

partially, by regions in which pre-Cambrian formations occur, or are the only apparent rocks, the potassium predominates over the sodium. For example, in the water from Reindeer Lake, which is situated 400 miles directly north of Lake Winnipeg, Professor Adams found the potassium to exceed very greatly the sodium. In the water from the Churchill River, as well as in the water from the Saskatchewan River above the junction of the Big Stone River, the potassium is much richer than the sodium.\* These rivers drain rocky areas chiefly of the pre-Cambrian type. Rocks of the primitive kind, therefore, contrary to the prevailing opinion,† supply to the water which comes in contact with them more potassium than sodium.

Even in the case of Lake Superior which draws its supply not only from the primitive rock region on its northern side, but also from the areas covered with soils of alluvial and drift origin on the south, the potassium is about equivalent to the sodium. In the lakes of the Bavarian Highlands, Rachel See, Würm See and Ronig See, the potassium is twice in amount that of the sodium. In Lake Zurich the potassium exceeds the sodium. In Lake Geneva, in Pyrenean and Vosgean Lakes and in those of Russia, Armenia and Central Asia the potassium is approximately two-thirds of the sodium. It is probable that if proper methods for estimating potassium had been current in his day, C. Schmidt would have found for the lakes of Russia, Armenia and Central Asia a higher potassium value than he obtained, for the methods then in vogue for the determination of the element in the presence of sodium were very faulty and gave very low results. It is probable also that this may explain the low value found by Sterry Hunt for the potassium of the Ottawa River, whose waters, as well known, are derived largely from Archæan regions.

The Tables A and B show further that, in nearly all cases, the calcium is very abundant. In the Nile only, amongst the rivers, is it less than the sodium, while it very greatly exceeds it in the rest. In the lakes it is very abundant relatively, with the exception of the Rachel See and Lake Onega. In the Bavarian lakes, Lake Geneva, Lake Zurich, and some others, it is exceedingly abundant relatively.

The magnesium is always less than the calcium, and the relative difference is sometimes very great. It may fall below the sodium, but, as a rule, it is greater in amount.

These proportions, one can readily understand, must have been

\* F. D. Adams *Geo. and Nat. Hist. Survey of Canada*, 1880-2, p. 6, 4.

† This opinion is based largely on the fact that the potash feldspars are difficult to decompose while the soda feldspars readily undergo decomposition.