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REPORT

OF

THE SUPERINTENDENT

OF THE

COAST SURVEY,

SHOWING

THE PROGRESS OF THE SURVEY

DURING

THE YEAR 1859.

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made upon Polaris near its eastern elongation, besides seventy-two on Ursæ Minoris, near the upper culmination, in connection with two hundred and eighty observations upon the elongation mark. At Western Ridge the azimuth was determined from seventy observations upon λ Ursæ Minoris, near its upper culmination, and one hundred and twenty-six observations on the elongation mark.

Magnetic observations.—The geological formation at station Howard indicated that the magnet would be affected by local attraction, and the experimental observations made at several points near it proved this to be the case. After selecting the most favorable position, one hundred and forty-seven observations were made for declination, the magnet used being freely suspended during three consecutive days. The inclination was measured with the nine-inch dip-circle, five complete sets of observations being made with two needles. The horizontal intensity and moment of inertia were deduced from two sets of experiments on different days.

At Western Ridge the magnetic declination was ascertained by one hundred and ninety observations on four days, and the inclination from three complete sets made on different days.

At station Chamcook the declination was determined by one hundred and thirty-five observations on three days, the inclination from four sets of experiments on different days, and the horizontal intensity and moment of inertia in the usual way.

Observations were also made at Eastport, Maine, and in its immediate vicinity, for determining the magnetic inclination and local intensity.

The declinometer D. 22, C. S. No. 1, and dip-circle, C. S. No. 4, were used in all the observations made at the several stations.

The azimuth and magnetic observations were made by Assistant Dean, aided by Messrs. R. E. Halter, R. H. Talcott, and C. S. Peirce.

While the astronomical and geodetic operations were in progress at Howard, Mr. Talcott made a series of levellings from the station to a bench-mark which had been established by careful tidal observations made by Mr. McDonnell, who also ran a line of levels between the same points.

Meteorological observations.—The usual journals were kept at the several stations by Mr. Talcott, and in the course of the working season two hundred and ninety readings of the barometer, thermometers, and evaporating point, were recorded.

All the original records were duplicated, and the computations from the latitude, azimuth, and magnetic observations nearly completed, before the party returned from the field. These, making a total of fifty volumes, have been deposited in the archives at Washington.

Assistant Dean and Sub-Assistant Goodfellow are about to resume the prosecution of longitude determinations on the Gulf of Mexico.

Reconnaissance.—The primary triangulation which has been carried through New England having approached the northeastern boundary of the United States, it became desirable that stations should be chosen for closing the series in that quarter so as to include the St. Croix river and Passamaquoddy bay. In the latter part of June Assistant C. O. Boutelle proceeded on this duty, first re-erecting on Mt. Desert island the primary signal which had been destroyed by a storm subsequent to the occupation of that point by my own party in the autumn of 1857, and placing the heliotropes necessary for the measurement of horizontal angles formed at the two remaining stations (Howard and Cooper) west of the boundary, intended to be occupied at a later period in the present surveying year. Ample facilities for the work were afforded in