ground state of B^{10} and with the recent assignment of $J=3$ to the ground state since an octopole transition is then involved. The observed width is consistent with p-wave proton capture, formation of the state by s-wave capture not being possible since Be^9 has a spin of $\frac{3}{2}$. A more detailed theoretical discussion of these results will be given in a forthcoming publication by E. R. Cohen and R. F. Christy. This work was assisted by the joint program of the ONR and AEC.

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Radioactive Silver Isotopes Produced by Photo-Disintegration of Cadmium*

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In the silver fraction isolated from cadmium, which had been irradiated with 21-Mev betatron x-rays, we have found evidence of two hitherto unassigned silver activities of half-lives 5.3 hr. and 20 min. Their counting rates, calculated to saturation and compared with those of the 3.2-hr. Ag 112 and the 7.6-day Ag 111 produced by (γ,p) reactions in the same irradiation, gave the relative yields shown in Table I.

The cadmium was irradiated in the form of reagent grade cadmium nitrate tetrahydrate; the silver fraction was precipitated as AgCl, dissolved and reprecipitated in the presence of inactive Cd^{++} solution to minimize contamination by the rather strong cadmium activities produced in the original sample.

Counts taken with the silver source mounted between the poles of a permanent magnet showed the 5.3-hr. and 20-min. activities to be β-emitters. The mass assignments of these periods were made by similar irradiations and treatment of samples of cadmium oxide enriched in Cd 114 and Cd 116.[1]

The decay curves are shown in Figs. 1 and 2.

The silver from the Cd 114 decayed with a half-life of 5.3 hr. over five half-lives, thus establishing that it was Ag 113 made by Cd 114 (γ,p). An aluminum absorption curve, evaluated by the Feather method, gave a beta-ray energy of 2.1 ± 0.2 Mev. No gamma-ray was detected. A period of similar half-life and beta-ray energy has been reported for a fission product silver by Turkevich.[2]

In the same manner, the 20-min. silver activity was found to be Ag 115 made by Cd 116 (γ,p). An aluminum absorption curve of the radiation showed the beta-ray energy to be approximately 3 Mev. No gamma-radiation was detected. Unfortunately, the low activity level of the sample prevented the positive identification of either the 43-day or 2.3-day Cd 115 daughters which would be expected to grow in. The half-life and beta-ray energy are very close to those reported for a fission-product silver by Turkevich[2] and by Seelmann-Eggebert and Strassman.[3]

Table I.

Activity	Half-life	Relative yield
Ag 111	7.6 day	2.7
Ag 112	3.2 hr.	1.00
Ag	5.3 hr.	1.15
Ag	20 min.	0.18

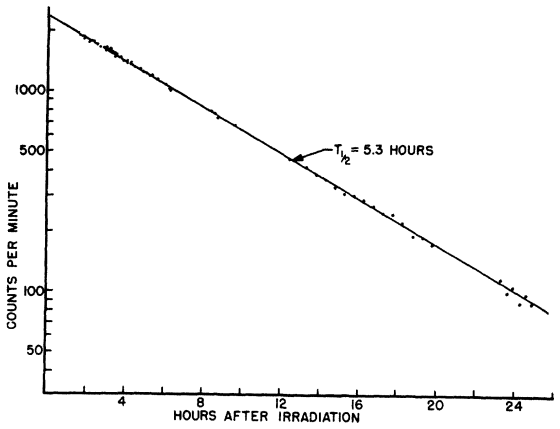

Fig. 1. Decay of silver activity produced by 21-Mev x-rays on cadmium containing 94 percent Cd 114.

Irradiation of the Cd 114 sample with fast neutrons from 10-Mev deuterons on beryllium produced a 2-min. β^--emitter which was chemically identified as silver. As a check on the possibility that this activity may have been due to 2.3-min. Ag 108 from a possible silver impurity in the cadmium, the latter was irradiated with slow neutrons and counted. No period of this half-life was found. A second possibility, that the 2-min. period may have been a metastable Cd 113m,[4] formed by Cd 114 $(n,2n)$, was excluded by the chemical separation and by the observed hardness of the electrons. It is probable, therefore, that the period we find is that of Ag 114 produced by Cd 114 (n,p).

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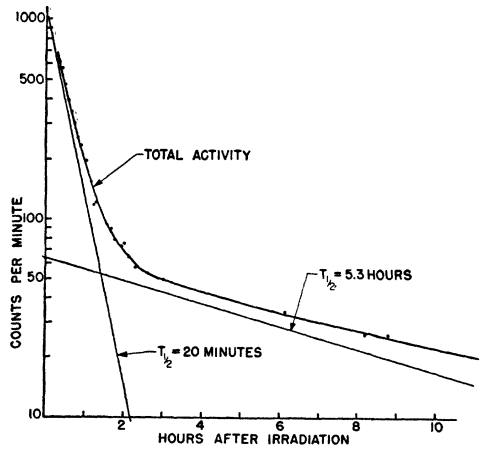

Fig. 2. Decay of silver activity produced by 21-Mev x-rays on cadmium containing 71 percent Cd 116, 18 percent Cd 114.