humphreys & Lieut. G. K. Warren, Corps of Topographical Engineers. [35]–111.

CONTENTS: Table of contents, [35]; An examination of the reports of explorations for railroad routes from the Mississippi to the Pacific, [37]–38; Humphreys & Warren report (6 chapters), [39]–111.

For reprintings of portions of this report *see* "Explanatory note" quoted under Volume III, *fn.* 18.

- (3) Memoranda on railways, prepared Office of Pacific Railroad Surveys; by Capt. Geo. B. McClellan, Corps of Engineers, under instructions from Hon. Jefferson Davis, Secretary of War. [113]–130.
- (4) Report upon the cost of transporting troops and supplies to California, Oregon, New Mexico, etc., etc. By Major General Thomas S. Jesup, Quartermaster General, U.S. Army. [131]–134.
- (5) Report of explorations for a route for the Pacific railroad, near the forty-seventh and forty-ninth parallels of north latitude, from St. Paul to Puget Sound. By I. I. Stevens, Governor of Washington Territory. [i]–vii; [1]–651.

CONTENTS: Table of contents, [iii]–vii; Part I. Reports from the field, [1]–72; Part II. Report (18 chapters), [73]–159; Miscellaneous documents related to special aspects of the survey,¹⁰ 160–635; Note, [636]; Alphabetical index to Governor Stevens's report. Prepared by E. B. Hunt, U.S.A., [637]–651.

For maps and profiles *see* under Volume XI.

A "Note," [636], states: "The Narrative of the Explorations, accompanied by Views, illustrating the Features of the country, the Natural History, Botanical and other Scientific Reports, with Illustrations, will be found in a Subsequent Volume." *See* under Volume XII, Books I and II.

one in the Arnold Arboretum Library, the printing is cited in every instance to facilitate checking should such be desired.

¹⁰ For authors of certain of these documents *see fn.* 56.

Volume II — 1857

33d Cong., 2d Sess., House Ex. Doc. No. 91 [Serial No. 792]

The title-page of *Pacific Railroad Reports*, Volume II, is dated 1855, but Pope's "Explanatory note" to Blake's geological report, inserted before the title-page of (4A) below, is dated February 18, 1857.

"Contents of Volume II," [iii], lists six papers, distinguished here as (1) through (6); a seventh, (4A) below, is not listed. Each of these seven papers has its own set of page numbers. They are cited on their respective title-pages as follows:

- (1) Report of explorations for a route for the Pacific railroad, by Capt. J. W. Gunnison, Topographical Engineers, near the 38th and 39th parallels of north latitude, from the mouth of the Kansas River, Mo., to the Sevier Lake, in the Great Basin. Report by Lieut. E. G. Beckwith, Third Artillery. [1]–128. 13 Plates (captioned but not numbered).

CONTENTS: Introductory letter, [3]; Contents, [5]–8; Report (10 chapters), [9]–118; Appendix A. Letters relating to the progress of the survey of the route near the 38th and 39th parallels, in charge of Captain Gunnison, [119]–124; Appendix B. Explanations of the map and illustrations, [125]–128.

For associated botanical report *see* under (2) below. For associated zoological reports *see* under Volume X. For maps and profiles *see* under Volume XI.

- (2) Report of explorations for a route for the Pacific railroad, on the line of the forty-first parallel of north latitude. By Lieut. E. G. Beckwith, Third Artillery. [1]–132.

CONTENTS: Introductory letter, [3]; Contents,¹¹ [5]–8; Report (10 chapters),¹² [9]–112; Appendix. Instructions from the Secretary of War, [113]–114; Botanical report, [115]–132.

For zoological reports *see* under Volume X. For plates, maps, profiles, *see* under Volume XI.

The title-page of the included Botanical report reads:

Report on the botany of the expedition: by John Torrey and Asa Gray. [115]–132. 10 plates (Nos. I–X).¹³

CONTENTS: Contents, [117]; Botanical report, Part I, [119]–125; Part II,¹⁴ 125–131; Explanation of the plates, 131–132.

- (3) Synopsis of a report of the reconnaissance of a railroad route from

¹¹ For "Errata" *see* p. 8, and for "Additional errata" *see* sheet inserted between pp. 8 and [9].

¹² Of these Chapter X, "Geology," includes 4 plates of fossils (Nos. 1–4) and 3 woodcuts.

¹³ Of these, No. I is associated with (2), Nos. II–X with (1).

¹⁴ Part I describes collections made under (2) and Part II collections made under (1). For the wording of the long descriptive headings of Parts I and II, *see Pacific Railroad Reports*, Volume II, where the heading of Part I appears on pp. 117, 119, and that of Part II on pp. 117, 119, 125.

Puget Sound via South Pass to the Mississippi River: by Fred W. Lander, Civil Engineer. [1]–45.

CONTENTS: Contents, [3]; Legislative and executive action in reference to this exploration and report, [5]–6; Introduction, [7]–28; Report, [29]–45.

- (4) Report of explorations of a route for the Pacific railroad, near the thirty-second parallel of north latitude, from the Red River to the Rio Grande, by Brevet Captain John Pope, Corps of Topographical Engineers. [i]–iv; [1]–185.

CONTENTS: Pope letter transmitting report, [ii]; Contents, [iii]–iv; Report (8 chapters), [1]–50; 12 Appendices (A through L),¹⁵ [51]–156; Botanical report, [157]–178; Index, [179]–185.

For map and profile *see* under Volume XI.

The title-page of the included Botanical report reads:

Report on the botany of the expedition: by John Torrey and Asa Gray. [157]–178. Index,¹⁶ [179]–185.

Associated with the route described in (4) but with its own set of page numbers is:

- (4A) Report on the geology of the route, near the thirty-second parallel: prepared from the collection and notes of Capt. Pope, by William P. Blake, Geologist of the Office of the United States Pacific Railroad Surveys. [1]–50. Geological map. Geological section.

CONTENTS: Explanatory note to geological report¹⁷ [inserted before title-page]; Blake letter submitting his report, [3]; Contents, [5]–6; Report (6 chapters), [7]–40; Catalogue of the geological collection made by Brevet Captain John Pope, 1853, [41]–42; Note in explanation of the map and section, [43]–44; Index to the report on the geology of the route near the thirty-second parallel, [45]–50.

- (5) Report of explorations for that portion of railroad route, near the thirty-second parallel of north latitude, lying between Dona Ana, on

¹⁵ Most of these are highly technical. Four, however, have a general interest:

“Appendix A. Diary of the expedition, by J. H. Byrne, Assistant Computer,” [51]–95, and “Appendix E. Table of camping places along the direct line of survey,” [98]–99, are both helpful guides to Pope’s route.

“Appendix B. Preliminary report on the natural history,” [94], signed by Spencer F. Baird, refers to the scope and importance of Pope’s zoological collection, and to anticipated publications thereon.

“Appendix D. Note upon the geological report,” [98], concerns the delayed publication of Blake’s report upon the geological collection, and the preliminary report of Jules Marcou in the octavo edition of *Pacific Railroad Reports*. *See* under (4A) below.

¹⁶ This covers matter contained in Pope’s report proper as well as in the botanical report.

¹⁷ Pope wrote: “The mineralogical collections made by me were placed in the hands of M. Jules Marcou for examination, and carried by him to France. They were subsequently returned in a confused condition, and with many of the labels displaced. This fact will account for many errors in the report, map, and section prepared by Mr. Blake.” This is dated Washington, February 18, 1857.

the Rio Grande, and Pimas Villages, on the Gila. By Lieut. John G. Parke, Corps of Topographical Engineers. [1]–28.

CONTENTS: Report, [3]–24; Appendix (in two parts, A and B), [25]–26; Index, [27]–28.

For Parke's later report *see* under Volume VII.

- (6) Extract from report of a military reconnaissance, made in 1846 and 1847, by Lieut. Col. W. H. Emory. [1]–22.

CONTENTS: Humphreys letter explaining the inclusion of this earlier report, [3]; Extract from Lt. Col. Emory's report, [5]–20; Index, [21]–22.

