of some other reactions, say those connected with the so-called local heating.

In addition, it is seen from Fig. 3 that our curves corresponding to the evaporation of 2, 3, or 4 neutrons from the excited nuclei are shifted towards the high-energy side by approximately 8 or 10 Mev relative to the similar curves obtained in references 5 and 6. It is possible that this shift is caused by the large angular momentum acquired by the compound nucleus from the multiply-charged ion. However, we do not have enough accurate data to ascertain complete reliability of this shift, let alone to estimate its magnitude.

Without going into the details of the variation of the excitation function, as manifested by the presence of the foregoing segments of the curves and with their shifts, it can be apparently stated at present that when the target mass numbers range from 50 to 200 the interaction with multiply-charged ions proceeds to a considerable extent via production of compound nuclei.

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CONCERNING THE ρ^0 MESON

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In the compound model of elementary particles, based on the Fermi-Yang idea,[2] the pion is represented as a system comprising a nucleon in strong interaction with an antinucleon.[2,3] However, along with a triplet of pions, the same "bare" particles can form an isotopic singlet[4]

$$\rho^0 = (\langle p\bar{p}\rangle + \langle n\bar{n}\rangle) / \sqrt{2}. \qquad (1)$$

The fact that no such particle has yet been observed experimentally necessitates a special explanation. Okun'[3] has proposed that the mass of the ρ^0 meson is sufficiently large. On the other hand, Perel'man has remarked recently[5] that $M_{\rho^0} \approx M_{\pi^0}$.

We wish to note that, in view of the difference in the isotopic spins, the forces that bind the nucleon and antinucleon into π^0 and ρ^0 mesons will also be different. For example, in the symmetrical variant, the interaction potential $V = a\tau_1\tau_2$ equals a when $t = 1$ and $-3a$ when $T = 0$. In this case the existence of a π meson would exclude the existence of a ρ^0 meson. Addition of a term independent of T to the potential cannot change this conclusion, since these forces are small.

The mass differences calculated by Perel'man pertain to particles having equal isotopic spins. In particular, the quantity $\Delta M = 12.7\ m_e$ is the mass difference between $\pi^\pm$ and π^0 mesons. Allowance for the magnetic interaction, which has an opposite sign but a somewhat smaller magnitude, brings the calculated mass difference closer to the experimental value $M = 9\,m_e$.

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