

masonry; 7,228 cubic yards of earth, 4,316 cubic yards of loose rock, and 8,387 cubic yards of solid rock have been removed; 80,994 pounds of cast-iron pipe, 106 cubic yards of second-class ashlar stone, and 18,127 feet (board measure) timber have been furnished by the contractors.

Further improvement will consist in continuing the masonry of the locks, in excavating, and building masonry for the foundation of the guard-gate, and in constructing a part of the lower breakwater.

July 1, 1878, amount available .....	\$229,529 30	
Amount appropriated by act approved March 3, 1879.....	100,000 00	\$329,529 30
July 1, 1879, amount expended during fiscal year.....	42,452 19	
July 1, 1879, outstanding liabilities.....	2,333 68	44,785 87

July 1, 1879, amount available .....	284,743 43
Amount (estimated) required for completion of existing project .....	1,424,338 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.	500,000 00

(See Appendixes K K 4 and K K 16.)

5. *Improvement of the mouth of Columbia River, Oregon.*—To comply with provisions of the river and harbor act of June 18, 1878, a survey of the bar and some limited observations of the currents were made by Lieut. A. H. Payson, Corps of Engineers, in August and November, 1878, the results of which were submitted in a report dated December 18, 1878, and printed in Senate Ex. Doc. No. 50, Forty-fifth Congress, third session.

It is expected to apply the appropriation of March 3, 1879, in continuing the current observations, and in making a partial survey to discover the material changes which have occurred since the last survey. Plans and estimates will be submitted for the improvement only after the data gained by the contemplated survey shall have been carefully studied.

July 1, 1878, amount available .....	\$5,000 00	
Amount appropriated by act approved March 3, 1879.....	5,000 00	\$10,000 00
July 1, 1879, amount expended during fiscal year.....		5,000 00
July 1, 1879, amount available .....		5,000 00

(See Appendixes K K 5 and K K 17.)

6. *Improvement of the entrance to and harbor of Coos Bay, Oregon.*—A survey of the harbor of Coos Bay was made in August, 1878, under the direction of Maj. J. M. Wilson, Corps of Engineers, in compliance with river and harbor act of June 18, 1878. The plan of improvement recommended consisted of the construction of two stone training walls at a cost of \$972,000.

By act of Congress of March 3, 1879, the sum of \$40,000 was appropriated for improving the entrance and harbor.

The project for the application of this appropriation is now the subject of investigation by the Board of Engineers for the Pacific Coast.

Amount appropriated by act approved March 3, 1879 .....	\$40,000 00
July 1, 1879, amount available.....	40,000 00

Amount (estimated) required for completion of existing project.....	932,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.	60,000 00

(See Appendix K K 18.)

7. *Improvement of Lower Clearwater River, Idaho.*—An examination of the Clearwater River from near the mouth of the south fork to the mouth

of the river, a distance of 84 miles, was made September–October, 1878, under the direction of Maj. J. M. Wilson, Corps of Engineers.

The improvement of the river above the north fork was found impracticable, but Major Wilson states in his report of October 16, 1878, that a depth of 4½ feet could be obtained from the north fork to Lewiston, a distance of 40 miles, by removing solid rock, loose rock, and cobble-stones, at a cost of \$34,424.

The appropriation of March 3, 1879, will be applied in removing solid and loose rock at the shoals where improvement is needed, and it is probable that navigation at medium stage may be extended to the mouth of Lapwai Creek, 12 miles from Lewiston.

Amount appropriated by act approved March 3, 1879.....	\$5,000 00
July 1, 1879, amount available.....	5,000 00

Amount (estimated) required for completion of existing project .....	29,424 00
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office .....	10,000 00

(See Appendix K K 19.)

#### EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

To comply with the provisions of the river and harbor act of June 18, 1878, Maj. J. M. Wilson, Corps of Engineers, was charged with and completed the following:

1. *The entrance of Coos Bay.* (See Appendix K K 6.)
2. *Cape Foulweather, Oregon, to ascertain its adaptability as a harbor of refuge.* (See Appendix K K 7.)
3. *Port Orford, Oregon, to ascertain its adaptability for a harbor of refuge.* (See Appendix K K 8.)
4. *Coquille River, Oregon.* (See Appendix K K 9.)
5. *Alsea River and Bay, Oregon.* (See Appendix K K 10.)

The results of these examinations were transmitted to Congress and printed as Senate Ex. Doc. No. 14, Forty-fifth Congress, third session.

6. *Clearwater River, Idaho.* (See Appendix K K 11.)
7. *Rogue River, Oregon, between Scottsburg and its mouth.* (See Appendixes K K 12 and K K 20.)
8. *Bar at mouth of Columbia River, Oregon.* (See Appendix K K 21.)

And to comply with the provisions of the river and harbor act of March 3, 1879, he was charged with and is now engaged on examinations and surveys at the following localities, the results of which will be duly submitted when received:

1. *The Columbia River at the Dalles in Oregon, including plan and specifications for locks and canal around said point.*
2. *The Cowlitz River, Washington Territory, for purpose of ascertaining the cost of removing snags and other obstructions.*
3. *Umpqua River, Oregon, between Scottsburg and its mouth.*
4. *For an accurate examination and survey of Alsea Harbor, Oregon, and bar in front of it.*

#### IMPROVEMENT AND CARE OF PUBLIC BUILDINGS AND GROUNDS IN THE DISTRICT OF COLUMBIA—WASHINGTON AQUEDUCT.

Officer in charge, Lieut. Col. Thos. Lincoln Casey, Corps of Engineers.

1. *Improvement and care of Public Buildings and Grounds in the District of Columbia.*—The condition of the public reservations is set forth

in the detailed report of the officer in charge. But little more than the care and preservation of the grounds could be effected with the available appropriations. The necessity for more watchmen for the improved squares is urged, and is recommended for favorable consideration. His estimates for the fiscal year ending June 30, 1881, are as follows:

For improvement and care of public buildings and grounds.....	\$184,500 00
For compensation to persons employed on and around public buildings and grounds.....	41,420 00
	225,920 00

(See Appendix L L 1.)

2. *Washington Aqueduct.*—The care and maintenance of the aqueduct was the only work done upon it during the year.

All its parts were kept in good order, and the water of the Potomac was delivered through it to the city without interruption. The necessity for extending the dam at the Great Falls of the Potomac is urged and recommended to favorable action.

The estimates of the officer in charge for the fiscal year ending June 30, 1881, are as follows:

For engineering, maintenance, repairs, and construction .....	\$116,000 00
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(See Appendix L L 2.)

#### SURVEYS AND EXAMINATIONS WITH A VIEW TO THE IMPROVEMENT OF RIVERS AND HARBORS.

For examinations and surveys for improvements and for contingencies of rivers and harbors, an appropriation of \$150,000 should be made.

#### SURVEYS OF NORTHERN AND NORTHWESTERN LAKES AND THE MISSISSIPPI RIVER.

Officer in charge, Maj. C. B. Comstock, Corps of Engineers, who had under his immediate orders Capt. H. M. Adams, First Lieuts. D. W. Lockwood, C. F. Powell, and P. M. Price, Corps of Engineers, and the following-named principal assistant engineers: E. S. Wheeler, A. R. Flint, G. Y. Wisner, R. S. Woodward, J. A. Ockerson, John Eisenmann, J. H. Darling, and L. L. Wheeler.

*Progress of the work during the year.*—On Lake Erie a primary baseline has been measured near Sandusky, Ohio, and the angles of the small triangulation connected with it have been read. The main triangulation connecting Lake Erie with Lake Michigan has been nearly completed.

The erection of the stations for the triangulation running south from Chicago has been continued.

On the Mississippi River the survey has been partially completed from Scanlan's to Helena, and entirely completed from Scanlan's to Mrs. Baldwin's. The work was interfered with by the late disappearance of the yellow fever and the unusual quantity of ice in the river during January.

