

information respecting the facilities for carrying pocket chronometers from one extremity to the other (by canoe on the river, or any other way), in order to determine the difference of longitude; which, with the difference of latitude (about which there is no difficulty), would give the direction in which a line must start from either extremity, in order to strike the other extremity.

8. The next point is a determination of a point on the south-west branch of the St. John, at which the latitude shall be $46^{\circ} 25'$. This is obviously to be done by taking a station satisfying, as nearly as the astronomer can judge, the condition laid down in the Treaty; then determining its true latitude, and then shifting the station until the latitude is found to agree well with that of $46^{\circ} 25'$, required by the Treaty.

As this operation is plain, and its necessity unequivocal, the attention of the astronomer should be specially called here to the recommendation under Article 1.

9. The next part is the Boundary anciently but incorrectly traced as the 45th degree of north latitude, in which (as in that treated under Article 5) the old line is to be adhered to. With regard to this contingency, the same course is to be followed as that laid down in Article 5. If the Commissioner should judge that astronomical operations are advisable, two courses are open, which, in an astronomical view, are unexceptionable, and between which a selection must be made. One is, to determine by trials of latitude (in the same manner as in Article 8), a series of points whose latitude is accurately 45 degrees. The other is, to determine one point whose latitude is accurately 45 degrees; to determine also a north line with the transit instrument, to lay down from this an east and west line by the altitude and azimuth instrument, and to carry on this line from hill to hill (with the proper allowance for the difference between a parallel of latitude and a great circle). It will be desirable here, that the same course should be pursued by the British and by the American astronomers.

10. With regard to the determination of the latitudes and longitudes of points selected to serve as bases for a future survey of the country; it is needless to call the attention of the astronomer to the methods of determining the latitude; but it is proper to point out the cautions which will be required, in order to make the longitudes worthy of credit. Two methods only can be resorted to with success: one, the observation of transits of the moon's limb, combined with the observation of transits of the principal fixed stars, or moon culminating stars; the other the observation of the moon's distance from the sun and stars, by means of a sextant or other reflecting instrument. The labour entailed by the former of these methods, is so small, that it is proper, at all events, that the astronomer follow it, as long as he shall remain at one of these posts, giving great attention to the state of adjustment of the transit, and observing, if possible, as many transits after full moon as before full moon. But the second is probably the method on which he must principally rely; and for this the following cautions are indispensable: that at each set of observations, the astronomer observe distances of one object east of the moon, and of another object west of the moon, at nearly equal distances; and that he obtain as many sets of observations before full moon, as after full moon. It is unnecessary to point out that his time must in all cases be accurately known, and that the moon's zenith distance must be measured with tolerable exactness.

11. The necessity for immediate calculation of the observations (as enjoined in Article 2) does not exist here to the same extent as for the observations which apply to the tracing of the Boundary Line. Nevertheless, it is desirable that the computations be carried at once, as far as they can be carried, consistently with general convenience; since it is only by comparing results, when the circumstances of observation are fresh in the memory, that many errors can be discovered, and since the preservation of the results in the memory or in manuscripts of small extent, will be a considerable guarantee against the loss of this labour, by the destruction of the more bulky books of observations and computations.