Volume III — 1856

33d Cong., 2d Sess., House Ex. Doc. No. 91 [Serial No. 793]

The title-page of *Pacific Railroad Reports*, Volume III, is dated 1856. No included matter bears a later date.

Volume III has five sets of page numbers.

"Contents of Volume III," [1], divides the subject matter into two parts, distinguished here as (1) and (2). The first bears the heading:

- (1) Extracts from the (preliminary) report of explorations for a railway route, near the thirty-fifth parallel of north latitude, from the Mississippi River to the Pacific Ocean, by Lieutenant A. W. Whipple, Corps of Topographical Engineers. [3]–36.

CONTENTS: Explanatory note,¹⁸ [3]; Extracts, [3]–32; [Portion of] Appendix B. Table containing the distances, altitudes, * * * * of each camp from Fort Smith to the Pacific Ocean, 33–36.

The title-page of the second reads:

- (2) Report of explorations for a railway route, near the thirty-fifth parallel of north latitude, from the Mississippi River to the Pacific Ocean: by Lieutenant A. W. Whipple, Corps of Topographical Engineers; assisted by Lieutenant J. C. Ives, Corps of Topographical Engineers.

CONTENTS: ¹⁹ Letter to the Secretary of War, [vii]–viii; General

¹⁸ Signed by Humphreys, the "Explanatory note" reads: "The reports of the Secretary of War and the revising officer, which appear in volume one, were founded, so far as they relate to the route near the 35th parallel, upon the preliminary report of Lieutenant Whipple. The following chapters, being those which are principally referred to in those revisory reports, are, therefore, republished. They are chapters two, three, four, five, and eleven, with a portion of appendix B. The preliminary profiles are also reprinted."

For "preliminary report of Lieutenant Whipple," *see* octavo edition of *Pacific Railroad Reports* (*House Ex. Doc. No. 129*). For "reports of the Secretary of War and the revising officer which appear in volume one" *see* under that volume. Reprintings of the "preliminary profiles" have not been located in the printings of the quarto series examined.

¹⁹ Page numbers in front matter preceding Part I appear to be confused but are cited as given.

table of contents,²⁰ [ix]–x; Part I, [i]–viii; [1]–136; Part II, [1]–77; Part III, [1]–127; Part IV, [iii]–xiii, [1]–175.

The title-pages of Parts I, II, III and IV read respectively:

Part I. Itinerary. [i]–viii, [1]–136. 10 plates (captioned but not numbered). 10 woodcuts.

CONTENTS: Errata, [iv]; Contents, [v]–vii; Illustrations, [viii]; Introduction, [1]–4; Itinerary (16 chapters), [5]–136.

Part II. Report of the topographical features and character of the country. [3]–77. 2 plates (captioned but not numbered). 2 woodcuts. 8 plates (diagrams, Nos. 1–8).

CONTENTS: Contents, [5]; Illustrations, [6]; General sketch of the route, [7]; Sections I through VII (of the route), [8]–45; General remarks upon various subjects, [45]–77.

For Maps and profiles *see* under Volume XI.

Part III. Report upon the Indian tribes, by Lieut. A. W. Whipple, Thomas Ewbank, Esq., and Prof. Wm. W. Turner, [1]–127. 7 plates (captioned but not numbered). 30 woodcuts. 3 maps (Nos. 1, 2, 3; inserted in text).

CONTENTS: Contents, [3]; Illustrations, [5]; Report (7 chapters), [7]–127.

Part IV. Report on the geology of the route, [i]–[xiii]; [1]–175. 3 plates (1 in text, unnumbered; for Nos. I, II, fossils, *see fn.* 21); 18 woodcuts. Geological map. 2 Geological sections. 9 small Geological sections (included in No. 2 below).

CONTENTS: Contents, [v]–vii; Illustrations, [viii]; Errata and addenda, [ix]; Additional errata, [xi]; Introductory letter (to No. 1), [xiii]; No. 1. General report upon the geological collections. By William P. Blake, Geologist of the Office of the United States Pacific Railroad Explorations and Surveys (10 chapters),²¹ [xiii]; [1]–116; Catalogue of the geological collection, [117]–119; No. 2. Resumé and field notes, by Jules Marcou,²² Geologist and Mining Engineer to the expedition; with a translation by William P. Blake, [121]–164; Resumé of a geological reconnaissance, extending from Napoleon, at the junction of the Arkansas with the Mississippi, to the Pueblo de los Angeles, in California. By Jules Marcou, Geologist and Mining Engineer,²³ [165]–175.

²⁰ This covers the subject matter of the entire Whipple report, Parts I through VI and its 13 Appendices (A through I, K through N), but only Parts I through IV are included in Volume III. For Parts V, VI and Appendices *see* under Volume IV.

²¹ Chapter IX, [99]–105, is headed: "Descriptions and notices of the fossils collected upon the route. By Professor James Hall." It contains 2 plates (Nos. I, II).

²² A "Note," [121], reads: "This paper is a copy of Mr. Marcou's field-book, and is an exact transcript of the original rough notes as they were taken while on the road or in camp."

²³ *Fn.* 1, [165], states: "This resumé is reprinted from the preliminary or first report of Lieutenant Whipple, in 8vo., Chap. VI, p. 40. (Reports of Pacific Railroad Surveys, House Doc. 129: Washington. 1855.)"

Volume IV — 1857

33d Cong., 2d Sess., House Ex. Doc. No. 91 [Serial No. 794]

The title-page of *Pacific Railroad Reports*, Volume IV, is dated 1856, but the "Introduction" to Part V, No. 4, [59], is dated January 12, 1857.²⁴

Volume IV has three sets of page numbers.

It is a continuation of the Whipple report begun in Volume III and includes Part V, Part VI, No. 1, and "Appendices to report." These subdivisions are distinguished here as (1), (2) and (3) and their title-pages read:

(1) Part V. Report on the botany of the expedition. [i]–vii; [1]–195.

CONTENTS: Contents, [v]–vii; Nos. 1, 2, 3, 4, [1]–167; Index to botany, [169]–182; No. 5, [185]–193.

For included botanical profile and for plates *see* under Nos. 2, 3, 4, 5, below.

Part V includes five papers, headed respectively:

No. 1. General description of the botanical character of the country. By J. M. Bigelow, M.D. [1]–16.

No. 2. Description of forest trees. By J. M. Bigelow, M.D. [17]–26. Botanical profiles.

No. 3. Description of the Cactaceæ. By George Engelmann, M.D., of St. Louis, and John M. Bigelow, M.D. [27]–58. 24 plates (Nos. I–XXIV).

CONTENTS: No. 3, [27]–53; Explanation of the plates of Cactaceæ, [54]–58.

No. 4. Description of the general botanical collections. By John Torrey. [59]–182. 25 plates (Nos. I–XXV).

CONTENTS: Introduction, [59]; No. 4, [61]–161; Explanation of the plates, [163]–167; Index to botany, [169]–182.

No. 5. Description of the mosses and liverworts. By W. S. Sullivant. [185]–193. 10 plates (Nos. I–X).

CONTENTS: No. 5, [185]–191; Explanation of the plates, 192–193.

(2) Part VI. Report on the zoology of the expedition. [1]–17.

This includes one paper, headed:

No. 1. Field notes and explanations. By C. B. R. Kennerley, M.D., Physician and Naturalist to the expedition. [5]–17.

An inserted sheet, following p. 17, bears a "Note," reading: "*The remainder of the Zoological Report will appear in a subsequent volume, it being impossible to prepare it in time for publication in connexion with the other portions of this report.*"

For Part VI, Nos. 2, 3, 4, 5, *see* under Volume X.

²⁴ *See* under Whipple report, *Part VI. Zoological report* (Volume X, [7], *fn.*), where it is stated — it would seem incorrectly — that No. 1 ". . . appeared in Vol. IV, 1856."

(3) Appendices to report. [1]–288.

These 13 appendices are distinguished by the letters A through I, K through N, and consist, according to a "Note" [3], of ". . . the original unreduced records of the astronomical, magnetic, and meteorological observations. . ."

