each, the members of each group being separated by eight hours solar or lunar, while one group is separated from the next by eight hours lunar or solar. In the mean of the nine results the lunar and solar semi-diurnal and diurnal inequalities are all four eliminated.

Nine is the smallest number of observations which can form a complete series. If the solar day be divided into m and the lunar into n equal parts, where m and n must both be greater than 2, there will be mn observations in the series; and if either m or n be a multiple of 3, or of a larger number, the whole series may be divided into two or more series having no observation in common, and each complete in itself. The accuracy of the method can thus be tested, by comparing the means obtained from the separate subseries of which the whole is made up.

Should the ship's stay not permit of the employment of the above method, a very fair determination may be made in less than a day by taking the mean of n observations taken at intervals of the nth part of a lunar day, n being greater than 2. Thus, if $n = 3$, these observations require a total interval of time amounting to only $16^h\ 32^m$. The theoretical error of this method is very small, and the result thus obtained is decidedly to be preferred to the mere mean of the heights at high and low water.

The mean level thus determined is subject to meteorological influences, and it would be desirable, should there be an opportunity, to redetermine it at the same place at a different time of year. Should a regular series of observations for a fortnight be instituted, it would be superfluous to make an independent determination of the mean sea-level by either of the above methods at the same time.

Besides taking observations on the ordinary waves of the sea when at all remarkable, the scientific staff should carefully note the circumstances of any waves attributable to earthquakes.

Specific Gravity.—The specific gravity of the surface and bottom water should be carefully compared whenever soundings are taken; and whenever serial soundings are taken, the specific gravity at intermediate depths should be ascertained. Every determination of specific gravity should be made with careful attention to temperature; and the requisite correction should be applied from the best table for its reduction to the uniform standard of 60°. It would be well to check the most important results by the balance; samples being preserved for examination in harbor. Wherever the temperature of the surface is high—especially, of course, in the intertropical region—samples should be col-