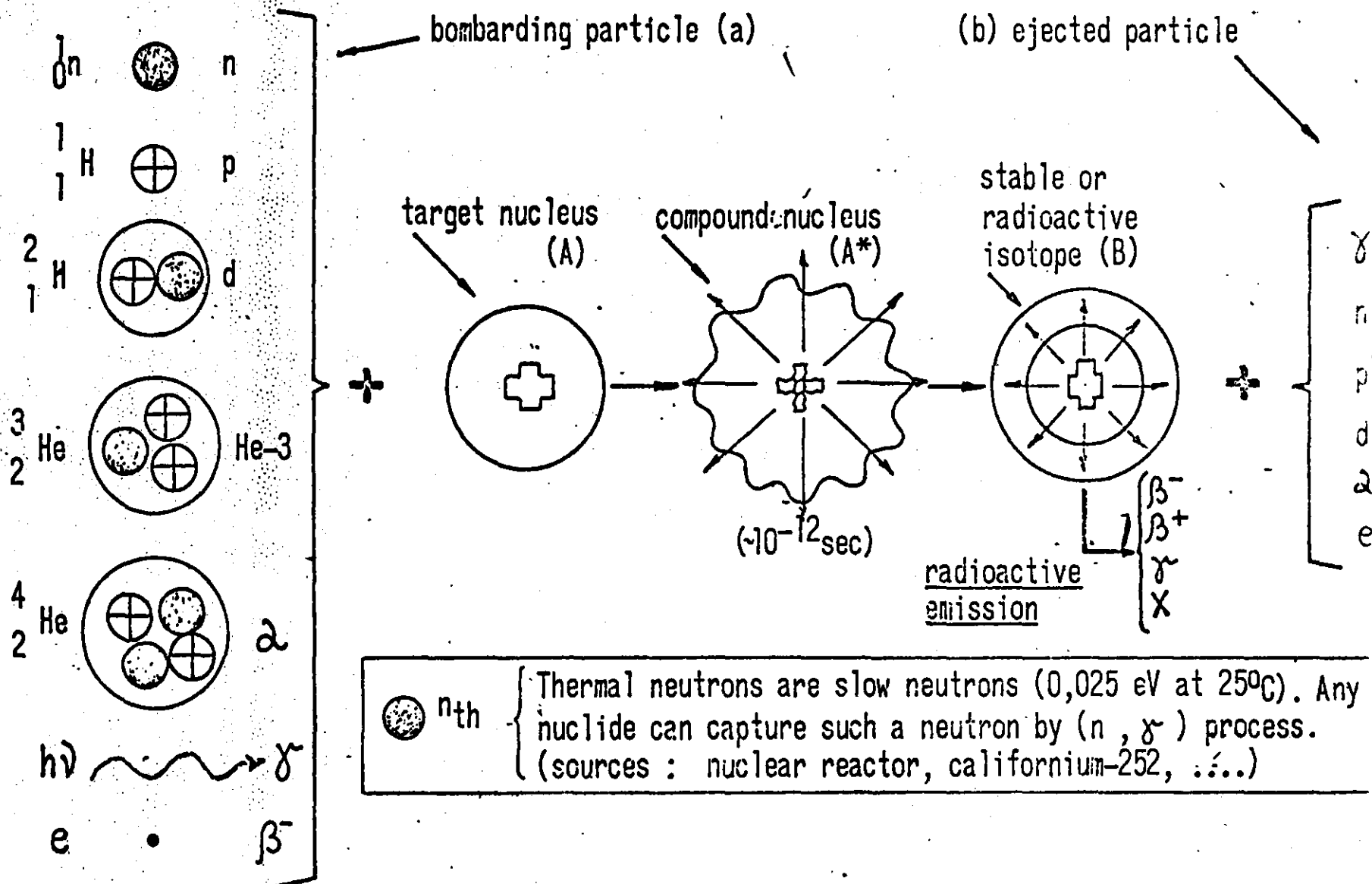


THE NUCLEAR REACTION AND TYPES OF NUCLEAR