The longitudes and latitudes of Louisiana, Mo., Rock Island, Ill., and Red Wing, Minn., have been determined.

Water-level observations on the lakes have been continued.

Coast charts Nos. 3, 4, and 5, of Lake Ontario, and Nos. 2, 3, and 4, of Lake Erie, have been completed; charts Nos. 8, 9, 10, and 11, of the Mississippi River south of Memphis, have been completed.

Amount available for fiscal year 1879-'80.....	\$85,000 00
Amount required for survey of northern and northwestern lakes for fiscal year ending June 30, 1881, namely, for the reduction of the field-work of the Lake Survey, for the preparation and publication of the final report, for printing charts for use of navigators, for continuance of water-level observations, for aid to State surveys, and miscellaneous .....	44,800 00
(See Appendix M M.)	

#### MAPS OF CAMPAIGNS AND BATTLE-FIELDS.

A survey covering the most important parts of the battle-field of second Bull Run was made by Maj. G. K. Warren in June, and maps in July, 1878. This was used in the investigation made by the Board of which Major-General Schofield was president, into the military operations conducted on August 28, 29, 30. This survey was limited at the time on account of expense to a special locality, but it is a part of the surveys necessary to furnish a proper map to illustrate the operations of our armies between the Potomac and Rappahannock in the years 1861-'62-'63.

Major (now Lieutenant-Colonel) Warren, is engaged in collecting all the topographical data available from the war operations, and all the surveys since made that will aid in correctly compiling a map of this part of Virginia. It will probably be necessary to make some additional surveys to insure proper connections of the different parts, to be made as means and opportunity permit.

(See Appendix N N.)

#### MILITARY, GEOGRAPHICAL, AND LAKE SURVEY MAPS.

*In the Office of the Chief of Engineers.*

The map of the Territory of the United States West of the Mississippi River has been completed and photolithographed on a scale of  $\frac{1}{2,000,000}$ .

The maps of Montana and Dakota, revised by Lieut. Edward Maguire, Corps of Engineers, Chief Engineer Department of Dakota in 1878, have been engraved, and an edition printed for distribution to the Army.

Atlas sheets Nos. 1, 2, 9, and 10, of the Department of Arizona, on a scale of 6 miles to 1 inch, and a map of Arizona Territory, on a scale of 18 miles to 1 inch, prepared in the office of the Chief Engineer of the Department of Arizona, have been photolithographed, and an edition printed for the use of the troops in that department.

A map of Reconnaissances of Routes in and leading from the Department of the Platte, by Capt. W. S. Stanton, Corps of Engineers, in 1875-'76-'77, has also been photolithographed and an edition printed.

Sixty-six sketches of military posts in the Military Division of the Pacific, with an outline map of the division, showing the relative positions of the posts, prepared in the office of the chief engineer of the division, have been photolithographed, and an edition printed.

The following maps, illustrating the operations of the late war, have been prepared and are now in the hands of the photolithographer, in order that an edition may be printed:

I. A map showing the country in the vicinity of Williamsport, Hagerstown, Funkstown, and Fallingwaters, Md.

II. A map of a reconnoissance in the vicinity of Gauley Bridge, Va.  
A map of the seat of war in Afghanistan was prepared, and an edition printed and distributed to the officers of the Army for their information.

A map of the White River, Indiana, by Maj. Jared A. Smith, Corps of Engineers, in 1878, in 17 sheets, including title page, has also been printed.

Charts 8 and 9 of the survey of the Mississippi River, by Maj. C. B. Comstock, Corps of Engineers, have been photolithographed and an edition printed.

The following lake-survey charts have been photolithographed, and an edition printed in advance of the engraved edition, namely:

Lake Ontario coast chart, No. 3.  
 Lake Ontario coast chart, No. 4.  
 Lake Ontario coast chart, No. 5.  
 Lake Erie coast chart, No. 2.  
 Lake Erie coast chart, No. 3.  
 Lake Erie coast chart, No. 4.

