REPORT
OF THE
SUPERINTENDENT
OF THE
UNITED STATES COAST SURVEY,
SHOWING
THE PROGRESS OF THE SURVEY
DURING
THE YEAR 1866.

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1866.
"Along the western side the bottom is rocky and very uneven, and entirely unfit for anchorage with such distances as might afford protection from southerly winds and seas. Most of the shallows are so close together that vessels having a draft of water of less than six feet below the keel can with great difficulty find a safe and commodious anchorage. On the north end of the passage two long, narrow, and shallows, which are extremely dangerous for shipping, are rendered still more dangerous by the depth of water in the passage, which is not less than six feet below the keel of the smallest vessel that can enter it. In this passage the depth of water in the narrowest part is but only a few feet, and the bottom is so uneven that vessels have been known to anchor in it with the bottom of their keel below the surface of the water. In places the bottom is so bare that the water is perfectly clear, and the bottom is so uneven that vessels might make the sea swell.

In connection with the survey of the island, the shore-line of the main island of Washington Territory, in the vicinity, was traced for several miles, and a few lines of soundings were run between the island and the main. The results are given in a sketch (No. 24) accompanying this report. Eleven hundred soundings were recorded in the progress of the survey.

Tidal Stations.—The tidal station of Astoria has been surveyed as the base of the scoreset, and the meteorological observations at this station have been recorded in the report of Mr. Wilson with the soundings.

Besides the station on Oregon, Captain Elliot has directed the observers employed at the two stations on the coast of California, already mentioned under the head of Section X.

COAST SURVEY OFFICE.

In the several divisions of the office in Washington the duties assigned to each have been performed with but slight change in the arrangements previously made for the service. As stated in former reports, this material needed for the field, admitting of classification, are approximately referred, and after being worked up and subsequently consigned under the direction of the assistant in charge for the intended publications. The divisions are designated as follows:

Hydrographic Division, in which, under the direction of Captain C. P. Patterson, hydrographic inspectors, all the agents required for the final issue of charts are prepared and arranged, as the inspection and verification of original matter, selection of characteristic soundings, designation of the sheets, and their arrangement into the division.

The equipment and care of vessels, and their readiness for service with the surveying parties, are amongst the duties devolving upon the hydrographic inspector.

Tidal Division.—The tidal data previously collected in this division, and retained in the charge of Assistant J. F. Putnam, have been digested within the present year, as in the case of the Atlantic, Gulf, and Pacific coasts of the United States. An edition printed and bound in convenient form has been furnished to the Secretary of the Interior, for the use of the naval and revenue service. Mr. R. S. Averys was in charge of the division during the latter part of the year, in the temporary absence of Assistant Putnam, and much credit is due to him for the good judgment and energy manifested, particularly in the preparation of the manuscript of the tide-tables for publication.

The deduction of results from extended series of observations. Amongst these was the establishment of final equations, derived from oscillations of the Feele, for the verification of longitude and for computing the lunar elements, a work prosecuted under the general direction of Professor Benjamin Peirce, of Harvard.

The routine work, such as office adjustments of the observations made by triangulation parties, reductions required in determining latitude, longitude, azimuth, and the magnetic elements, has been kept up, each of these operations being completed being made the subject of a special report by the chief of the Computing Division.

The computers attached to the office are Messrs. W. W. Werner, Eugene Nulty, G. Bump, and E. T. Courtenay. Mr. S. R. Averys was on duty in the division until May, and Messrs. J. G. Spann-"
limited to the determination of facts to serve for tracing the shore-line, and for hydrographic signals. Mr. Gordon identified two of the stations which he had previously occupied, and from them extended the triangulation by observing at seven new stations. He was aided in the field by Sub-Assistant C. H. Boyd, and by Messrs. L. A. Sangster and H. G. Ogles.

SECTION IX.
FROM VERMILION BAY TO THE RIO GRANDE BOUNDARY, INCLUDING PART OF THE COAST OF LOUISIANA AND THE COAST OF TEXAS. (Sect. No. 16.)

Hydrography of Matagorda Bay, Texas.—An interval in the hydrography between the entrance and the port of Matagorda was filled in by the party of Assistant F. P. Webster, in July. For this service the schooner Stevens was assigned, and continued in the work until the 1st of August, when the vessel was laid up at Indianapolis. Eight thousand soundings were recorded.

Assistant Webster was aided in the hydrography by Messrs. H. A. Oshia and F. D. Granger.

During the latter part of this season all the members of this party were on duty in other sections of the coast.

Hydrography of Corpus Christi Bay, Texas.—The regular topographical survey of the coast of Texas was resumed on Aransas Point on the 18th of June, by Sub-Assistant Charles Hosmer, with a party in the schooner Pescador. Owing to the damage received in her very stormy passage, the vessel was found to be unsuitable for the usual service in moving from place to place as the plane-table work advanced. Signals were however set up and other preliminaries arranged for the successful prosecution of the work. After tracing twenty-four miles of shore-line at the northern end of Corpus Christi bay, the condition of the schooner required that she should be sent to Mobile for repairs. Seven square miles of topographical area were mapped before closing work at the end of July.

Sub-Assistant Hosmer was aided in this section by Mr. A. L. Ross.

SECTION X.
COAST OF CALIFORNIA FROM THE SOUTHERN BOUNDARY OF THE UNITED STATES ON THE PACIFIC TO THE FORTY-SECOND PARALLEL. (Sect. No. 42.)

Topography between Point San Pedro and Pillar Point, California.—The coast topography between San Francisco entrance and Monterey bay has been completed by the addition of an elaborate sheet of plane-table work turned in by Assistant A. F. Rodgers. The bold features which mark that part of the Pacific coast are expressed on the sheet by contour lines, the directions of which were carefully determined by leveling. Twelve square miles are thus represented, the topography having an average breadth of nearly two miles. Assistant Rodgers was aided in the field by Mr. Alexander Chase.

Reoccupation of Salinas Bay, California.—Assistant W. E. Greenwell resumed this work at the limits to which it had been extended in a previous season by Assistant Lawton, and completed the triangulation of the bay in March and April of the present year. In the upper part of the bay his stations were selected so as to include the entrances of the Sacramento and San Joaquin rivers. The points requisite for the purposes of the hydrographic party were furnished by Assistant Greenwell.

Hydrography of Salinas Bay, California.—This work was commenced in November, 1865, and was completed in the month of February following, by the party of Assistant Edward Correll. The soundings, of which an aggregate of twenty thousand were recorded, were made with the schooner Mary. As Army Point, (Sketch No. 22,) where the work joins with the hydrography of Captain Alden, day and night observations of the tides were recorded for a complete lunation, and as the work advanced similar observations were made at two stations in the upper bay. In the lower part of the bay the soundings were extended gage into the entrances of the Sacramento and San Joaquin rivers. By the heavy rains in January, the water at Sacramento was raised to a level of twenty-two feet above low-water mark.

Mr. W. E. Dennis was attached as aid to the hydrographic party.

Hydrographic examination of Sacramento river, California.—In March, Assistant Correll exa...