Volume V — 1857

33d Cong., 2d Sess., Senate Ex. Doc. No. 78 [Serial No. 762]

The title-page of *Pacific Railroad Reports*, Volume V, is dated 1856, but the title-page of Part II. Geological report, is dated 1857 and Blake's letter transmitting that report is dated April 6, 1857.

Volume V has four sets of page numbers.

The title-page, covering the content of Volume V, reads:

Report of explorations in California for railroad routes, to connect with the routes near the 35th and 32d parallels of north latitude, by Lieutenant R. S. Williamson, Corps of Topographical Engineers.

Front matter preceding and following this title-page and related to Williamson's report in its entirety appears on 12 unnumbered pages and includes the following: Contents of Volume V; Letter to the Secretary of War; General table of contents; Introduction. Instructions from the War Department.

The "General table of contents" divides the report into Parts I, II, III and IV, and three Appendices (A, B, C). These subdivisions, distinguished here as (1), (2), (3), (4) and (5), are cited on their respective title-pages as follows:

- (1) Part I. Report. [1]–43. 12 plates (Nos. I–XII). 12 wood engravings.

CONTENTS: Contents, [5]; Illustrations, [5]; Report, [7]–43.

For maps and profiles *see* under Volume XI.

- (2) Part II. Geological report, by William P. Blake, Geologist and Mineralogist to the expedition. [i]–xvi; [1]–370; [i]–xiii.

CONTENTS: Blake letter submitting the report, [v]; Contents, [vii]–xii; [Contents of] Appendix, [xiii]; Illustrations, xiv–xvi; I. Itinerary, [1]–130; II. Geology of portions of the route, [131]–310; Appendix (Articles I through VII), [311]–370; Index, [i]–xiii.

For maps, sections, plates, wood engravings, *see* under I. Itinerary; II. Geology of portions of the route; and Appendix (Articles I. II. III. V and VII).

The three subdivisions of the Geological report are cited on their respective title-pages as follows:

I. Itinerary, or notes and general observations upon the geology, mineralogy, and agricultural capabilities of the route (10 chapters, I–X), [1]–130. 9 plates (Nos. I–IX). 53 wood engravings.

II. Geology of portions of the route (10 chapters, XI–XX). [131]–310. 8 plates (3 maps, 4 views, section). 34 wood engravings. Geological sections. Geological map.

Appendix. [311]–370.

For plates *see* under Articles I, II, III, V, VII, below.

The Appendix includes seven Articles (of a contemplated eight) which are headed respectively:

Article I. Notice of fossil fishes. By Professor Louis Agassiz. [313]–316. 1 plate (No. 1).

Article II. Description of the fossil shells.²⁵ By T. A. Conrad. [317]–329. 8 plates (Nos. II–IX).

Article III. Catalogue of the recent shells, with descriptions of the new species. By Augustus A. Gould, M.D. [330]–336. 1 plate (No. XI).

Article IV. Letter from Professor J. W. Bailey, describing the structure of the fossil plant from Posuncula River. [337].

For plate (No. XII, figs. 1, 2) *see* under Article V.

Article V. Description of the fossil wood from the Colorado Desert. By Prof. Geo. E. Schaeffer. [338]–339. 1 plate (No. XII, figs. 1–4).

Article VI. Chemical examination of soils and incrustations. By J. D. Easter, Ph.D. [340]–358.

CONTENTS: Article VI, 340–343; Catalogue of the geological collection with descriptions of several of the specimens, [343]–358.

Article VII. Description of plants collected along the route, by W. P. Blake, and at the mouth of the Gila.²⁶ By John Torrey. [359]–370. 10 plates (Nos. I–X).

CONTENTS: Article VII, [359]–367; Description of the plates, [368]–370.

Article VIII.²⁷

(3) Part III. Botanical report: by E. Durand and T. G. Hilgard, M.D. [1]–15. 18 plates (Nos. I–XVIII).

(4) Part IV. Zoological report.²⁸

²⁵ A *fn.* states: "These descriptions were published in 1855. See Appendix to the Preliminary Geological Report, 8vo; Washington, 1855."

²⁶ An introductory paragraph, [359], signed by Torrey, mentions that the collection included, in addition to those of Blake, plants ". . . collected near Fort Yuma, by Major Thomas and Lieutenant Du Barry, of the United States army . . ."

²⁷ A page inserted at this point bears a "Note" reading: "Article VIII was not received in time for publication with the other portion of this report."

Article VIII has been cited in the contents of the Appendix (Part II. Geological report, [xiii]), as: "Description of fossil microscopic organism, from Monterey: By Professor J. W. Bailey." It has not been found in the series of *Pacific Railroad Reports* examined.

²⁸ A "Note" following the above title-page states: "The Zoological Report will appear in a subsequent volume, it being found impossible to prepare it in time for publication in connexion with the other parts of this report."

According to the "General table of contents" of Volume V, Part IV should have included the following papers: "No. 1. Mammals, by Professor S. F. Baird"; "No. 2. Birds, by Dr. A. L. Heermann, Physician and Naturalist to the expedition"; "No 3.

(5) Appendices. [1]–14.

CONTENTS: Appendix A. Distances and altitudes, [3]–4; Appendix B. Latitudes and longitudes, [5]; Appendix C. Data for profiles, [6]–14.

Volume VI — 1857

33d Cong., 2d Sess., Senate Ex. Doc. No. 78 [Serial No. 763]

The title-page of *Pacific Railroad Reports*, Volume VI, is dated 1857. This date is corroborated in a footnote to "Contents" of Abbot's zoological report, (Volume X, [7]), which reads: "Numbers 1, 2, and 3 [of Part IV. Zoological report, my (4) below] will be found in Vol. VI of the Pacific Railroad Surveys, printed and published in 1857 . . ."

Volume VI has five sets of page numbers.

The title-page covering the content of Volume VI reads:

Report of Lieut. Henry L. Abbot, Corps of Topographical Engineers, upon explorations for a railroad route, from the Sacramento Valley to the Columbia River, made by Lieut. R. S. Williamson, Corps of Topographical Engineers, assisted by Lieut. Henry L. Abbot, Corps of Topographical Engineers.

CONTENTS (front matter): Letter to the Secretary of War,²⁹ [3]–4; General table of contents, [5]; Introduction. Instructions from the War Department, [7]–15.

The Abbot report has five main subdivisions, distinguished here as (1), (2), (3), (4) and (5). Their respective title-pages read:

- (1) Part I. General report. [17]–134. 12 plates (Nos. I–XI, XIII). 3 woodcuts.

CONTENTS: Contents, [21]–23; List of illustrations, [24]; General report (7 chapters), [25]–129; Index to General report, [130]–134.

For maps and profiles *see* under Volume XI.

- (2) Part II. Geological report, [1]–85.

CONTENTS: Contents, [5]–7; List of illustrations, [8]; Nos. 1, 2, 3, and 4 of Geological report, [9]–85.

Part II contains four papers, headed respectively:

No. 1. Report upon the geology of the route. By J. S. Newberry, M.D., Geologist of the expedition (8 chapters), [9]–68. 1 plate (No. I). 11 woodcuts.

No. 2. Description of the tertiary fossils collected on the survey. By T. A. Conrad. [69]–73. 4 plates (Nos. II–V).

No. 3. Report upon an analytical examination of water and

Reptiles, by Dr. Edward Hallowell"; "No. 4 Fishes, by Dr. Charles Girard." For these papers *see* under Volume X.

²⁹ The Hon. Jefferson Davis held the post of Secretary of War from March, 1853, to March, 1857. The letter is addressed to the Hon. John B. Floyd who had been appointed to that office by President Buchanan in March, 1857.

minerals from the Hot Springs in Des Chutes Valley. Conducted under the direction of Prof. E. N. Horsford.³⁰ [74]–78.

No. 4. Catalogue of the minerals and fossils collected on the survey. [79]–85.

(3) Part III. Botanical report. [1]–102.

CONTENTS: Contents, [5]; List of illustrations, [7]–8; Nos. 1 and 2 of Botanical report, [9]–94; Index to Botanical report, [97]–102.

For plates and woodcuts *see* under Nos. 1 and 2 below.

