ON THE RADIUM CONTENT OF SOME NOVA SCOTIAN MINERALS.—
BY CARL KENTY, M. Sc., formerly MacGregor Fellow in
Physics, Dalhousie University, Halifax, N. S.

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An attempt was made to develop a more sensitive method
for measuring the radium content of minerals and in the process
the occasion arose to make some measurements on a few Nova
Scotian minerals, the results of which seem worth recording.

METHOD

Only a resume of the method used need be given in this
note. The radium emanation was boiled off from a solution of
the mineral as usual. Instead of a gold leaf electroscope, the
measuring instrument was a quadrant electrometer used ballis-
tically. The emanation was introduced into an ionization
chamber having a quartz insulated electrode. This electrode
was made to charge up from earth potential, for a known time,
by a suitably applied electric field, and then connected to a
previously earthed quadrant of the electrometer. The magni-
tude of the resulting ballistic kick was then observed.

The ballistic method possessed several advantages over
the ordinary rate of deflection method. In the first place, the
natural leak was considerably decreased. This was very im-
portant in the present work, which was done in the summer
when the leak over the amber supports of the quadrants was
very large. Secondly, all shift of the zero during the charging
period was eliminated.

The minerals were obtained in solution by grinding in a
mortar and boiling with aqua regia. The solutions thus ob-
tained were sealed up and left for the emanation to accumulate
for a period of four or more days.

RESULTS

The apparatus was calibrated with standard carnotite
solutions. Blank tests made it possible to correct for natural
ionization in the chamber. The sensitivity of the electrome-
ter used was about 450 divisions per volt, while that of the
apparatus as a whole was 58 electrometer scale divisions per $10^{-10}$ gram of radium per minute of time of charge. Thus by taking 10 grs. of the mineral, a measurement could be made on a specimen containing $10^{-23}$ gram Ra. per gram. The following results were obtained:

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Location in Nova Scotia</th>
<th>Ra. content in grs.: per gram of mineral.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common salt</td>
<td>Malagash, Cum. Co.</td>
<td>Less than $5 \times 10^{-14}$</td>
</tr>
<tr>
<td>Potash salt</td>
<td>Malagash, Cum. Co.</td>
<td>Less than $5 \times 10^{-14}$</td>
</tr>
<tr>
<td>Felspar (light)</td>
<td>Governor’s Lake, Hfx. Co.</td>
<td>$8.7 \times 10^{-12}$</td>
</tr>
<tr>
<td>Felspar (dark)</td>
<td>Governor’s Lake, Hfx. Co.</td>
<td>$14.0 \times 10^{-12}$</td>
</tr>
<tr>
<td>Siliceous slate</td>
<td>Upper Musquodoboit, Hfx. Co.</td>
<td>$2.6 \times 10^{-13}$</td>
</tr>
</tbody>
</table>

**Remarks**

The dark felspar contained a number of dark coloured impurities of which mica was one. The tests on the Malagash deposit were suggested by Dr. Ellsworth, of the Geological Survey of Canada, as possibly capable of throwing light on the origin of that deposit. The measurements were made on both the soluble and insoluble parts of the salt and no trace of radium was found in either. Further measurements were cut short, owing to the lack of time and to some difficulty in getting samples.

In conclusion, I wish to thank Dr. G. H. Henderson for his kindly interest and guidance throughout the work.