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ANALYSIS OF THE PACIFIC RAILROAD REPORTS*

The reports known familiarly as the Pacific Railroad Reports are a storehouse of information to the student of Pacific Coast history. The reports together with notes, letters, maps and plates fill thirteen quarto volumes and represent years of labor on the part of men who won distinction in their country's service. The accounts were the result of the western surveys made shortly after the discovery of gold and the acquisition of the Mexican cession turned the attention of all classes of people to the Pacific region.

Eugene V. Smalley in his "History of the Northern Pacific Railroad" gives an interesting summary of the situation preceding the surveys. He states that during the period of twenty years prior to 1850 there had been more or less agitation in an effort to arouse the interest of the public and the action of Congress in the building of a railroad to the Pacific. At that time the only route spoken of was that followed by Lewis and Clark. When the peace with Mexico added to the United States the vast area now comprised in the states of California, Nevada, New Mexico, Arizona and Utah, the project assumed greater proportions. The South which controlled the government had taken little interest in the proposed line, but the conquest from Mexico opened the possibility of a line which should be of advantage to the Southern States and which should extend through the newly acquired territory to the gold region of the West. It became a generally acknowledged sentiment that a transcontinental road must be built and that the government would have to aid its construction. Quoting still further from Mr. Smalley's history, we find that one of the great engineers of the time, E. F. Johnson, prepared and published a pamphlet favoring a road to the Pacific from St. Paul. The reading of Johnson's article is said to have spurred the Secretary of War, Jefferson Davis, to immediate action to set on foot government surveys of all proposed routes. The historian explains that the sectional jealousies of the time rendered it impossible for Congress to

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secure any action looking to the survey or the opening of any particular route, but it was feasible to throw together all the suggested routes and obtain an appropriation of money to survey them all. This was done and provision was made for the surveys in a section of the Regular Army Appropriation Bill approved March 1, 1853. The Secretary of War was authorized under the direction of the President of the United States to employ such portion of the corps of topographical engineers and such other persons as he deemed necessary to make surveys to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean. The Secretary of War, Davis, had full charge of the organization of the expeditions and the selection of the routes. Early in the spring of 1853, he put five separate expeditions in the field to explore the country adjacent to the proposed routes, the first near the 32d parallel, the second near the 35th parallel, the third near the 38th and 39th parallels, the fourth near the 41st and 42nd parallels and the fifth near the 47th and 49th parallels.

Of the five explorations that of the northern route is of most vital interest to students of Northwest history. The survey for this continental line was the one lying near the 47th and 49th parallels and was in charge of Isaac I. Stevens, an experienced engineer and army officer who had served in the Mexican war. The story of his remarkable achievements in the organization of the expedition is best told by his son and biographer, Hazard Stevens. "Early in the year of 1853, Major Stevens, who for a number of years had held a position in the Coast Survey Office, applied for the governorship of Washington Territory, to which was attached ex-officio, the superintendency of Indian affairs, and also for the charge of the exploration of the Northern route. He set forth his views in such a convincing manner that within four days his proposal to lead the expedition and all his suggestions were adopted. . . . With characteristic energy Stevens organized, outfitted and started in the field an expedition for the survey of two thousand miles of wilderness, accomplishing the momentous task within two months. In obtaining assistants a delicate question arose as to the placing of army officers under the command of a civilian, a thing almost without precedent in military usage. However, Stevens found no difficulty in securing the voluntary service of as many able officers as he needed. There is probably no similar instance in our history where twelve army officers came under the command of a civilian." Among those assigned to the survey were Captain George B. McClellan, Lieutenants C. Grover, J. Mullan, A. J. Donelson and R. S. Saxton, army officers; A. W. Tinkham and Fred W. Lander, civil

engineers; Dr. John Evans, geologist; Drs. George Suckley and J. G. Cooper, surgeons and naturalists; J. M. Stanley, artist. Professor Baird of the Smithsonian Institute was placed in charge of the zoological and botanical collections, and of preparing the outfits and instructions for field work.