Nos. 1 and 2 are headed respectively:

No. 1. Report upon the botany of the route. By John S. Newberry, M.D., Botanist of the expedition (2 chapters), [9]–64.

Chapter I. Geographical botany. [9]–19.

Chapter II. Description of the forest trees of northern California and Oregon. [20]–64. 10 plates (Nos. I–X). 28 woodcuts.

No. 2. General catalogue of the plants collected on the expedition. By J. S. Newberry, assisted by Asa Gray and John Torrey, as specified in the proper places, [65]–94.

No. 2 has four subdivisions:

I. Exogenous plants.³¹ [65]–90. 6 plates (Nos. XI–XVI).

II. Endogenous plants. By John Torrey, [90]–92.

III. Mosses and liverworts. By W. S. Sullivant, 93–94.

IV. Lichens. By Edward Tuckerman, 94.

(4) Part IV. Zoological report. [1]–114.

CONTENTS: Contents, [5]; List of illustrations, [6]; Prefatory note to Part IV, [7]; Nos. 1, 2, and 3³² of Zoological report, [9]–114; Index to Zoological report, [i]–iv.

The subdivisions included in the Zoological report are the following:

No. 1. Report upon fishes collected on the survey. By Charles Girard, M.D. [9]–34. 11 plates. (Nos. XXIIa, XXIIb, XXVa, XXVb, XLa, XLVI, LXII, LXVI, LXVIII, LXX, LXXIV).

No. 2. Report upon the zoology of the route. By J. S. Newberry, M.D.³³ (2 chapters), [35]–110.

For allocation of included plates *see* under Chapters I, II, below.

The chapters are headed:

³⁰ A Horsford letter, [74], refers to this as “. . . the report of my assistant, Mr. L. M. Dornbach. . .”

³¹ In “Contents,” [5], of Botanical report, the authors of “Exogenous plants” are named as Asa Gray, John Torrey, and J. S. Newberry.

³² For omission of Part IV, No. 4, which had been cited in “Contents,” [5], *see* “Note” following No. 3 below.

³³ A *fn.*, [38], states: “The species enumerated in this report have been determined, and their diagnoses prepared, by Prof. S. F. Baird, Assistant Secretary of the Smithsonian Institution.”

Chapter I. Report upon the mammals: [35]–72. 3 plates (Nos. I, III, XXII).

Chapter II. Report upon the birds.³⁴ [73]–110. 2 plates (Nos. XXVI, XXXIV).

No. 3. Report upon the land shells collected on the survey. By W. G. Binney, Member of the Academy of Natural Sciences of Philadelphia. [111]–114.

A "Note" on an inserted page, following p. 114, states: "*No. 4 has not been completed in time for publication with the rest of this Report. It will appear in a subsequent volume.*" No. 4 had been cited in the "Contents," [5], of Part IV. Zoological report as: "Report upon reptiles collected on the survey. By S. F. Baird, Assistant Secretary of the Smithsonian Institution." For this see under Volume X.

(3) Appendices. [1]–64.

Distinguished by letters A through F, these 13 Appendices relate to astronomical observations and the like. They are enumerated in "General table of contents," [5], of the Abbot report.

An inserted page following the Appendices lists "Errata for Volume VI."

Volume VII—1857

33d Cong., 2d Sess., Senate Ex. Doc No. 76 [Serial No. 764]

The title-page of *Pacific Railroad Reports*, Volume VII, is dated 1857. No included matter bears a later date.

Volume VII has five sets of page numbers.

"Contents of Volume VII," [3], records two subdivisions, distinguished here as (1) and (2). The title-page of the first reads:

- (1) Report of explorations for railroad routes from San Francisco Bay to Los Angeles, California, west of the Coast Range, and from the Pimas Villages on the Gila to the Rio Grande, near the 32d parallel of north latitude, by Lieutenant John G. Parke, Corps of Topographical Engineers, assisted by Albert H. Campbell, Civil Engineer.

CONTENTS: Letter to the Secretary of War, (7); General table of contents, [9]; Introduction. Instructions from the War Department, [11]–15; Part. I. General report, [17]–[23],³⁵ [1]–12; Part II. Geological report, [1]–204; Part III. Botanical report, [1]–28; Appendices (A through E), [1]–118.

³⁴ A *fn.*, [73], reads: "As the final determination of the species of birds collected by the expedition has not yet been completed by Prof. Baird, the names here given are to be considered as temporary. In his general report upon the birds of the Pacific Railroad Surveys, hereafter to appear, the names and pages of the species in this article will be carefully quoted, and any errors of determination thus rectified." For Baird's "general report upon the birds" see under Volume IX.

³⁵ The 23 pages (8 blank) which precede the text proper of Part I. General report, are, with the exceptions of pages 14, 15, 22, unnumbered. The content of some relate to Parke's report as a whole, while others represent front matter to Part I. I have inserted the missing page numbers and have allocated the subject matter to accord with my understanding of its proper association.

For maps and profiles *see* under Volume XI.

Parts I, II, III, and Appendices are cited on their respective title-pages as follows:

Part I. General report. [17]–[23]; [1]–42. 8 plates.

For allocation of the plates *see* under Nos. 1 and 2 below. For maps and profiles *see* under Volume XI.

CONTENTS: Contents, [21]–[23]; [1]–23; List of illustrations, [23]; Nos. 1 and 2, [1]–42.

The two subdivisions of the General report are headed:

No. 1. Report of explorations from San Francisco Bay to Los Angeles. [1]–18. 3 plates (Nos. I, II; the third not numbered).

No. 2. Report of explorations from Pimas Villages to Rio Grande. [19]–42. 5 plates (Nos. VI [= IV], V, VI, VII, VIII).

Part II. Geological report, by Thomas Antisell, M.D., Geologist of the expedition. [1]–204. 2 maps (geological). 24 plates.

For allocation of plates *see* under Chapters XXIX and XXX below.

CONTENTS: Contents, [5]–10; List of illustrations, [11]–13; Geological report (30 chapters), [15]–197; Description of the plates, [19]–204.

Of the 30 chapters of the Geological report, Chapter XXIX ("Report upon the palaeontology of the survey. By T. A. Conrad"), [189]–196, contains 10 plates (Nos. I–X); and Chapter XXX ("Order of position of Californian strata"), [197], contains 14 plates (Nos. I–XIV).

Part III. Botanical report: by John Torrey. [1]–28. 8 plates.

For allocation of plates *see* under Chapter I below.

CONTENTS: Contents,³⁶ [5]; Chapters I, II, III, [7]–28.

The subdivisions of the Botanical report are headed respectively:

Chapter I. List and descriptions of the plants collected. By John Torrey, M.D. [7]–22. 8 plates (Nos. I–VIII).

Chapter II. Synoptical tables of botanical localities. By Thomas Antisell, M.D. [23]–26.

Chapter III. Description of the plates. By John Torrey, M.D. [27]–28.

Appendices. [1]–116. 11 plates.

For allocation of plates *see* under Appendix A.

The five Appendices are headed respectively:

Appendix A. Remarks on meteorology and barometric results, with meteorological plates. By Albert C. Campbell, A.M. Civil Engineer to the expedition. [3]–14. 11 plates (Nos. I–XI).

Appendix B. Report upon the route from San Diego to Fort

³⁶ This contains a list of plates.

Yuma via San Diego River, Warner's Pass, and San Felipe Canon. By Charles M. Poole, Chief Engineer. [15]–28.

Appendix C. Translation of an archive from Tucson. [29]–30.

Appendix D. Description of maps and profiles, with table of latitudes. [31]–34.

Appendix E. Table of distances, and barometric and meteorological observations and results. By Albert H. Campbell, A.M., Civil Engineer to the expedition. 35–116.

The title-page of the second subdivision of Volume VII reads:

- (2) Conclusion of the official review of the reports upon the explorations and surveys for railroad routes from the Mississippi River to the Pacific Ocean. [1]–37.

For General map and General profiles *see* under Volume XI.

CONTENTS: Contents, [3]; Prefatory note, [5]; Nos. 1, 2, 3, 4, 5, [7]–37.

The five subdivisions of the "official review" are headed respectively:

No. 1. Extract from the annual report of the Secretary of War. December, 1855. [7]–10.