A general chart of the northern and northwestern lakes and an index chart.

During the past year the engraving on copper of Lake Michigan coast charts Nos. 4, 8, 9, Lake Ontario and Lake Ontario coast charts Nos. 1, 2, 3, and 4, has been completed.

The following charts are now in the hands of the engraver: Lake Ontario coast chart No. 5, Lake Erie coast chart No. 2, and Lake Erie coast chart No. 3.

#### GEOLOGICAL EXPLORATION OF THE FORTIETH PARALLEL.

Mr. Clarence King, United States civil engineer, in charge.

The printing of volume I, Systematic Geology, has been completed. Volume VII, Vertebrate Paleontology, by Professor Marsh, remains to be printed.

Mr. King completed his labor in connection with this survey and was relieved January 30, 1879.

#### GEOGRAPHICAL SURVEYS OF THE TERRITORY OF THE UNITED STATES WEST OF THE ONE-HUNDREDTH MERIDIAN.

Officer in charge, Capt. George M. Wheeler, Corps of Engineers, having under his orders First Lieut. Samuel E. Tillman and Second Lieuts. Eugene Griffin and Willard Young, Corps of Engineers; First Lieut. B. H. Randolph, Third Artillery, and Second Lieut. M. M. Macomb, Fourth Artillery.

During the year the following gentlemen have been engaged in the investigation of special subjects: Prof. John J. Stevenson, geologist, assisted by I. C. Russell; H. W. Henshaw, ornithologist; Dr. J. T. Rothrock, with the assistance of the collaborators in the botanical branch, brought to a close the proof reading of his report and those of others, contributing to volume VI, which volume is now in print.

Prof. F. W. Putnam, curator of the Peabody Museum, assisted by Dr. C. C. Abbott, of Trenton, N. J., and Lucien Carr, completed his portion of the manuscript of volume VII, and this report is now passing through the several stages of proof.

Prof. J. J. Stevenson has paid especial attention to the outcrops of the Coal Measures at the east base of the Rocky Mountains, more particularly from Trinidad, Colo., to the southward as far as Santa Fé, and has determined the geological formations covering an area of fully 7,000 square miles.

The parties of the season of 1878 were, from lateness of appropriations, unable to take the field until the first week in July, thus losing the

early portion of the season, at which time, however, the Colorado, Utah, and California sections were organized at Fort Garland, Colo.; Fort Union, N. Mex.; Ogden, Utah; Carson, Nev., and Fort Bidwell, Cal.

The several main parties, nine in number, were distributed in Colorado, New Mexico, Texas, Arizona, Utah, Nevada, California, Oregon, and Washington Territory, and during the season carried on their labors in portions of atlas sheets 20 A, 20 C, 29 A, 29 C, 38 B, 56 B, 56 D, 61 D, 70 A, 70 C, 73, 76, 77 D, 78 A, 83, 84, 90 A, and 90 B. (See progress map accompanying Appendix O O.)

The drainage basins entered were: Portions of the northwestern arm of the "great interior basin"; of the Upper Klamath and of the Columbia basins; the mountain basins at the headwaters of the Tuolumne, Stanislaus, Merced, and Feather rivers, all of which are tributary to the basin of the Sacramento; also portions of the basin of the Rio Grande.

The special survey of Great Salt Lake and vicinity including its meander, that of the islands and their contours, together with a number of soundings, has been completed, and observations upon surface evaporation have been continued as far as practicable.

At the Washington office the reductions needed for map construction and the subsequent delineation are carried on continuously.

A temporary field-office at Ogden, Utah, has been kept up throughout the season of 1878. Five bases were measured at or near the following points: (1) Austin, Nev.; (2) The Dalles, Oregon; (3) Fresno, Cal.; (4) Fort Bliss, Tex.; (5) Fort Bayard, N. Mex.

