single group. Furthermore, it follows at once from the data that Mg^{24} is formed in an excited state.

The existence of gamma-gamma coincidences means that in at least some cases there are two or more gamma-rays emitted per disintegration in dropping from the excited state of Mg^{24} to the ground state. If one assumes that the sensitivities of the counter to the different gamma-rays emitted by the source is not very different from an average sensitivity S_γ, one may get an estimate of K, the average number of gamma-rays per disintegration. We have, from the beta-gamma coincidences data,

$$N_{\beta\gamma}/N_\beta S_\beta = S_\gamma K = 3.0\times 10^{-3}, \tag{1}$$

where $N_{\beta\gamma}$ is the beta-gamma coincidence rate, $N_\beta S_\beta$ the number of beta-rays recorded.

From the gamma-gamma coincidence data we have[7]

$$N_{\gamma\gamma}/N_\gamma S_\gamma = (K-1)S_\gamma = 1.72\times 10^{-3}. \tag{2}$$

Therefore,

$$K = 2.36.$$

The level scheme proposed by Richardson and Kurie permits the transition to the ground level to take place either in one jump by a 3-Mev gamma-ray or in two steps of 2 Mev and 1 Mev. This should result in an average value of K less than 2. The scheme of Feather and Dunworth, on the other hand, calls for a 1-Mev gamma-ray followed by one of 3 Mev or alternatively a 2-Mev gamma-ray followed by another of 2 Mev. This should give $K=2$. Our value of $K=2.36$ suggests that in some cases the transition to the ground level may take place in even more than two steps.

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The Use of Radioactive Forms of the Common Elements in Physiology

The use of radioactive forms of the elements as "tracers" for studying cell-wall permeability and metabolic processes is becoming increasingly common in physiology. For example, Cohn and Cohn,[1] using radioactive sodium, have recently reported that this form of the element readily traverses the wall of the red blood cell. They conclude, therefore, that ordinary nonradioactive sodium, contrary to what had generally been thought, passes as readily through the red cell membrane.

Since the red cell is known to have a charged surface[2] composed of a polar lipoidal substance probably of monomolecular thickness,[3] it is fair to raise the question as to whether (1) the charge on the limiting membrane of a red blood cell and (2) the polar properties of the lipoid molecules of which it is composed, might not be modified by the radiations (electrons and gamma-rays) emanating from the radioactive ion being studied. One would not expect electrically asymmetrical polar molecules in a monolayer to remain indifferent to bombardment by electrons and gamma-rays at short range and any change in the polar properties of the membrane would, according to Wilbrandt,[4] alter its permeability. Fricke[5] has shown that beta- and gamma-rays are capable of denaturing proteins. Radioactive sodium, once it has traversed the cell membrane, might, therefore, also denature the proteins in the vicinity of the cell surface and grossly modify surface conditions. Since the cell membrane is assumed to have a thickness of the order of one molecule, the radioactive sodium might even modify intracellular proteins while outside the cell, its radiations traversing the cell wall before the ion itself has penetrated. Any conclusions as to the permeability of the walls of a red cell for radioactive sodium ion cannot, therefore, be properly extended to embrace the behavior of the nonradioactive forms of the same element, until or unless it is first shown that the radioactivity is without effect on the membrane and on the proteins with which the latter is in contact.

The question raised here is, of course, broader than the illustrative case given. It applies to the general body of work now currently appearing in many journals and involving the use of radioactive forms of the common elements as tracers. Until it is answered, it will be fair to doubt the validity of conclusions drawn as to the corresponding behavior of nonradioactive forms of the same elements.

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The Nature of Visual Observations at Low Light Intensities

We were led to conclude from visual observations that the minima reported by Allison in his magneto-optic method were reproducible. Our conclusions[1] are certainly wrong as we have not been able by any purely objective method to check these results. In order to clear up the record we wish to make this retraction.

There have been so many cases of erroneous deduction resulting from visual observations at very low light in-