No. 2. Report upon the progress of the Pacific Railroad explorations and surveys. November, 1855. By Captain A. A. Humphreys, Corps of Topographical Engineers. [11]–18.

No. 3. Extract from the annual report of the Secretary of War, December, 1856. [19]–22.

No. 4. Report upon the progress of the Pacific Railroad explorations and surveys. November, 1856. By Captain A. A. Humphreys, United States Topographical Engineers. [23]–34.

No. 5. Table exhibiting the comparative lengths, cost, etc., of the different routes, with explanatory remarks. By Captain A. A. Humphreys, Corps Topographical Engineers. [35]–37.

Volume VII ends with an inserted page: "Errata for Volume VII."

Volume VIII — 1857

33d Cong., 2d Sess., Senate Ex. Doc. No. 79 (Serial No. 765)

The title-page of *Pacific Railroad Reports*, Volume VIII, is dated 1857.

This date is corroborated in the "Preface" to Part II. Birds (Volume IX, [xiii]) which refers to the account of the mammals (Part I. below) as "... having been published in 1857. . ."

The pages of Volume VIII are numbered consecutively throughout.

Following "Contents of Volume VIII," [iii], is a title-page reading:

General report upon the zoology of the several Pacific Railroad routes.

CONTENTS: Letter to Captain Humphreys, Topographical Engineers,

[vii]; General table of contents,³⁷ [ix]; Introduction. General sketch of lines explored,³⁸ [xi]–xvii.

The title-pages covering the content of Volume VIII read:

Part I. Mammals: by Spencer F. Baird, Assistant Secretary of the Smithsonian Institution. [xix]–xlvi; [1]–757. 38 woodcuts. 43 plates. (Nos. XVII–XXVIII, XXX–LX).

CONTENTS: Contents, [xxiii]; Preface, [xxv]–xxix; Table of the higher groups, xxx–xxxi; List of species, [xxxii]–xlvi; Introductory remarks, [1]; [Orders of mammals, I through VI], [3]–684; Appendix A. List of authorities referred to in the preceding report, [685]–703; Appendix B. Alphabetical list of localities referred to in the preceding report, [704]–715; Alphabetical index. I. Systematic index of common names, [717]–720; Alphabetical index. II. Systematic index of scientific names, [721]–735; Explanation of the plates,³⁹ [737]–750; List of wood-cut figures, 750–752; Systematic list of illustrations, 755–757.

Volume IX — 1858

33d Cong., 2d Sess., Senate Ex. Doc. No. 78 [Serial No. 766]

The title-page of *Pacific Railroad Reports*, Volume IX, is dated 1858. No included matter bears a later date.

The pages of Volume IX are numbered consecutively throughout.

It is a continuation of the "General report upon the zoology of the several Pacific Railroad routes" begun in Volume VIII.

Following "Contents of Volume IX," [iii], and "Letter to Captain Humphreys, Topographical Engineers," [v], are title-pages readings:

Part II. Birds: by Spencer F. Baird. Assistant Secretary Smithsonian Institution. With the co-operation of John Cassin and George N. Lawrence. [vii]–lvi; [1]–1005.

CONTENTS: Contents, [xi]; Preface,⁴⁰ [xiii]–xvi; I. Table of the

³⁷ This cites the content of Volume VIII (Part I. Mammals); of Volume IX (Part II. Birds); and of Volume X (as to Part III. Reptiles and Part IV. Fishes).

³⁸ A valuable reference paper, enumerating collectors in natural history, not only along the main lines of the Pacific Railroad surveys but along routes "intimately connected" therewith. Included also are men who, working independently, made collections contributing to the report. For a somewhat similar paper see "Preface" (Volume IX, [xiii]–xvi).

³⁹ A *fn.*, [747] explains to which reports the plates of mammals enumerated in the list of illustrations supplied in the "Explanation of the plates" should be allocated: whether to the "General report upon the zoology of the several Pacific Railroad routes" ("... all that have been prepared for the present volume . . .") or to "... the special reports of the different railroad parties. . .", and tells how plates associated with special reports should be distinguished. A list of officers in command of the different lines of survey and the zoologists associated with them, is also supplied. Despite the explicit directions, attempts to check the plates were not successful.

⁴⁰ This useful enumeration of collectors is somewhat similar to the one supplied in "Introduction. General sketch of lines explored" (Volume VIII, [xi]–xvii) for the reason that some of the men collected in more than one branch of natural history. But it contains additional names and covers some different territory.

higher groups, [xvii]–xxiv; II. List of species, [xxx]–lvii; Introductory remarks, [1]–2; [Orders of birds, I through VI], [3]–920; Appendix A. Additional remarks on North American birds, [921]–925; Appendix B. Birds found at Fort Bridger, Utah, [926]–937; Appendix C. List of authorities referred to in the preceding report, [928]–954; Alphabetical index. I. Systematic index of common names, [955]–963; Alphabetical index. II. Systematic index of scientific names, [965]–1005.

Volume X — 1859

33d Cong., 2d Sess., Senate Ex. Doc. No. 78 [Serial No. 767]

The title-page of *Pacific Railroad Reports*, Volume X, is dated 1859. This date is corroborated in a footnote to the "Contents" of Abbot's report (Part IV. Zoological report, Volume X, [7]), which states: "No. 4 [Report on reptiles collected on the survey. By S. F. Baird] dates 1859." See *fn.* 49.

Volume X has seven sets of page numbers.

"Contents of Volume X," [3], names two subdivisions: first, Parts III and IV of the "General report upon the zoology of the several Pacific Railroad routes" (continued from Volumes VIII and IX); and, second, five groups of zoological papers which had not been ready when the reports with which they are affiliated has been published; they are distinguished here as (1), (2), (3), (4), and (5).

The title-pages of Parts III and IV read respectively:

Part III. Reptiles: by Spencer F. Baird, Assistant Secretary of the Smithsonian Institution. [7]–18. 13 plates (Nos. XXIV–XXXVI).

CONTENTS: Letter of Humphreys,⁴¹ [11]; Explanation of the plates, [13]–16.

Part IV. Fishes: by Charles Girard, M.D. [i]–xiv; [1]–400. 21 plates (Nos. VII, VIII, XIII, XIV, XVII, XVIII, XXIIc, XXVI, XXIX, XXX, XXXIV, XXXVII, XL, XLI, XLVIII, LIII, LIX, LXI, LXIV, LXV, LXXI).

CONTENTS: Contents, [v]–xiv; Introductory remarks,⁴² [1]–2; [Orders of fishes, I through X], [3]–284; List of the plates,⁴³ [385]–388; Alphabetical index, 389–400.

The title-pages of the five groups of reports forming the second subdivision of Volume X read respectively:

- (1) Report of Lieut. E. G. Beckwith, Third Artillery, upon explorations for a railroad route, near the 38th and 39th parallels of north latitude,

⁴¹ This reads: "The General Natural History Reports having been extended so much beyond the limits originally contemplated, the War Department has considered it advisable to omit the publication of the Report on Reptiles. The plates to accompany this report having been prepared and printed, they, with a brief explanation of the figures composing them, are herewith given."

⁴² These appear in two forms in the printing under analysis. One was presumably a preliminary draft and should have been omitted.

⁴³ A *fn.* states: "Plates XXIIa, XXIIb, XXVa, XLa, XLVI, XLVII, LXVI, LXVIII, LXX and LXXIV of this list will be found in vol. VI, part IV, of the present series. Other plates missing from this volume will be found in vol. X."

by Captain J. W. Gunnison, Corps of Topographical Engineers, and near the forty first parallel of north latitude, by Lieut. E. G. Beckwith, Third Artillery. Zoological report.⁴⁴ 20 plates.

For allocation of the plates see under Nos. 1, 2, 3, and 4 below.

CONTENTS: Contents,⁴⁵ [5], List of illustrations, [6]; Nos. 1, 2, 3, and 4, [7]–27; Alphabetical index, [28].

The four included zoological reports are headed respectively:

No. 1. Report upon mammals collected on the survey. By S. F. Baird. [7]–9. 3 plates (Nos. IV, VI, X).