The historian, Mr. Smalley, gives a concise statement of Stevens' plans. "Governor Stevens determined that the exploration should be conducted in two divisions, operating respectively from the Mississippi River and Puget Sound; and that a depot of provisions should be established by a third party at the St. Mary's village, at the western base of the Rocky Mountains, to facilitate the winter operations of the exploration, and enable the exploring parties to continue in the field the longest practicable period; and that all the parties should be organized in a military manner for self-protection, and to force their way through whatever difficulties might be encountered."

The narrative of the expedition and the results of the survey, together with instructions to the members of the party are recorded by Gov. Stevens in volumes I and XII (the latter in two parts). In the first pages are found statements of the Acts of Congress authorizing the surveys and explorations, and the resolutions of Congress authorizing the printing of the reports. Pages 3-30 are devoted to the report of the Secretary of War, Jefferson Davis, who summarizes the most important facts set forth in the reports of the engineers of the various routes. Pages 31-33 contain tabulations of the different routes as to lengths, ascents and descents, and distances from the eastern termini. Then follows an examination of the various reports by A. A. Humphreys, Captain of Topographical Engineers, and Lieutenant G. K. Warren, together with tabulations of the various routes, chapters I-V, pp. 39-108. Chapter I, pp. 39-56, deals with the report of Gov. Stevens on the northern route. Pages 109-111 contain notes by Lieut. G. K. Warren compiled from reports of the topographical engineers on the route via San Antonio to El Paso. The memoranda on railways in different parts of the country, pp. 115-130, were prepared in the office of the Pacific railroad surveys by George B. McClellan, corps of engineers. A list of the principal railroad tunnels of the world is also given with data as to their cost and construction. Pages 130-134 contain a short report upon the cost of transporting troops and supplies to California, Oregon and New Mexico by Major General Thomas S. Jessup, Quartermaster General of the United States Army.

The numerous reports of the exploration for a route near the 47th and 49th parallels fill Parts I and II of the remainder of

Volume I. Part I, pp. 1-72, contain the instructions of Stevens to the members of the expedition as to their organization, equipment and duties, each officer, artist and scientific man being instructed to keep a daily journal which was to be turned over as a part of its archives; official correspondence giving an account of the progress of the expedition; and short reports from members of the survey concerning certain phases of their work. In Part II, Chapter I, pp. 73-75 is to be found the instructions of the Secretary of War in regard to the purpose and conduct of the survey. Chapter II, pp. 76-159, embodies the preliminary report of Gov. Stevens showing the progress of the exploration and the facts established in reference to the practicability of the northern route for a railroad. So clearly and graphically was his account written that the report served afterward as the basis upon which the Northern Pacific Railroad project rested when the actual building began. He gives a clear and vivid description of the country surveyed, showing its superiority in soil and climate, abundance of fuel and building material, absence of snows, easy grades and low elevations. His remarkable grasp of engineering problems is plainly indicated by the correctness with which he estimated the cost of railroads and by the absolute accuracy with which he estimated the work to be done on gradients and tunnels and in excavations. Attentive consideration was given to wagon roads, navigability of rivers, adaptation to settlement, Indian tribes, and military posts that ought to be established. Stevens speaks enthusiastically of the unequalled and unparalleled good health of the parties operating over an extent of eighteen hundred miles as being quite remarkable. His clear comprehension of the future possibilities of the Puget Sound country are set forth in chapter X, pp. 113-116 and show the wonderful insight of the projector of a great enterprise. His views are concisely given in his own words: "Puget Sound has fifteen hundred miles of shore line, many capacious harbors and roadsteads, accessible, commodious and entirely landlocked. It is particularly adapted to steam navigation. Steilacoom, Seattle, and Bellingham Bay are good termini for the railroad; Seattle combines the greatest number of advantages. . . . The question of highest importance in connection with the proposed railroad is the effect which it will have in securing for this country the control of the Asiatic trade. Nature has clearly indicated the northern pathway for the commerce from the future mart of Asiatic trade to this country and Europe. The road communicates on a direct line with the northern lake trade. It intersects the Mississippi River, thus communicating with the Southern States; it is on the line of the great

wheat producing region of America and on a direct line of shortest distance between centers of European and Asiatic population. A portion of European trade and nearly all travel to Asia must take a course across the continent and on the northern road, as the shortest route."

