the remarks already made in regard to the appearance of two high waters in the curves for Isle Dernier and Calcasieu, indicate a system of interferences yet to be unravelled. As was the case with the diurnal wave, the stations at Isle Dernier and Calcasieu gave cotidal hours very like those of Brazos Santiago and Aransas, and Galveston is later then either.

The differences between the cotidal hours for the diurnal and semi-diurnal tides are shown in a table. The grouping of the semi-diurnal results is next made, and the results tabulated and drawn on a diagram map. This map also shows the cotidal lines deduced. The cotidal lines of thirteen and fourteen hours only appear on the coast of the Florida Keys; that of sixteen hours is well marked, near Egmont Key (Tampa), and passes around the shore of the great Bay, between Louisiana and Florida, to near Southwest Pass. The line of eighteen hours is at the head of the heights, between St. George's and Cedar keys, and seventeen in that near Cat Island; the lines of sixteen and twenty-one have succeeded each other closely in the bay to the westward of Southwest Pass.

In comparing the two sets of cotidal lines for the diurnal and semi-diurnal waves, we find a general resemblance in the great bay between the western coast of Florida and the eastern coast of Louisiana. The lines of 24, 25 and 26 of the diurnal tide on the eastern side of the bay, corresponding generally with 16, 17 and 18 of the semi-diurnal tides and 25 and 26 hours of the diurnal tide on the western side of the bay corresponding generally to 16 and 17 of the semi-diurnal. On the southern coast of Florida, by the Keys, on the contrary the lines of 19, 20, 21, 22 and 23 hours succeed each other rapidly between Cape Florida and the Tortugas, in the diurnal series, along the same shores in the semi-diurnal tide. On the contrary on the west of southwest Pass, the lines of 26, 27 and 28 hours only occur at considerable distances in the diurnal system, while 16, 17, 18, 19, 20 and 21 occur in the same space between Southwest Pass and Brazos Santiago in the same diurnal tide-

NOTES ON THE PROGRESS MADE IN THE COAST SURVEY, IN PREDICTION TABLES FOR THE TIDES OF THE UNITED STATES COAST, BY A. D. BACHE, SUPTD., ETC.

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As soon as tidal observations had accumulated sufficiently to make the task a profitable one, I caused them to be treated, under my immediate direction, by the methods in most general acceptance. The observations at Old Point Comfort, Virginia, were among the earliest used for this purpose, and the labors of Commander Charles H. Davis, U. S. N., then an assistant in the coast survey, were directed to their reduction chiefly by the graphical methods pointed out by Mr. Whewell. This work was subsequently continued by Mr. Lubbock's method, by Mr. Henry Mitchell; and next the tides of Boston harbor were taken up as affording certain advantages in the observations themselves, which could not be claimed for those of Old Point.

The system of Mr. Lubbock is founded on the equilibrium theory, and in it the inequalities are sought by arranging the elements of the moon's and sun's motions, upon which they depend. Having obtained the coefficient of the half monthly inequality of the semi-diurnal tide at Boston, from seven years' observations, through the labors of the tidal division, and approximate corrections for the parallax and declination, I was much disappointed in attempting the verification by applying to individual tides for a year during which we had observations. There was a general agreement on the average but a discrepancy in the single cases, which was quite