No. 2. Report upon birds collected on the survey. By S. F. Baird. [13]–16. 7 plates (Nos. XII, XIII, XIV, XV, XVII, XXXII, XXXV).

No. 3. Report on reptiles collected on the survey. By S. F. Baird. [17]–20. 4 plates (Nos. XVII, XVIII, XXIII, XXIV).

No. 4. Report on fishes collected on the survey. By Charles Girard, M.D. [21]–27. 6 plates (Nos. XXIII, XLIX, LIV, LVI, LXXIII, LXXV).

- (2) Report of explorations for a railway route (near the thirty-fifth parallel of north latitude), from the Mississippi River to the Pacific Ocean. By Lieutenant A. W. Whipple, Corps of Topographical Engineers: assisted by Lieutenant J. C. Ives, Corps of Topographical Engineers. Part VI.⁴⁶ Zoological report. [1]–34. 34 plates.

For allocation of plates *see* under Nos. 2, 3, 4 and 5 below.

CONTENTS: Contents,⁴⁷ [7]; List of illustrations, [9]–10; Nos. 2, 3, 4, and 5, [11]–59; Alphabetical index, [61]–64.

The four included zoological reports are headed respectively:

No. 2. Report on mammals collected on the survey. By C. B. R. Kennerley, M.D. [11]–18. 6 plates (Nos. VIII, XI, XII, XIII, XIV, XVI).

No. 3. Report on birds collected on the route. By C. B. R. Kennerley, M.D. [19]–35. 11 plates (Nos. XVIII, XIX, XX, XXII, XXVII, XXIX, XXX, XXXI, XXXIII, XXXVI, XXXVII).

⁴⁴ A *fn.* states: "The report to which this article belongs will be found in Vol. II of this series."

⁴⁵ Of five zoological reports listed, only four are included. The missing report, named in "Contents" as "No. 5. Report on insects collected on the survey. By John L. Leconte, M.D.," has not been found in the quarto series.

⁴⁶ For Parts I, II, III and IV, *see* Volume III; for Part V, and Part VI, No. 1, *see* Volume IV.

⁴⁷ Of five zoological reports cited, only four are included. Of the missing report (No. 1. Field notes and explanations. By C. B. R. Kennerley, M.D.) it is stated in a *fn.*: "No. 1 has already appeared in Vol. IV, 1856." According to my analysis Volume IV was published in 1857, certainly not earlier. *See* Volume IV, Introduction to Part V, No. 4, [59], which is dated January 12, 1857.

No. 4. Report upon the reptiles of the route. By S. F. Baird. [37]–45. 3 plates (Nos. XXV, XXVI, XXVII).

No. 5. Report upon fishes collected on the survey. By C. Girard, M.D. [47]–59. 14 plates (Nos. III, IV, V, VI, IX, X, XXI, XXIV, XXV, XXXV, XLb, LII, LVII, LVIII).

- (3) Report of explorations for a railroad route near the 32d parallel of north latitude, lying between Dona Ana, on the Rio Grande, and Pimas Villages, on the Gila, by Lieutenant John G. Parke, Corps of Topographical Engineers. Zoological report. [1]–24. 4 plates.

For allocation of plates *see* under Nos. 1 and 2 below.

CONTENTS: Contents, [5]; List of illustrations, [6]; Introductory letter, [7]; Nos. 1 and 2, [9]–24.

The two included zoological reports are headed respectively:

No. 1. Report upon the birds collected on the survey. By A. L. Heermann, M.D. [9]–21. 3 plates (Nos. I, IV, VI).

No. 2. Report upon reptiles collected on the survey. By Edward Hallowell, M.D. [23]–24. 1 plate (No. II).

- (4) Report of explorations in California for railroad routes to connect with the routes near the 35th and 32d parallels of north latitude. By Lieutenant R. S. Williamson, Corps of Topographical Engineers. Part IV. Zoological report, [i]–[viii]; [1]–91. 26 plates.

For allocation of plates *see* under Nos. 1, 2, and 4 below.

CONTENTS: List of illustrations, [vi]; Contents,⁴⁸ [vii]; Introductory letter. By A. L. Heermann, M.D. [viii]; Nos. 1, 2, 3 and 4, [1]–91; Alphabetical index, [93]–97.

The four included zoological reports are headed:

No. 1. Report upon the reptiles collected on the survey. By Dr. Edward Hallowell. [1]–23; List of reptiles collected. By Dr. A. L. Heermann, Naturalist to the expedition, [24]–25; Explanation of the plates, [26]–27. 9 plates (Nos. I, III, IV, V, VII, VII [sic], VIII, IX, X).

No. 2. Report upon birds collected on the survey. By A. L. Heermann, M.D. [29]–77; List of birds collected between San Francisco and Fort Yuma, California, during the survey of railroad routes from the Mississippi to the Pacific Ocean, under the command of Lieutenant R. S. Williamson, Top. Engs. [79]–80. 7 plates (Nos. II, III, V, VII, VIII, IX, X).

No. 3. Report on mammals collected on the survey. By S. F. Baird. [81]–82.

No. 4. Report on fishes collected on the survey. By Charles Girard,

⁴⁸ A *fn.* states: "The report to which the present part belongs will be found in volume V."

M.D. [83]–91. 10 plates (Nos. II, XII, XXII, XXVII, XXVIII, XXXI, XXXVI, XXXVIII, XXXIX, XLVII).

- (5) Report of Lieut. Henry L. Abbot, Corps of Topographical Engineers, upon explorations for a railroad route, from the Sacramento Valley to the Columbia River, made by Lieut. R. S. Williamson, Corps of Topographical Engineers, assisted by Lieut. Henry L. Abbot, Corps of Topographical Engineers. Part IV. Zoological report. [1]–13. 4 plates.

For plates *see* under No. 4 below.

CONTENTS: Contents,⁴⁹ [7]; List of illustrations, [8]; No. 4, [9]–15.

The included zoological report is headed:

No. 4. Report on reptiles collected on the survey. By S. F. Baird. [9]–13. 4 plates (Nos. XI, XXVIII, XXX, XLIV).

Volume XI — 1859

33d Cong., 2d Sess., House Ex. Doc. No. 91 [Serial No. 801]

The title-page of *Pacific Railroad Reports*, Volume XI, is dated 1855, but the title-page of Warren's Memoir as well as the title-page preceding the maps, profiles, plates, etc., which form the last half of the volume, are dated 1859.

Following the "Contents of Volume XI," [3], and "Letter to the Secretary of War," [5], is a title-page reading:

Memoir to accompany the map of the territory of the United States from the Mississippi River to the Pacific Ocean, giving a brief account of each of the exploring expeditions since A.D. 1800, with a detailed description of the method used in compiling the general map. By Lieut. Gouverneur K. Warren, Corps of Topographical Engineers, U.S.A. [3]–120. 4 plates (Nos. I, II, III, IV).⁵⁰

CONTENTS: Letter to Captain A. A. Humphreys, Topographical Engineers, [9]; Contents, [11]–12; List of illustrations, [13]; Introductory remarks, [13]–16; Memoir (6 chapters), [17]–115; Alphabetical index, [117]–120.

The remainder of Volume XI is preceded by a title-page reading:

Topographical maps, profiles, and sketches, to illustrate the various reports of surveys for railroad routes from the Mississippi River to the Pacific Ocean.

This is followed by "Contents," [iii]–iv, in which the illustrations, segregated under ten headings, are meticulously enumerated and described. These headings and the total number and type of illustration allotted to each in the "Contents" follow:

⁴⁹ A *fn.* states: "Numbers 1, 2, and 3 will be found in Vol. VI of the Pacific Railroad Surveys, printed and published in 1857. No. 4 dates 1859."

⁵⁰ These are reduced copies of old maps, intended for insertion in the text.

Sketch of route of the 41st parallel — Beckwith's Report, Vol. II. 8 plates (views). 5 panoramas (views).

Official review of the reports — Vols. I and VII. General map. General profile.

Route of the 47th and 49th parallels — Stevens's Report, Vol. I. 3 maps (Nos. 1, 2, 3). Profiles.

