be drawn to connect the Coulomb potential curve to the known energy at r = 0. Presumably stable nuclei with A > 100 are represented by curves of the type I, with barrier heights of the order of 50 Mev, since the Coulomb potential at r = nuclear diameter is greater than the fission energy. Presumably uranium would be represented by a curve like II, where the barrier is about 6 Mev. Substances whose energy curve would be given by III would naturally not exist for long. This latter curve presumably represents nonexisting transuranics.*

Consider r = B to be of the order of the diameter of a fission fragment. Then from equation (8-2), $B = 2 \times 1.48 \times 10^{-13}(A/2)^{1/3}$. Using this value for B, we can plot E_B (the Coulomb potential at r = B) as a function of mass number A, Figure 51. Similarly we can draw a curve E_A, the excess of mass of a parent nucleus of mass number A over that of its two fragments (i.e, the fission energy). This latter curve becomes negative below A = 85 and crosses the curve for E_B at about A = 250. From such a graph, one can get $E_B - E_A$ for any A. The quantity $E_B - E_A$ is a measure of the height of the energy barrier against fission.

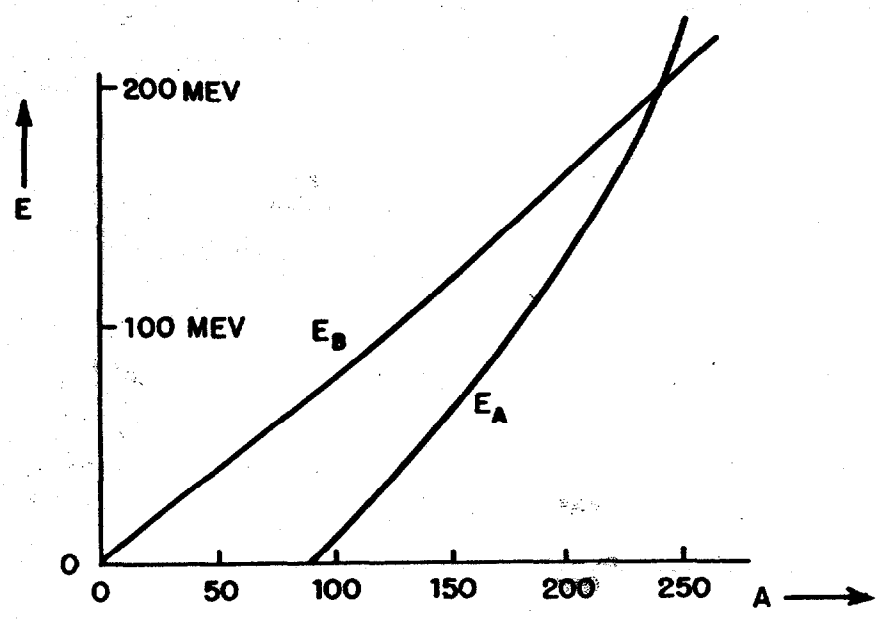

Figure 51. Energy barrier against fission.

* For a somewhat more detailed discussion of the transition curves, see the Bohr, Wheeler paper, Phys. Rev. 56:426 (1939).

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