Following the report of Stevens are a number of papers written by the several officers and scientific men accompanying him. The most important of these with their paginations is as follows:

A 1. Report of the topography of the route from the Mississippi River to the Columbia, by Mr. John Lambert, topographer of exploration, Washington, D. C., June 1, 1854.

A 2. Medical reports by Dr. George Suckley and Dr. J. G. Cooper, pp. 177-180.

B 4. Railroad practicability of the Cascades and of the line of the Snoqualmie Pass by Captain G. B. McClellan, pp. 180-183. This report made in 1854 after a winter's exploration, gives a description of the Cascade range and estimates of the depth of the snows which were later proved incorrect. McClellan practically failed in his work on this part of the survey, depending too much on the accounts of Indians instead of actual investigation. In reference to the choice of a terminus on Puget Sound he says, "Seattle as a proper terminus for the road is far superior to other harbors on the eastern shore of the Sound, is nearest the Strait of Fuca, secure from heavy seas, has excellent holding ground of blue clay and a depth of thirty fathoms of water, the deep water coming close to the shore so that only short wharves are necessitated; the banks are suitable for a town."

B 5. Railroad practicability of the Snoqualmie Pass by Mr. A. W. Tinkham, pp. 184-186. This fearless engineer succeeded in penetrating the pass, reaching Seattle in ten days after McClellan's failure. This incident was the cause of bitter feeling on the part of the latter and was brought out later during the Civil War.

B 6. Report on the practicability of the Columbia River pass by Mr. F. W. Lander, pp. 186-187.

C 7. General report of Captain G. B. McClellan in command of the western division, pp. 188-202.

C 8. Topographical report of Lieut. J. K. Duncan of the western division, pp. 203-219.

C 9. Natural history report by Dr. J. G. Cooper, naturalist of the western division, pp. 219-221.

D 11. Report of Mr. F. W. Lander, assistant engineer, of the

crossings of the Mississippi and the length of the bridges required, pp. 224-225.

E 14. Report of Lieutenant A. J. Donelson, corps of engineers, of his survey of the Missouri to Ft. Union and of his reconnaissance of the country in the vicinity of Ft. Union, pp. 231-247.

E 15. Survey of the upper Missouri by Lieutenant C. Grover, pp. 247-249.

E 16. Report of Lieutenant Saxton of his trip in a keel-boat from Fort Benton to Ft. Leavenworth and of the navigability of the Missouri River by steamer, pp. 249-250.

F 17. Report of the route of Lieutenant R. Saxton from the Columbia Valley to Ft. Owen and thence to Ft. Benton, pp. 251-269.

He speaks of the region as being rich in agricultural and mineral resources, abounding in timber and all other materials necessary for the construction of a railroad.

F 18. Report of Lieutenant A. J. Donelson as to railroad practicability from Fort Benton across the plain of the Columbia to Wallah Wallah, pp. 269-273.

H 27-34. Itineraries of the routes, pp. 352-389.

J 39. Report of Mr. George Gibbs to Captain G. B. McClellan on the Indian tribes of the Territory of Washington, pp. 402-434.

He remarks upon the great difference in the geographic features of eastern and western Washington Territory and states that the "inhabitants differ not less than the geographic features. He names the tribes of each section, giving the modes of life, habits and characteristics of each. From the Yakimas he learned the legends connected with Mount St. Helens and Mount Adams. A visit to the Clallam tribe revealed the influence of the whites in giving names to the families of distinction.

"The head chief of the Clallams was Lachka-nam, or Lord Nelson, but has abdicated in favor of S'Haiaak, King George. Most of the principal men of the tribe have received names either from the English or 'the Bostons;' and the genealogical tree of the royal family presents as miscellaneous an assemblage of characters as a masked ball in carnival. Thus, two of King George's brothers are the Duke of York and General Gaines. His cousin is Tom Benton; and his sons by Queen Victoria are General Jackson and Thomas Jefferson. The queen is daughter to the Duke of Clarence, and sister to Generals Scott and Taylor; as also to Mary Ella Coffin, the wife of John C. Calhoun. The Duke of York's wife is Jenny Lind; a brother of the Duke of Clarence is John Adams; and Calhoun's sons are James K. Polk, General Lane and Patrick Henry. King George's sister is

the daughter of the late Flattery Jack. All of them have papers certifying to these and various other items of information which they exhibit with great satisfaction."