The number of sextant latitude stations occupied was 90; 64 triangles about bases were measured, and observations made at 70 main and 87 secondary triangulation stations; 763 three-point and cross-sight stations and 15,936 minor points were occupied.

Magnetic variations were determined at 197 stations, and 10,299 miles measured, cistern and aneroid barometer observations for altitude differences at 8,098 stations. The location of 23 mineral and thermal springs has been noted and 15 mining-camps visited.

Collections of specimens of minerals, fossils, mammals, birds, reptiles, fishes, insects, shells, &c., have been made.

In the office 43 astronomical positions have been computed, 90 stations adjusted, 904 triangles, 1,808 distances, 292 longitudes and latitudes, and 255 azimuths computed. Altitudes have been computed of 1,041 cistern and 6,983 aneroid barometer stations.

There have been 14 sheets and parts of sheets plotted on a scale of 1 inch to 2 miles, and 8 special sheets drawn to various scales.

Seven completed atlas sheets in hachures with land classification colors added will be ready to be submitted in time to accompany extra copies of Captain Wheeler's annual report, viz, 32 D, 47 B, 47 D, 61 A, 73 A, 78 A, 84 B; 2,633 reports and 14,906 maps have been distributed during the year.

The call for maps is increasing. There have been published since the commencement of this survey of the regular atlas sheets, not enumerating special maps, as follows:

Topographical sheets .....	28
Advancing toward publication and to accompany extra copies of appendix .....	5
Land classification sheets .....	21
Geological sheets .....	7

There yet remain to be published from data already gathered the following number:

Topographical sheets .....	23
Land classification sheets .....	12
Geological sheets .....	4

During the month of April, 1879, the Utah section resumed its field labors, and subsequently two parties of the Colorado section and one party of two divisions of the California section were organized.

As no funds were available for the prosecution of field-work after June 30 current, it became necessary to withdraw these parties at that date, which was done, and office work resumed.

During the year volume VI of the quarto reports authorized by act of Congress has appeared. Volume VII is now being proofed.

The special reports now remaining unpublished are volume 1, Geographical Report, and tables of geographical positions, altitudes, distances, &c.

The special map of the Lake Tahoe region, on a scale of 1 inch to 1 mile, awaits publication.

The thirteen remaining land classification maps, of which 20 already are published, are being prepared with all possible rapidity, as are all those including topographical and geological, 40 in number, for which data have been gathered.

The main results of the survey are the topographical maps that, requiring slow and skillful delineation, demand much time for their completion.

Captain Wheeler's report, with estimates and appendixes, is appended. (See Appendix O O.)

#### RECONNAISSANCES AND EXPLORATIONS.

The officers who have been engaged on these surveys are as follows:

Maj. O. M. Poe (colonel and aide-de-camp to the General of the Army), Maj. G. L. Gillespie at headquarters Military Division of the Missouri till September 28, 1878, and Capt. J. F. Gregory since December 28, 1878; Capt. W. R. Livermore at headquarters Department of Texas; Capt. W. S. Stanton at headquarters Department of the Platte; Lieut. E. H. Ruffner at headquarters Department of the Missouri; Lieut. Edward Maguire at headquarters Department of Dakota; Lieut. Carl F. Palfrey at headquarters Military Division of the Pacific.

These officers have been employed in surveys in the field and in compiling maps from note-books and sketches made by the officers and soldiers in the scouts and campaigns in the west.

An appropriation is urgently needed for purchase and repair of instruments, and the expenses attending the draughting and printing of maps required for distribution to the Army.

Capt. James F. Gregory, on duty at headquarters Military Division of the Missouri, reports that the work of his office since December 28, 1878, the date of his assignment there, has consisted in correcting, mounting, and issuing maps for use of officers in the division; in making copies, reductions, and tracings of maps of military reservations, scouts, reconnaissances, &c., for file and forwarding, in collecting and platting information received for the correction of future editions of existing maps and in compiling and platting "Sheet No. 4 Western Territories." He has been embarrassed in the work of his office by reason of total lack of funds, and states that \$5,000 could be profitably expended during the fiscal year ending June 30, 1881.