Routes in Oregon and California — Abbot's Report, Vol. VI. 2 maps (Nos. 1, 2). 2 profiles (Nos. 1, 2).

Route near the 41st parallel — Beckwith's Report, Vol. II. 4 maps (Nos. 1, 2, 3, 4). Profiles of the route.

Route near the 38th and 39th parallels — Beckwith's Report, Vol. II. Profiles of the route. 4 maps (Nos. 1, 2, 3, 4).

Route near the 35th parallel — Whipple's Report, Vol. III. 2 maps (Nos. 1, 2). Profiles.

Routes in southern California — Williamson's Report, Vol. V. 4 maps. 2 profiles (sheets Nos. 1, 2).

Routes in California and on the 32d parallel — Parke's Reports, Vol. VII. 2 maps (Nos. 1, 2). Profiles.

Route of the 32d parallel — Pope's Report, Vol. II. Map and profile.

Volume XII. Book I⁵¹ — 1860

36th Cong., 1st Sess., House Ex. Doc. No. 56 [Serial No. 1054]

The title-page of *Pacific Railroad Reports*, Volume XII, Book I, is dated 1860. No included matter bears a later date.

The volume has two sets of page numbers.

"Contents of Volume XII. Book I," [3], records two subdivisions: Part I and Appendices.⁵²

Following "Contents of Volume XII. Book I" is a title-page reading:

Narrative and final report of explorations for a route for a Pacific railroad, near the forty-seventh and forty-eighth parallels of north latitude, from St. Paul to Puget Sound. By Isaac I. Stevens, Governor of Washington Territory.

This is followed by "Letter to the Secretary of War," by the "General table of contents" and by an "Introduction."

⁵¹ The first Stevens report appeared in Volume I. His second and final report and the scientific papers associated with it necessitated two volumes which are distinguished on the title-pages of *Pacific Railroad Reports* as "Volume XII. Book I" and "Volume XII. Book II."

⁵² The subdivisions are in accord with the contents of Book I as issued. For the reason that, with one exception, none of the pages in Volume I preceding page 20 is numbered and the exception, page "18," bears no numerical relationship to those which precede or follow it, and for the reason that the "General table of contents," [9], places the Appendices after Part III. Zoological report (Volume XII. Book II), it seems probable that there were "last minute" changes in the compilation of Books I and II which were not incorporated in the introductory pages of Book I. See also *fr.*, 54.

The title-page of the first subdivision of Volume XII, Book I reads:

Part I. General report. [15]–358. 70 plates (Nos. I–LXX). 2 maps. 1 sheet of profiles.

CONTENTS: Contents, [19]–27; List of illustrations, [29]–30; General report (18 chapters), [31]–358.⁵³

The second subdivision of Volume XII. Book I is preceded by a title-page reading:

Appendices. [1]–25.⁵⁴

CONTENTS: Appendix A. Heights and distances. [3]–12; Appendix B. Meteorological register, [13]–25.

Volume XII. Book II — 1860

36th Cong., 1st Sess., House Ex. Doc. No. 56 [Serial No. 1055]

The title-page of *Pacific Railroad Reports*, Volume XII. Book II, is dated 1860. No included matter bears a later date.

The volume has two sets of page numbers.

It is a continuation of the Stevens report begun in Volume XII. Book I. "Contents of Volume XII. Book II," [3], divides the subject matter into two Parts which are cited on their respective title-pages as follows:

Part II. Botanical report. [5]–76. 6 plates.

For allocation of plates *see* under Nos. 2 and 3 below.

CONTENTS: Contents, [9]; List of illustrations, [11]; Nos. 1, 2 and 3 of Botanical report, [13]–71; Index to Botanical report, [73]–76.

The three included papers are headed respectively:

No. 1. Report on the botany of the route. By J. G. Cooper, M.D. [13]–39.

No. 2. Catalogue of plants collected east of the Rocky Mountains. By Professor Asa Gray. [40]–49. 5 plates (Nos. I, II, III, IV, V).

No. 3. Catalogue of plants collected in Washington Territory. By J. G. Cooper, M.D. [50]–71. 1 plate (No. VI).

Part III. Zoological report. [i]–[ix]; [1]–399. 46 plates.

For allocation of plates *see* under Nos. 1, 2, 3, 4, 5 below.

CONTENTS: Contents, [v]–vi; List of illustrations,⁵⁵ [vii]–viii.

⁵³ The "General report" is subdivided into Narrative of 1853 (Chapters I–X, [31]–195); Narrative of 1855 (Chapters XI–XII, [196]–225); Geographical memoir (Chapters XIII–XVI, [226]–331); Railroad report and estimate (Chapter XVII, [332]–351); Computation of altitudes from barometrical observations. Table of heights and distances. Meteorological register (Chapter XVIII, [352]–358).

⁵⁴ Following the Appendices and with pages in numerical sequence thereto is an Alphabetical index, [27]–41. Its content does not cover the Appendices and its existence is nowhere recorded in the volume. *See fn.* 52.

⁵⁵ This enumerates between 80 and 90 plates, more than half of which are referred to zoological reports contained in Volume XII. Book II, and the remainder to zoological reports published in earlier volumes of the series. Attempts to check the enumeration

Prefatory note to Part III, [ix]; Nos. 1 through 7 of Zoological report, [1]–389; Index to Zoological report, [391]–399.

Part III contains 7 papers, headed respectively:

No. 1. Report upon insects collected on the survey. By John T. Leconte, M.D. [1]–77. 2 plates (Nos. I, II).

No. 2. Report upon the mammals collected on the survey. [73]–138. 5 plates.

For allocation of plates *see* under Chapters I and II below.

No. 2 contains 3 reports headed respectively:

Chapter I. Report by J. G. Cooper, M.D. [73]–88. 4 plates (Nos. V, VII, IX, XV).

Chapter II. Report by Dr. Geo. Suckley, U.S.A. [89]–106. 1 plate (No. II).

Chapter III. Report of Dr. Geo. Suckley, U.S.A., and Geo. Gibbs, Esq. [107]–138.

No. 3. Report upon the birds collected on the survey. [140]–291. 8 plates.

For allocation of plates *see* under Chapters I, II, below.

No. 3 contains 2 subdivisions, headed respectively:

Chapter I. Land birds, by J. G. Cooper, M.D. [140]–226. 7 plates (Nos. XI, XVI, XXVIII, XXI, XXIII, XXIV, XXV).

Chapter II. Water birds, by Dr. G. Suckley, U.S.A. [227]–291. 1 plate (No. XXXVIII).

No. 4. Report upon the reptiles collected on the survey. By J. G. Cooper, M.D. [292]–306. 11 plates. (Nos. XII, XIII, XIV, XV, XVI, XIX, XX, XXI, XXII, XXIX, XXXI).

No. 5. Report upon the fishes collected on the survey. By Dr. G. Suckley, U.S.A. [307]–368. 21 plates (Nos. I, XI, XV, XVI, XIX, XX, XXXII, XXXIII, XLII, XLIII, XLIV, XLV, L, LI, LV, LX, LXIII, LXVII, LXIX, LXXII, LXXV).

No. 6. Report upon the Mollusca collected on the survey. By William Cooper. [369]–386.

No. 7. Report on the Crustacea collected on the survey. By J. G. Cooper, M.D. [387]–389.

ALPHABETICAL INDEX OF AUTHORS TO BE USED IN CONJUNCTION WITH THE ANALYSES ⁵⁶

ABBOT, H. L. (Sacramento Valley to Columbia River): Report, v. VI.