J 40. Indian tribes of eastern Washington by Lieutenant John Mullan, pp. 437-441.

J 41. Indian tribes of the Blackfoot nation by Mr. James Doty, pp. 441-446.

J 42. Visit to the Piegan camps at Cypress Mountain by J. M. Stanley, pp. 446-449.

A. Reconnaissance of the country lying upon Shoalwater Bay and Puget Sound, by George Gibbs, pp. 465-473.

B. Geology of Washington Territory by George Gibbs, pp. 473-486.

C. Final report of Lieutenant Grover on his survey of the Missouri, from thence to the dalles of the Columbia, pp. 488-515.

For a complete list of the papers accompanying Stevens' report the reader is referred to the table of contents, p. v, preceding the report.

Upon the completion of the preliminary report which was made as soon as the governor had satisfactorily solved the questions of mountain snows and climates, Stevens reported to the Secretary of War urging further examinations of the mountain passes. Hazard Stevens in his biography of the governor throws some interesting light on the attitude of Davis in regard to the northern route. The following facts are quoted from Vols. I and II of the biography:

"Davis sent a curt order to Governor Stevens to disband the winter parties and bring his operations to a close. Acknowledging the receipt of the order, Feb. 13, Stevens declared that it should be promptly obeyed but made a plea for the continuation of the surveys. He called the attention of the department to the peculiar circumstances of the exploration which necessitated the exceeding of the appropriation. The field was totally new, rendering it impossible to form an estimate. Much work of reconnaissance had to be done, which had previously been done for all other routes, before a direction could be given to the railroad examinations and estimates proper. Unforeseen expenses in the way of presents had to be incurred to conciliate the Indian tribes and an investigation of the question of snow was a vital and fundamental one, essential to making any reliable report at all. Stevens took the course which he believed Congress and the department would have taken under the circumstances. The Secretary's order arrived too late to frustrate the governor's thorough-going measures for determining the snow question. Subsequent ex-

perience has fully confirmed the report which minimizes the much-feared obstacles to the operation of a railroad through the mountains. Stevens decided to hasten to Washington to prevent the discontinuance of the exploration. The confidence of the legislature of Washington Territory is shown in the passage of a joint resolution that 'no disadvantage would result to the Territory should the governor visit Washington, if, in his judgment the interests of the Northern Pacific Railroad survey could thereby be promoted.' . . . On June 30, 1854, he submitted his report to the department, the first report of all the routes, although it covered the greatest field, and was by far the most comprehensive and exhaustive. Secretary Davis, recognizing that in his measures for prosecuting the survey General Stevens was actuated solely by zeal for the public service, submitted an estimate to cover the deficiency, which was duly appropriated by Congress. Secretary Davis was astonished and deeply disappointed at the results of the survey and was of the opinion that the accounts bearing upon the agricultural resources of the Northwest were overdrawn. In his report to Congress transmitting the surveys of the several routes, he took great pains to belittle the results of Governor Stevens' labors and disparage the Northern route. An extreme Southerner, 'he had set his heart upon the Southern route, and hoped to secure its adoption as the national route, in order to aggrandize his own section. He put a stop to further work on the Northern route, prevented any more appropriations for it, and kept up his fight against it. Nevertheless, Stevens continued the work of exploration, survey and observation despite privation of funds. His office in the capacity of superintendent of Indian affairs taking him into nearly all parts of the Territory, enabled him to take advantage of every opportunity to increase his general knowledge of the country.'

The final report of Stevens was submitted to the newly appointed Secretary of War, John B. Floyd, in February, 1859. This report, published by order of Congress in two large quarto volumes, as Parts I and II, Vol. XII., contains over eight hundred pages, with tables of meteorological and barometric observations, plates, lithographs and woodcuts. Part I partakes of the nature of a general report following the preliminary report of 1854 as given in Vol. I, pp. 73-154. He gives a most interesting account of his work among the Indians in 1855 and states that he occupied his entire time in negotiating treaties, in gaining the good will of the tribes to give them absolute and entire confidence in the government. The treaty operations taking him through Washington Territory to the waters of the Mis-

souri enabled him to thoroughly examine the mountain portion of the railroad route.