(See Appendix P P.)

Capt. W. S. Stanton, on duty with the general commanding the Department of the Platte, reports that for want of the necessary appropriation no field work has been accomplished. The year has been occupied

in computations somewhat elaborating the results of previous reconnaissances and with office routine and minutiae of a miscellaneous character specified in detail in his report.

(See Appendix Q Q.)

Lieut. E. H. Ruffner, Corps of Engineers, has been on duty during the year as the engineer officer of the Department of the Missouri. He was engaged during the summer and fall in working on the military wagon-road from Alamosa to Pagosa Springs, Colo., for which an appropriation of \$5,000 was made. This road, crossing the main range of the Rocky Mountains at an elevation of 11,554 feet, and through an entirely new country of 50 miles without roads, was opened to beyond the summit, and an appropriation of \$10,000 made by the last Congress to complete it will enable him to put the line in working order.

He has also surveyed the boundary lines for a military reservation at Fort Lewis, Colo., which reserve six miles square has been accepted and declared by the President. Since that time he has been engaged in making a detailed survey of the interior of the new reserve, which is now completed, and the map under course of preparation.

A very valuable report is submitted by Lieutenant Ruffner from Dr. Chas. Smart, U. S. A., on the chemical characteristics of the water and deposits at Pagosa Springs, Colo., which report explains certain peculiarities in these noted hot springs which have escaped the attention of prior investigators.

(See Appendix R R.)

Lieut. Edward Maguire, at headquarters Department of Dakota, reports that the reservation of Fort Keogh, Mont., 90 square miles, was surveyed and the boundary lines established. The latitude was determined by 142 and the longitude by 144 sextant observations. A reconnaissance of 171 miles was made from Fort Keogh to the Missouri River, observations for latitude and time taken when the weather permitted. In addition, two elaborate surveys were made, one for the site of department headquarters and the other of the post of Fort Snelling. The roads across the reservation to the bridge were also laid out.

The surveys of the Fort Custer reservation and of the cemetery of Custer's battle-field are now in progress.

The office work consisted in computing and plotting the field-notes, revising and correcting the maps of Dakota and Montana, making numerous tracings and copies of reports for forwarding and office files, compiling tables of distances for the Paymaster-General, and in the usual routine work of furnishing such information, data, and drawings as were called for by the department commander and other officers.

(See Appendix S S.)

Lieut. Carl F. Palfrey, engineer officer at headquarters Division of the Pacific, reports the following as accomplished:

*Field work.*—Survey of boundaries of Marine Hospital reservation by Lieutenant Fletcher.

Examination and report upon water supply of Presidio and Point San José.

Location and grading of road connecting Presidio and Fort Point.

Examination and report upon boundaries of military reservation at Monterey, Cal., as laid out by Deputy Surveyor Foreman.

Examination and report upon hay reservation at Camp McDermit, Nev., as laid out by Deputy Surveyor Van Lennep.

Resurvey and location of displaced corner post at Fort Halleck, Nev.

*Office work.*—Correction of photographic sheets map of Western Territories.

Tracing from field sketches, or plotting from field notes, of scouts reported, 15 maps.

Tracing, or reducing to scale, plans of posts in Military Division of the Pacific, 86 plans.

Photographic printing from tracings, 796 sheets.

Scouts reported during year, 8.

(See Appendix T T .)

ESTIMATE FOR AMOUNT REQUIRED FOR MILITARY SURVEYS AND RECONNAISSANCES IN MILITARY DIVISIONS AND DEPARTMENTS.

For military surveys, reconnaissances, and surveys of military reservations by the engineer officers attached to the various headquarters of military divisions and departments an average of \$5,000 for each of the nine military divisions and departments west of the Mississippi River, and \$5,000 for publication of maps; total, \$50,000.

OFFICE OF THE CHIEF OF ENGINEERS.

