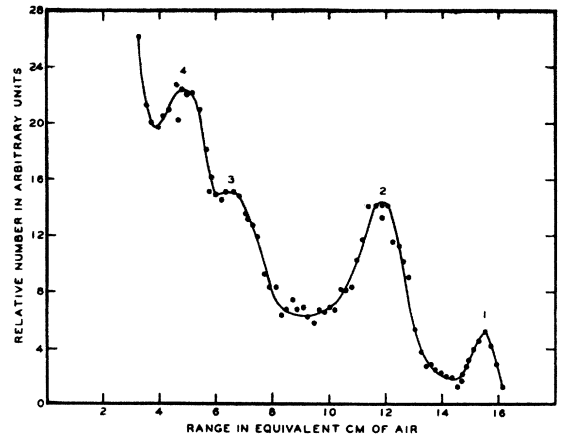

FIG. 1. Number of α-particles *vs* range in equivalent cm of air for B(d, α)Be with a target of 96 percent B^{10} and a bombarding energy of 1.20 Mev.

the work of Smith and Murrell[1] and shows that their tentative assignment of the group with a Q value of 4.90 Mev to the Li contamination is probably correct, for there is no evidence of a group between groups 2 and 3 on either curve.

The ranges of the α-particles were measured using aluminum absorbing foils and a movable proportional counter; the gross range changes were made with foils and the fine changes by moving the counter in air. The energy of the α-particles was determined from the range to the peak of the group, using the procedure of Holloway and Moore[2] for converting from the range to the peak to the mean range, and using the Brookhaven[3] range tables to determine the energy. The Q values determined from these energies are 17.92±0.15 Mev for the ground state, and 15.19±0.15 Mev for the first excited state which is thus 2.73±0.20 Mev above the ground state. Using the ground-state Q value from this reaction, the masses of B^{10} and d from Tollestrop *et al.*,[4] and the mass of the α-particle from Whaling and Li,[5] the mass of Be^8 is 8.00780±0.0016 MU and is unstable to α-emission by 0.110±0.150 Mev. Assuming that the width in range at half-maximum for the excited state is $(\sigma_x^2+\sigma_n^2)^{\frac{1}{2}}$, where σ_x is the experimental half-width due to range straggling and angular straggling, and σ_n is the spread in range due to the natural width of the level, the width of the first excited level in Be^8 is 0.95±0.20 Mev.

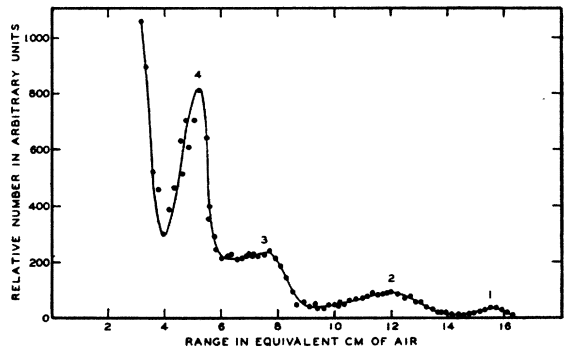

FIG. 2. Number of α-particles *vs* range in equivalent cm of air for B(d, α)Be with a target of normal boron (80 percent B^{11}) and a bombarding energy of 1.20 Mev.

The excitation functions were determined by measuring the peak heights as the bombarding energy was varied from 0.50 Mev to 1.60 Mev in 0.1-Mev intervals (Fig. 3). The ratio of the peak heights of the two groups is not equal to the ratio of the intensities; but the ratio of the areas under the peaks is, and at 1.20 Mev

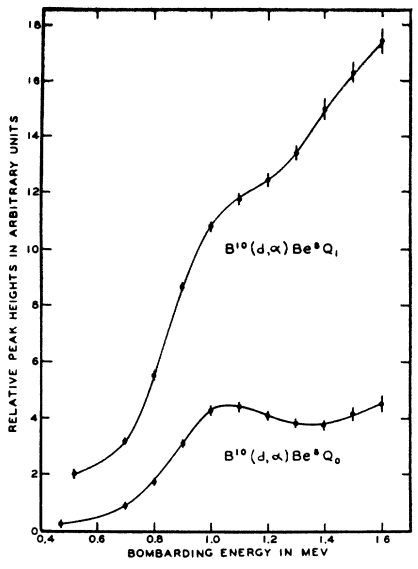

FIG. 3. Peak heights in arbitrary units *vs* bombarding energy for $B^{10}(d, \alpha)Be^8$ ground state and $B^{10}(d, \alpha)Be^8$ first excited state. The statistical errors are less than 2 percent.

is 7.1. The resonances in the excitation curves at 1.05-Mev bombarding energy give a level in C^{12} at 26.1 Mev. Since the ground-state group of α's and the protons from the ground state of $C^{12}(d, p)C^{13}$ have approximately the same range, and the first excited group of α's and the protons from the ground state group of $O^{16}(d, p)O^{17}$ have approximately the same range, at a bombarding energy of 1.05 Mev, the possibility that the resonance is due to piling up of the protons and alphas has to be considered. The protons are not counted directly because their maximum pulse height is 16 volts, and a bias of 30 volts was used in the discriminator; also, the number of counts per microcoulomb was independent of current as the current was changed by a factor of six, so that the piling up is negligible.

* Assisted by the joint program of the ONR and AEC.
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[5] W. Whaling and C. W. Li, Phys. Rev. **81**, 150 (1951).

Erratum: The Cathode Field in Diodes under Partial Space-Charge Conditions with Initial Velocities

[Phys. Rev. **81**, 274 (1951)]
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IN the formulas for $f(0)$ and for the saturation current I_{sa}, the letter ϑ should read $(2e)$, where e is the charge of the electron.

The Ratio of Proton and Electron Masses

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THE most exact value at present[1] for the ratio of proton to electron mass is 1836.12±0.05. It may be of interest to note that this number coincides with $6\pi^5=1836.12$.

[1] Sommer, Thomas, and Hipple, Phys. Rev. **80**, 487 (1950).