Part I, chapters I-X, are devoted to the narrative of 1853 and give every species of information bearing upon the question of railroad practicability—the passes of the several mountain ranges, the geography and meteorology of the whole intermediate region from St. Paul to the Pacific, the character of the Missouri and Columbia Rivers as avenues of trade and transportation, the snows, and rains of the route, and especially of the mountain passes.

Chapters XI and XII, pp. 196-225, contains the narrative of 1855, and give the itinerary of the expedition from Walla Walla to Fort Benton and return to Olympia.

In chapters XIII and XIV Stevens gives a geographical memoir. The following are a number of significant facts brought out in this part of the report—that the line of the 47th parallel is central to the vast region of the temperate zone, extending from the water line of the Great Lakes to the shores of the western ocean; that north of this is an area which, in similar latitudes in Eastern Europe and in Asia, is habitable, productive and at the moment increasing in population; the region is intersected by the only streams flowing either side of the watershed of the continent of which any considerable use could be made for purposes of navigation.

Chapter XV, pp. 261-306, includes a valuable report on the hydrography of the coast and the navigable rivers of Washington Territory by Dr. J. G. Kohl. The second part of the report gives a most instructive account of the origin of some of the geographical names within the Territory.

Chapters XVI, XVIII, pp. 307-358, cover reports on the meteorology of the route with tables of mean temperatures, between the mouth of the St. Lawrence and Puget Sound; reports on the peculiar features for which provision must be made, tunnels, facilities in fuel, etc.

Accompanying the reports of Part I are seventy fine lithographs of scenes along the route from St. Paul to the Coast, two maps, and one sheet of general profiles.

Parts II and III of Volume XII form a separate volume and include the zoological and botanical reports, the authors and paginations of which are given as follows:

Report No. 1 on botany by Dr. J. G. Cooper, pp. 13-39.

Catalogue of plants collected east of the Rocky Mountains, compiled by Asa Gray, pp. 40-49.

Report No. 3, pp. 55-71, is of special interest to Northwest students, since it deals with the botany of Washington Territory and gives a catalogue of plants collected therein. Dr. Cooper speaks of the remarkable variety of botanical and zoological regions, each distinguished by more or less peculiar forms of life. He describes the great forests of coniferous and broad-leaved trees, the plains of the Columbia and the salt and fresh water regions. A botanical index is found on pages 73-76.

Part III of Vol. XII, embodies the information collected by the expedition in the department of natural history and includes Reports Nos. 1-7, on Insects, Mammals, Birds, Reptiles, Fishes, Mollusca and Crustacea. Accompanying the reports are many beautiful engravings made by competent artists within the Smithsonian Institution.

The first volume designated as Part I was entirely the work of Stevens, with the exception of the meteorological tables and the paper on the hydrography of Washington Territory. Governor Stevens expected to devote a year to the preparation of the final report but the work was interrupted by the Indian Wars and his duties as congressional delegate from Washington Territory. His biographer, Hazard Stevens, relates how the governor overcame the difficulties, completing the report in a few months, a task which only a man of his remarkable mental powers could have accomplished. "He dictated the whole report. Every morning an expert stenographer came at six; and the governor, walking up and down in the dining room, dictated to him for one or two hours before breakfast. The reporter then took his notes, wrote them out, and had the manuscript ready for the governor's revision at the next sitting." The report so clearly and graphically written was a convincing answer to the criticisms of Jefferson Davis. Stevens appealed to Davis for aid "on the ground that the valuable data in his final report ought to be published for the benefit of the country." Davis was magnanimous enough to grant his request. The subsequent development of the country along the northern route has borne out the views recorded by Stevens in his reports. Furthermore, his work was so thorough that there was little necessity for preliminary surveys when, ten years later, the project of a railroad assumed definite form.

In addition to the reports in Vols. I and XII, the students will find further material on the Northwest in Vols. II, III, VI and VIII-XI. A brief outline regarding the nature of the reports with their paginations is as follows:

Vol. II, Part III, pp. 1-45: An introduction to and a synopsis of a report of the Reconnaissance of a railroad route from Puget Sound via the South Pass to the Mississippi River by Fred W. Lander, civil engineer, who undertook the exploration at his own expense. In view of the importance of his reconnaissance and its scientific character the Legislature of Washington Territory instructed its delegate to present the report to Congress and to procure its publication as a public document.

