the library shelves—letters at once interpreted as possibly standing for "British North America." The boxes were taken down, the dust of years removed, and in them lay the long-lost records of the international survey of the forty-ninth parallel.

The final report, dated May 7, 1869, and jointly signed by the two commissioners, together with other official correspondence pertaining to the boundary, has since been published by the Office of Chief Astronomer, Department of the Interior, Ottawa.[6]

With the material found it was now possible to understand all the operations of the survey, the method of placing the monuments, the reason for the existence of diverging lines cut through the forest, and the meaning of duplicate cairns. The occurrence of the last was due to the non-removal by the men as instructed of those cairns which no longer indicated the position of the accepted boundary line.

In order to understand how and why unavoidable difficulties arose in making the demarcation of the boundary line continuous, it is necessary to say a word about astronomical observations for latitude. The zero from which latitude observations are made is indicated by the "level," and its position in turn is the resultant of all the gravitational forces acting on it. Mountainous regions generally show deflections of the plumb line, due to anomalous distribution of matter. Were there no anomalies it would be possible theoretically, after establishing an individual point on any parallel of latitude, to establish other points on the parallel from it. Or we may say that, if two points are established, the direction a straight line must take from the one point to the other is simply a matter of computation. In the present case the effect of this condition was most noticeable in the 96 miles from the Similkameen River to the Columbia, where most of the duplicate cuttings in the forest were found. In a letter dated March 28, 1861, and addressed to the Secretary of State, Colonel Hawkins said[7]:

> If the actual boundary was to be defined by the joint commission in any part of the space intervening between the waters of the Pacific and the Rocky Mountains, the interval between the Similkameen and the Columbia Rivers is not only of as much importance as, if not of greater importance than, any other part of the line, but it also presented greater facilities for the performance of the necessary operations, while it embraces about a fourth of the whole extent of land boundary comprehended in the treaty under which the commission was appointed.

The astronomic stations in this section of the boundary were, in order from west to east: Similkameen (119° 35′ W.; U. S.); Osoyoos (119° 24′; Br.); First Crossing, or Newhoilpitkw (118° 44′; U. S.); Second Crossing, or Inshwointum (118° 28′; Br.); Third Crossing, or Statapoosten (118° 16′; U. S.); Columbia (117° 38′; Br. and U. S.). It will be remembered that it was agreed to project the boundary line a short distance east and west from each astronomic station. This was done. From the British

[6] Foreign Office Correspondence, Parts III and IV, Ottawa, 1899.

[7] *Ibid.*, Part III, p. 41, Ottawa, 1899.