cases (nickel-58 – iron-57, nickel-60 – iron-57, copper-63 – nickel-62, nickel-64 – copper-63, and copper-65 – nickel-64), without exception, the agreement is poor and always in such a direction as to indicate that the masses of nickel determined mass spectroscopically are too low by $\sim 60 \times 10^{-5}$ atomic mass units. There appears to be no other large systematic effect.

On this basis, we are putting forward the hypothesis that the nickel masses are in error, and hope in the near future to make some experimental attempts to confirm or allay this suspicion by investigating the behaviour of nickel ions in the mass spectrograph under varying conditions of pressure. In the meantime, we feel that, within the framework of the foregoing remarks, the atomic mass values for the other elements in the chromium – germanium group may be used with reasonable confidence.

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Radioactive Fall-out in Kingston, Canada

DURING the recent nuclear tests carried out by the United States Atomic Energy Commission, we have checked the radioactive fall-out in Kingston, a small Ontario town situated some 2,200 miles north-east of the testing grounds. Our sampling period extended from February 15 to May 28, 1955, and included all the test explosions reported by the Press.

For a large part of the sampling period the ground was covered with snow; samples were taken from the top layer of the snow, melted and 600-c.c. samples filtered and the filter paper counted with a thin-window β-counter. When the snow left, rain was collected and 600-c.c. samples were filtered and counted. When all precipitation failed, dust was collected on a tray, washed off, filtered and counted.

A record of the activity with the background subtracted is shown in Fig. 1. Arrows along the abscissa indicate the day that a test was conducted, and in all cases except April 9 only one bomb was fired. Two explosions were detonated on this date. The largest reported explosions were set off from 500-ft. steel towers and were equivalent to 30 kilotons T.N.T. These were fired on March 7 and 22 and on May 5 and 15. They were detected, but they did not display as high an activity as smaller explosions on March 1 and April 9 and 15.

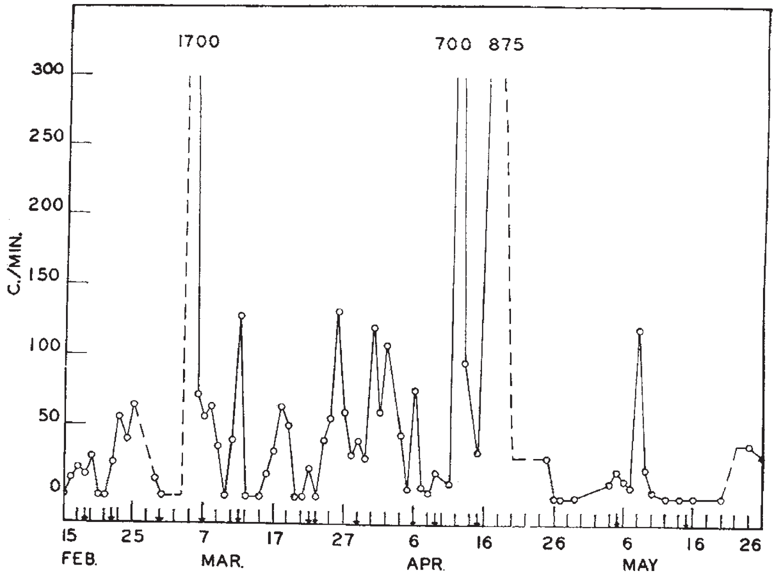

Fig. 1. Plot of counts per min. above background versus time. Dotted lines indicate lack of data because of equipment breakdown. Circles are experimental points and arrows indicate nuclear tests as reported in the Press

Meteorological factors seem to outweigh the magnitude of the bombs at such a great distance from the site of the explosion. The high activities detected on March 6 and 7 were found in fresh snow and the activities detected on April 12 and 18 were found in fresh rain. There is generally a one-to-one correspondence between tests and activity peaks, except for an unexplained peak at April 6, which may be due to some previous explosion.

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Long-Period Fading in Medium-Wave Radio Signals

CONSIDERABLE work has been done on the interpretation of periodic fading observed in continuous-wave radio signals reflected from the ionosphere. Appleton and Beynon[1] observed both slow and fast types of periodic fading in the records of short-wave radio signals which were interpreted by them as due to magneto-ionic origin. Tantry and Khastgir[2] reported long-period fading in the medium-wave records and assumed it to be due to interference of lower trajectory ordinary and extraordinary waves. This interpretation has been confirmed by Satyanarayana and Dharambir Rai[3] by using polarized receiving aerials. The object of the present investigation was to study the periodicity of this slow type of fading in medium-wave records, and compare the observed periodicity with the