Vol. VI, Part II, chapter VII, pp. 53-60: Report on the general geology of the Columbia Valley. Chapter VIII, pp. 60-85, a report on the economical geology of the Puget Sound region, including a catalogue of minerals and fossils.

Vols. VIII, IX and X embody a report upon the zoology of the several Pacific routes. "Specimens collected were transmitted to the Smithsonian Institution and preserved until the return of the parties. The series of special reports prepared by the naturalists of the expedition were necessarily incomplete. It was deemed advisable to furnish a general systematic report upon the collection as a whole, and for the purpose materials were entrusted to competent individuals, necessary drawings being made by a skillful artist within the walls of the Smithsonian Institution."

In the introduction of Vol. VIII is a general sketch of the lines explored, that on the 47th parallel being designated as No. 1, page xiii.

The general report on zoology is divided into four parts:

Part I, on Mammals, by Spencer F. Baird, fills Vol. VIII, and is accompanied by a number of plates, a systematic index of common names, a list of authorities and an alphabetical list of localities.

Part II, on Birds, compiled by Spencer F. Baird, fills Vol. IX, and is accompanied by lists of species, authorities and indices in addition to some beautiful colored plates.

Parts III and IV on Reptiles and Fishes, respectively, are found in Vol X. The report accompanying Part III was omitted since it had been extended beyond the limits originally contemplated.

Vol. XI contains a brief account of each of the exploring expeditions from 1800 to 1857, by Lieut. G. K. Warren, with topographical maps, profiles and sketches to illustrate the various reports and surveys. Chapter IV, pp. 63-70, deals with the exploration of Washington Territory. For further information on this portion of the country, the student is referred to the alphabetical index on page 111 and to profile maps Nos. 1, 2 and 3 on the route of the 47th and 49th parallels.

Although the reports on the northern routes, as previously stated, are more exhaustive than those of other routes and fill a larger space in the printed volumes, many detailed reports are given on each of the other surveys. The most important reports with their paginations are as follows:

Report of Lieutenant E. G. Beckwith upon the route near the 38th and 39th parallels, explored in 1853 by Captain J. W. Gunnison, who with other members of the party was killed by the Indians in Utah. The report is a detailed narrative of the explorations with a minute and general description of the topographical features of the region from the mouth of the Kansas River to Sevier Lake in the Great Basin, of the flora, fauna and Indians. The report which includes tables of distances, altitudes and barometric observations, is followed by official letters of Captain Gunnison and explanations of the maps by Lieutenant Beckwith, Vol. II, chapters I-X, pp. 1-88.

A report of a survey of the route near the 41st parallel by Lieutenant Beckwith, 1854, with reference to the character of the country, its resources and its practicability for a railroad, pp. 9-66, of a new pagination.

Reports and letters on the geology of the explorations of 1853 and 1854, including a letter on infusorial fossils by Prof. J. W. Bailey, a report on the botany of the routes surveyed by Captain Gunnison and Lieutenant Beckwith, pp. 120-132.

Report of the survey near the 32d parallel from the Red Pine to the Rio Grande by Brevet Captain John Pope, corps of engineers, 1854, beginning a new pagination, pp. 1-156. This survey was made for the purpose of examining the military features of the route and made manifest the necessity of providing more ample means of accommodation and protection to the immense rush of immigration to the Pacific Ocean. The botanical report is found on pages 157-178; the geographical report in a new pagination, pp. 7-50.

Report of Lieutenant John G. Parke on the explorations of the route near the 32d parallel, pp. 3-26.

Extract from the report of a military reconnaissance made in 1846 and 1847 by Lieutenant Colonel W. H. Emory describing the route from the junction of the latter with the Colorado of the West, pp. 1-20, separate pagination.

