

now attached to the brig will leave no excuse why it should not be done, and it will be expected by me that this part of your duty will meet with the greatest attention.

Variation will be often taken; also your dip and intensity observations should be frequently repeated.

You will endeavour to obtain all the information that may lay in your power, relative to the geological formation, and capabilities of the soil for agriculture, near and about the parts surveyed, also all minerals. The east sides of Quadra's and Vancouver's Islands are known to contain coal, which the Indians get from the surface. It would be desirable to view the locality and get specimens, &c. All water-courses and brooks that may afford water for shipping, will be particularly noticed.

You will also pay great attention to the tides, their height and fall; set of currents, and the time of high and low water at full and change: this may be done in a few hours, by marking a staff, stuck in the water a few feet from shore, and an hour or two before high and low water, noting the time by the watch at the same time, and again when the water rises to the same point: the mean will give you the high and low water on that day, which, applied to the age of the moon, will give it on full and change.

I am desirous, also, that your dredge should be much used at all anchorages: there are many times when it can be done very successfully in deep water, and the results would be more rare and valuable.

As respects your astronomical observations, those by the north star I should much prefer to the sun for your latitude, and the time by a star I consider fully as good as by the sun; and, after a little practice, observations on stars with the artificial horizon will be found easy and convenient, interfering but little with your surveying duties during the day. The accuracy of the survey depends so much on these observations, that a few hours taken from sleep will be amply repaid.

Let all your work on paper bear date, scale, and name. The names of the Indian tribes, numbers, and extent of the districts belonging to them, it is desirable to get; all curiosities, &c., you will of course preserve.

Referring you to my General Order of May 1st, and wishing you success in the execution of these instructions,

I am, &c.

LIEUT. COM. C. RINGGOLD,
U. S. Brig Porpoise.

CHARLES WILKES,
Commanding Exploring Expedition.