

target. The observed $C^{13}(d,p)C^{14}$ ground-state group had a measured Q -value of 5.948 ± 0.014 Mev, in good agreement with Curling and Newton's value³ of 5.91 ± 0.03 Mev. In addition, proton groups were investigated with energies between 2.0 and 1.03 Mev, corresponding to a region of excitation of C^{14} from 5.1 to 6.14 Mev. One proton group was observed which, if assigned to the $C^{13}(d,p)C^{14*}$ reaction, had a Q -value of -0.148 ± 0.005 Mev, corresponding to an excited state of C^{14} at 6.096 ± 0.015 Mev. This group was estimated to be about three times more intense than the ground-state $C^{13}(d,p)C^{14}$ group. No additional proton groups were observed in this partial survey, except the low energy side of the $O^{16}(d,p)O^{17*}$ group with $Q=1.049$ Mev. The remainder of the $O^{16}(d,p)O^{17*}$ group was not observed because of the presence of a large background of deuterons elastically scattered from the target material.

The assignment of the previously unreported $C^{13}(d,p)C^{14*}$ group was verified in two ways. The yield of this group was observed at 1.807-Mev bombarding energy from both enriched $VaC^{13}O_3$ and normal $BaCO_3$ targets. The results shown in curves 2 and 3 indicated that this proton group should be attributed to the C^{13} isotope. In addition, a precise measurement was made of the change in energy of this proton group for a change in bombarding energy of 298 ± 2 kev. The expected shift in energy of a $C^{13}(d,p)$ group would be 238 ± 2 kev, while the shift for a $C^{12}(d,p)$ or $N^{14}(d,p)$ group would be 234 ± 2 kev or 242 ± 2 kev, respectively. The observed energy shift was 240 ± 2 kev, indicating that the target mass could not be different by more than one unit from 13. Since there are no known $C^{12}(d,p)$ or $N^{14}(d,p)$ groups in this region, the assignment of this group to the $C^{13}(d,p)C^{14*}$ reaction appears to be correct.

It is concluded that a level has been found in C^{14} at 6.095 ± 0.015 Mev, which is in excellent agreement with Thomas and Lauritsen's assignment⁴ of a 6.115 ± 0.030 -Mev gamma-ray to an excited state of C^{14} . No additional $C^{13}(d,p)C^{14*}$ groups were found in a region of excitation of C^{14} from 5.2 to 6.1 Mev with an intensity greater than 0.2 the intensity of the proton group corresponding to the

6.096-Mev level. Hence, there was no evidence for the proton group reported by Curling and Newton which would correspond to a level of C^{14} at 5.59 ± 0.04 Mev (indicated by region A in Fig. 1). Thomas and Lauritsen have assigned to this same level a gamma-ray of 5.69 ± 0.05 Mev which was 0.3 as intense as the 6.115-Mev gamma at 1.58-Mev bombarding energy. The present results indicate no corresponding proton group with this relative intensity at a bombarding energy of 1.51 Mev.

* This work has been assisted by the joint program of the ONR and AEC.

¹ Bennett, Bonner, Hudspeth, Richards, and Watt, Phys. Rev. **59**, 781 (1941).

² R. F. Humphreys and W. W. Watson, Phys. Rev. **60**, 542 (1941).

³ C. D. Curling and J. O. Newton, Nature **165**, 609 (1950).

⁴ R. G. Thomas and T. Lauritsen, Phys. Rev. **78**, 884 (1950).

⁵ We are indebted to Professor J. D. Roberts of the M.I.T. Chemistry Department for the enriched $BaC^{13}O_3$.

Erratum: Scattering of Positrons and Electrons by Nuclei

[Phys. Rev. **79**, 892 (1950)]

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October 6, 1950

THROUGH an editorial slip the errors in the figures given in Table I were indicated incorrectly. The correct form of Table I is as follows:

TABLE I. Ratio of e^-/e^+ scattering by platinum.

Kinetic energy (Mev)	e^-/e^+ (experimental)	e^-/e^+ (unscreened theory)
0.7	3.15 ± 0.15	2.74
1.0	3.13 ± 0.12	2.90
1.3	3.60 ± 0.36	2.98