Report of Lieutenant A. W. Whipple with explanatory notes and reports by Captain A. A. Humphrey, Vol. III, Parts I-VI, giving the itinerary of the survey, a description of the topographical features of the country and an account of the numbers, modes of subsistence, traditions and superstitions of the Indians. Part IV con-

tains the special geological report from the Arkansas River via Santa Fe to California, with a resume and field notes by Jules Marcom.

Report of a further survey near the 35th parallel by Lieutenant A. W. Whipple, 1853-4, followed by the botanical and zoological reports, is embodied in Vol. IV, Parts V and VI.

Report of Lieutenant R. S. Williamson upon the routes in California to connect with the routes near the 32d and 35th parallels with lithographs and woodcuts, Vol. V, Part I. Reports on geology, botany and zoology are given in Parts II, III and IV, respectively.

Report written by Lieutenant Henry L. Abbott from the surveys made by Lieutenant R. S. Williamson from the Sacramento River to the Columbia to determine the practicability of connecting the two river valleys by rail. Vol. VI, Part I, chapters I-VII; geology of the country bordering the Columbia is found in chapter VII, pp. 53-68.

Report of exploration for a route from San Francisco Bay to Los Angeles, Cal., west of the Coast Range and from Pimas Village to the Gila to the Rio Grande near the 32d parallel by Lieutenant John G. Parks, assisted by Albert H. Campbell, Part 1, Vol. VII.

Report by Thos. Antisell on the geology of the Santa Barbara Mountains, the Cordilleras and the plains of San Francisco, Los Angeles and San Bernardino, Part II, pp. 1-204. The report on botany by John Torrey is given in Part III, pp. 1-116, of a separate pagination.

In studying the railroad reports one is impressed by the number of men taking part in the surveys, who later won a place in the nation's history. It is doubtful whether there were ever railroad parties put in the field which contained so many future great men. Governor Stevens became a major-general in the Civil War and fell in the battle of Chantilly, Sept. 1, 1862, bearing in his hands the colors of the 79th Highlanders.

Captain George B. McClellan became Commander-in-Chief of the Army of the Potomac and later Democratic candidate for President. Lieutenant C. Grover was a major-general of volunteers and a colonel in the regular army.

Lieutenant R. Saxton was made brigadier-general of volunteers and military governor of the department of the South from 1862-5. Dr. Suckley was staff surgeon 1862-5. F. W. Lander was a brigadier-general and died in 1862 while preparing an attack on the enemy. Captain John Pope held the rank of brigadier-general in the Civil War and was later in command of the Army of the Potomac. Lieutenant E. G. Beckwith was chief of commissariat of the 5th Army

Corps, and of the army of Virginia, and was in command of the defenses of New Orleans, receiving the brevet rank of brigadier-general, United States Army, 1865, for his services during the war. Lieutenant Colonel W. H. Emory was made brigadier-general of volunteers, and raised to the rank of major-general of volunteers at the close of the war. Lieutenant G. K. Warren rose from the rank of lieutenant-colonel of volunteers to that of chief of engineers of the Army of the Potomac and was later made a major-general. Lieutenant A. W. Whipple served as chief of topographical engineers on the staffs of McDowell and McClellan and lost his life at the battle of Chancellorsville. Lieutenant R. S. Williamson became chief of topographical engineers with the Army of the Potomac and later served on the Pacific Coast as superintending engineer of various surveys of rivers, harbors and sites for fortifications. Lieutenant John G. Parke rose from the rank of brigadier-general of volunteers to that of major-general and chief of staff under General Burnside. Captain A. A. Humphreys rose to the rank of major-general of volunteers and served as chief of staff under General Meade. After the war he was made brigadier-general and given command of the corps of engineers, the highest scientific appointment in the United States Army, with charge of the engineering bureau in Washington.

Aside from giving some idea of the contents of the reports of the surveys, the main purpose in writing this article is to bring to the notice of students one of the most valuable sources of information on the history and geography of our state. The thirteen formidable looking volumes entitled, "Pacific Railroad Reports," are not so lifeless as they might at first appear, but are teeming with the spirit of the dauntless men who braved the mountain winters and the trackless regions of the West to furnish their country with a detailed account of the characteristic features and resources of its western domain. The student is urged to become acquainted with these reports which served as a basis of operations when the government began the construction of the transcontinental lines which to-day link the East and the West.

PEARL RUSSELL.