In the labors of the office the Chief of Engineers was assisted, on the 30th of June, by the following officers in charge of the several divisions:

FIRST AND SECOND DIVISIONS.—*Fortifications, battalion, and engineer depot, lands, armaments, personnel, &c.*, Maj. George H. Elliot.

THIRD DIVISION.—*River and harbor improvements, &c.*, Lieut. Col. John G. Parke.

FOURTH AND FIFTH DIVISIONS.—*Property accounts, estimates, funds, survey of the lakes and the Mississippi River, explorations, maps, instruments, &c.*, Capt. Henry M. Adams.

Very respectfully, your obedient servant,

H. G. WRIGHT,

*Chief of Engineers, Brig. and Bvt. Major-General.*

Hon. GEORGE W. McCRARY,

*Secretary of War.*

STATEMENT SHOWING RANK AND DUTIES OF OFFICERS OF THE CORPS OF ENGINEERS DURING THE FISCAL YEAR ENDING JUNE 30, 1879.

RANK AND NAME.	DUTIES.
BRIGADIER-GENERAL AND CHIEF OF ENGINEERS.	
Andrew A. Humphreys.. <i>Bvt. Major-General.</i>	Commanding Corps of Engineers. Member of Board for the survey of the harbor of Baltimore City and adjacent waters. Member of Joint Commission to supervise the construction of the Washington Monument. Member of Advisory Board to harbor Commissioners State of Massachusetts. Member of Board to examine and revise the exterior and bulkhead lines of New York Harbor along Staten Island side. To co-operate with the authorities of the State of New York in examining and deciding upon exterior pier and bulkhead lines on Hudson River from State dam at Troy to the city of Hudson. Retired at his own request after more than 40 years' continuous active service, to date June 30, 1879.
COLONELS.	
John G. Barnard..... <i>Bvt. Major-General.</i>	Member of Board of Engineers for Fortifications. Member of Lighthouse Board. Member of Commission to select site for the Naval Observatory. Member of Board of Engineer Officers on improvement of low-water navigation of the Mississippi and Missouri rivers. Member of Board of Engineer Officers appointed under provision of act of Congress approved June 19, 1878, to examine and report progress of construction of works at South Pass of the Mississippi River.
Henry W. Benham..... <i>Bvt. Major-General.</i>	In charge of construction of forts Winthrop, Independence, and Warren, and work on Long Island Head, Mass., forts Montgomery, Columbus, Wood, Hamilton and additional batteries, Castle Williams, South Battery Governor's Island, and Mortar Battery at Fort Hamilton, N. Y., and fort at Sandy Hook, N. J. Member of Board of Engineer Officers for the examination of certain named officers for promotion in the Corps of Engineers.
John N. Macomb.....	In charge of construction of forts Delaware, Del., and Mifflin, Pa., battery at Finn's Point, N. J., and work opposite Fort Delaware, and pier at Lewes, Del.; harbor improvements at New Castle and Wilmington, Del., Chester, Pa., and on Delaware River and Bay; improvement of the Shrewsbury and Salem rivers and Cohansey Creek, N. J., Delaware and Broadkill rivers, Del., and Schuylkill River, Pa. Examination of Mispillion Creek, Del., Woodbridge Creek, Elizabeth, Rahway, and Manasquan rivers, N. J., and Duck Creek, Del. Survey of Delaware River below League Island, and Salem River between Sharpstown and Delaware Canal. Member of Board of Engineer Officers appointed under provision of act of Congress approved June 19, 1878, to examine and report progress of construction of works at South Pass of the Mississippi River. Member of Board of Engineer Officers on improvement of Shrewsbury River, N. J. Member of Board of Engineer Officers to meet in pursuance of provision of act of Congress approved January 13, 1879, for the relief of legal representatives of George Williams, deceased, contractor for building locks of Muscle Shoals Canal, Tennessee River. In charge of improvement of Elizabeth, Rahway, and Manasquan rivers, N. J.; Mispillion Creek, Del., Woodbridge Creek, N. J., and Dela-