AGASSIZ, L. (Williamson route): Fossil fishes, v. VI.

of this List with plates in the given reports have not been satisfactory, either as to the total number of plates or as to their allocation. *See fn. 39.*

⁵⁶ To the first Stevens report published in Volume I are appended (pp. 160–635),

- ANTISELL, T. (Parke route): Geological report; Synoptical table botanical localities. v. VII.
- *ARNOLD, R. 160-177, v. I.
- BAILEY, J. W. (Williamson route): Fossil plant Posuncula River, v. V.
- BAIRD, S. F. (Pope route): Preliminary report natural history, v. II.
(General report on zoology): Mammals, v. VIII. Birds, v. IX. Reptiles, v. X.
(Beckwith and Gunnison routes): Mammals; Birds; Reptiles, v. X.
(Whipple route): Reptiles, v. X.
(Williamson route): Mammals, v. X. (Abbot route): Reptiles, v. X.
- BECKWITH, E. G. (41st parallel route): Report, v. II. (Gunnison route, 38th and 39th parallels): Report, v. II.
- BIGELOW, J. M. (Whipple route): Botanical character country; Forest trees, v. IV.
- BIGELOW, J. M. *See* ENGLEMAN, G.
- BINNEY, W. G. (Abbot route): Land shells, v. VI.
- BLAKE, W. P. (Pope route): Geology, v. II. (Whipple route): General report geological collections, v. III. (Williamson route): Geological report, v. V.
- *BLODGET, L. 566-571, v. I.
- *BURR, F. H. 586-597, v. I.
- BYRNE, T. H. (Pope route): Diary, v. II.
- CAMPBELL, A. H. (Parke route): Table distances, barometric observations, v. VII.
- CONRAD, T. S. (Williamson route): Fossil shells, v. V. (Abbot route): Tertiary fossils, v. VI. (Parke route): Palaeontology, v. VII.
- *COOPER, J. G. (Stevens route): Botany; Catalogue plants Washington Territory; Mammals; Land birds; Reptiles; Crustacea, v. XII. Book II. *See also*: 179-180; 219-221, v. I.
- COOPER, W. (Stevens route): Mollusca, v. XII. Book II.
- DAVIS, J. Report on the several railroad explorations, v. I.
- *DONELSON, A. J. 231-247; 269-279; 358-359; 360-363, v. I.
- DORNBACH, L. M. (Abbot route): Examination water, minerals, v. VI.
- *DOTY, J. 441-442; 442-445; 445-446; 543-553; 553-565; 572-584, v. I.
- *DUNCAN, J. K. 203-219, v. I.
- DURAND, E. and HILGARD, T. G. (Williamson route): Botanical report, v. V.
- EASTER, J. D. (Williamson route): Chemical examination soils, incrustations, v. V.
- EMORY, W. H. Extract from report of a military reconnaissance made 1846, 1847, v. II.
- ENGELMANN, G. and BIGELOW, J. M. (Whipple route): Cactaceae, v. IV.
- EWBANK, J. *See* WHIPPLE, A. W.

together with letters, etc., etc., a number of signed documents describing work done in connection with particular sections and aspects of his survey; some of these (pp. 160-449) were appended to the report when submitted; others (pp. 449-635) were added at a later date. In my analysis of the content of the report these papers are merely noted as "Miscellaneous documents related to special aspects of the survey, 160-635", and neither the authors nor the long descriptive titles of their papers are enumerated—in *fn.* 10, reference is made to the present statement.

In the "Alphabetical index of authors" the names of those who contributed these appended papers are preceded by an asterisk and the pages where their contributions appear in the Stevens report of Volume I are supplied. In instances where authors contributed papers which are cited in the analyses, and appended reports also, the first take precedence and the last are preceded by the notation *See also*.

- *GIBBS, G. 402-434; 465-473; 473-486, v. I.
GIBBS, G. *See* SUCKLEY, G.
GIRARD, C. (Abbot route): Fishes, v. VI. (General report on zoology): Fishes, v. X. (Beckwith and Gunnison routes): Fishes, v. X. (Whipple route): Fishes, v. X. (Williamson route): Fishes, v. X.
GOULD, A. A. (Williamson route): Recent shells, v. V.
GRAY, A. (Stevens route): Catalogue plants from east of Rocky Mountains, v. XII. Book II.
GRAY, A., TORREY, J., and NEWBERRY, J. S. (Abbot route): Exogenous plants, v. VI.
GRAY, A. *See* TORREY, J.
*GROVER, C. 222-223; 247-248; 396-398; 486-488; 488-498; 498-515, v. I.
GUNNISON, J. W. For route of, *see* BECKWITH, E. G.
HALL, J. (Whipple route): Fossils, v. III.
HALLOWELL, E. (Parke route): Reptiles, v. X. (Williamson route): Reptiles, v. X.
HEERMANN, A. L. (Parke route): Birds, v. X. (Williamson route): Birds, v. X.
HILGARD, T. C. *See* DURAND, E.
HUMPHREYS, A. A. Official review reports and explorations, 1855, 1856, v. VII.
HUMPHREYS, A. A. and WARREN, G. K. Examination of reports of explorations made 1853, 1854, and earlier, v. I.
HUNT, E. B. Index to Stevens report, v. I.
JESUP, T. S. Cost transporting troops, supplies, v. I.
KENNERLEY, C. B. R. (Whipple route): Zoological field notes, v. IV. (Whipple route): Mammals; Birds, v. X.
*LAMBERT, J. 160-177, v. I.
*LANDER, F. W. Reconnaissance Puget Sound to Mississippi River, v. II. *See also*: 186-187; 224-225, v. I.
LECONTE, J. T. (Stevens route): Insects, v. XII. Book II.
*MACFEELEY, R. 286-290, v. I.
*McCLELLAN, G. B. Memoranda on railways, v. I. *See also*: 180-183; 188-202, v. I.
MARCOU, J. (Whipple route): Resumé, field notes; Geological reconnaissance Napoleon to Pueblo de los Angeles, v. III.
*MINTER, J. F. 377-389, v. I.
*MOWRY, S. 389-395; 602-613, v. I.
*MULLAN, J. 301-319; 319-349; 349-352; 437-441; 516-527; 527-537; 538-540, v. I.
NEWBERRY, J. S. (Abbot route): Geology; Botany (Geographical botany; Forest trees northern California and Oregon); Zoology (Mammals; Birds), v. VI.
NEWBERRY, J. S. *See* GRAY, A.
PARKE, J. G. (32d parallel, Dona Ana to Pimas Villages): Report, v. II. (San Francisco Bay to Los Angeles and Pimas Villages to Rio Grande near 32d parallel): Report, v. VII.
POOLE, C. M. (San Diego to Fort Yuma, Parke route): Report, v. VII.
POPE, J. (32d parallel route, Red River to Rio Grande): Report, v. II.
*SAXTON, H. 249-250; 251-269, v. I.
SCHAEFFER, G. E. (Williamson route): Fossil wood, v. V.
*STANLEY, J. M. 447-449, v. I.
STEVENS, I. I. (47th and 49th parallels): Report, v. I. Narrative and final report, v. XII. Book I.

- *SUCKLEY, G. (Stevens route): Mammals; Water birds; Fishes, v. XII. Book II.
See also: 177-179; 291-301, v. I.
- SUCKLEY, G. and GIBBS, G. (Stevens route): Mammals, v. XII. Book II.
- SULLIVANT, W. S. (Whipple route): Mosses and liverworts, v. IV. (Abbot route): Mosses and liverworts, v. VI.
- *TINKHAM, A. W. 184-186; 226-230; 276-281; 352-358; 399-400, v. I.
- TORREY, J. (Whipple route): Description general botanical collections, v. IV. (Williamson route): Plants collected by W. P. Blake, v. V. (Abbot route): Endogenous plants, v. VI. (Parke route): Botanical report (Description of plants collected; Description of plates), v. VII.
- TORREY, J. *See* GRAY, A.
- TORREY, J. and GRAY, A. (Beckwith and Gunnison routes): Botany, v. II. (Pope route): Botanical report, v. II.
- TUCKERMAN, E. (Abbot route): Lichens, v. VI.
- TURNER, W. W. *See* WHIPPLE, A. W.
- WARREN, G. K. Memoir of explorations since A.D. 1800, v. XI.
- WARREN, G. K. *See* HUMPHREYS, A. A.
- WHIPPLE, A. W. Extracts from preliminary report, v. III. (35th parallel route): Report, v. III.
- WHIPPLE, A. W., EWBANK, T., and TURNER, W. W. (Whipple route): Indian tribes, v. III.
- WILLIAMSON, R. S. (Route to connect with those near 35th parallel): Report, v. V.



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<https://doi.org/10.5962/p.186025>.

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