PARTICLES EMPLOYED



Nuclear Reactions

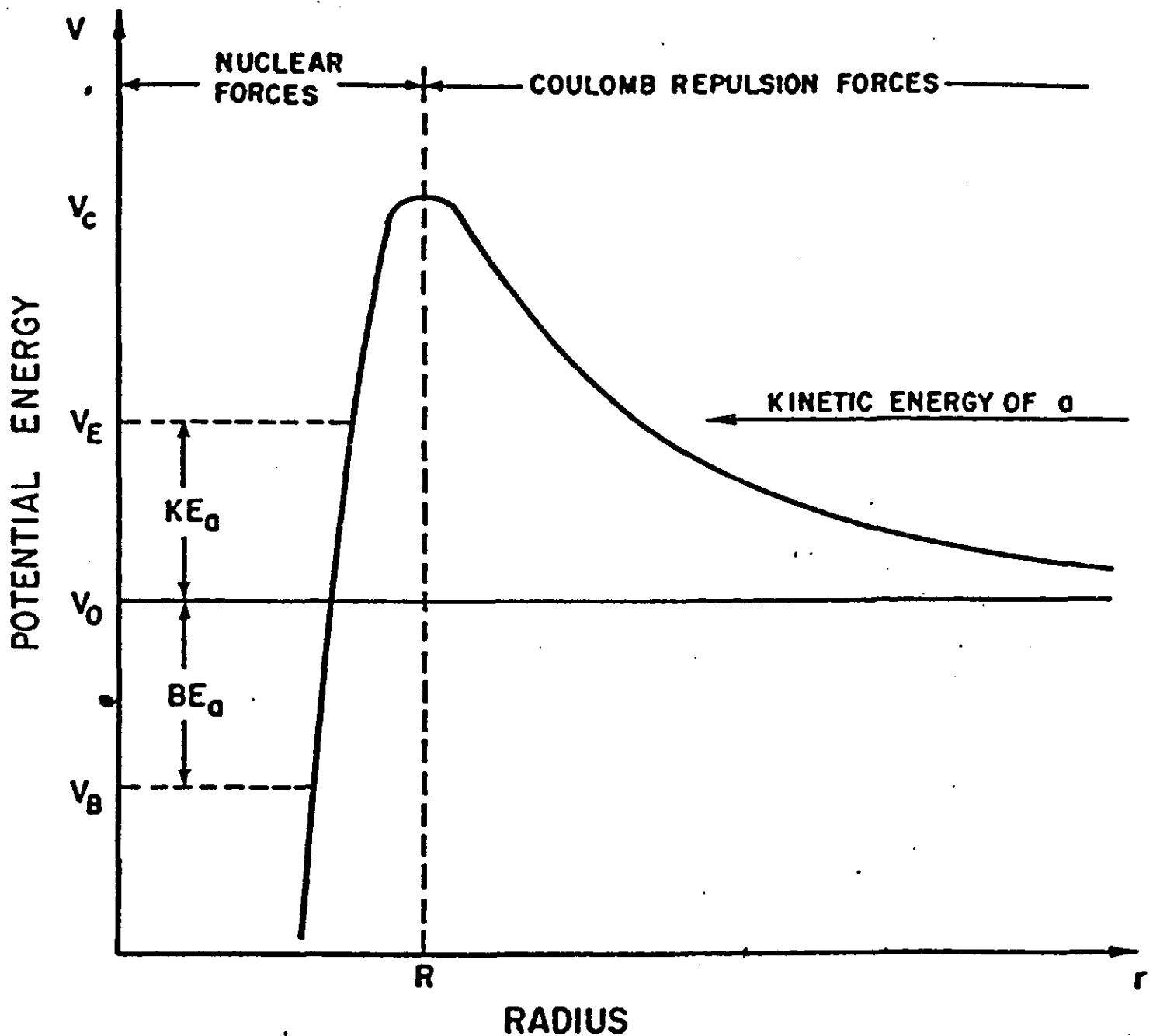
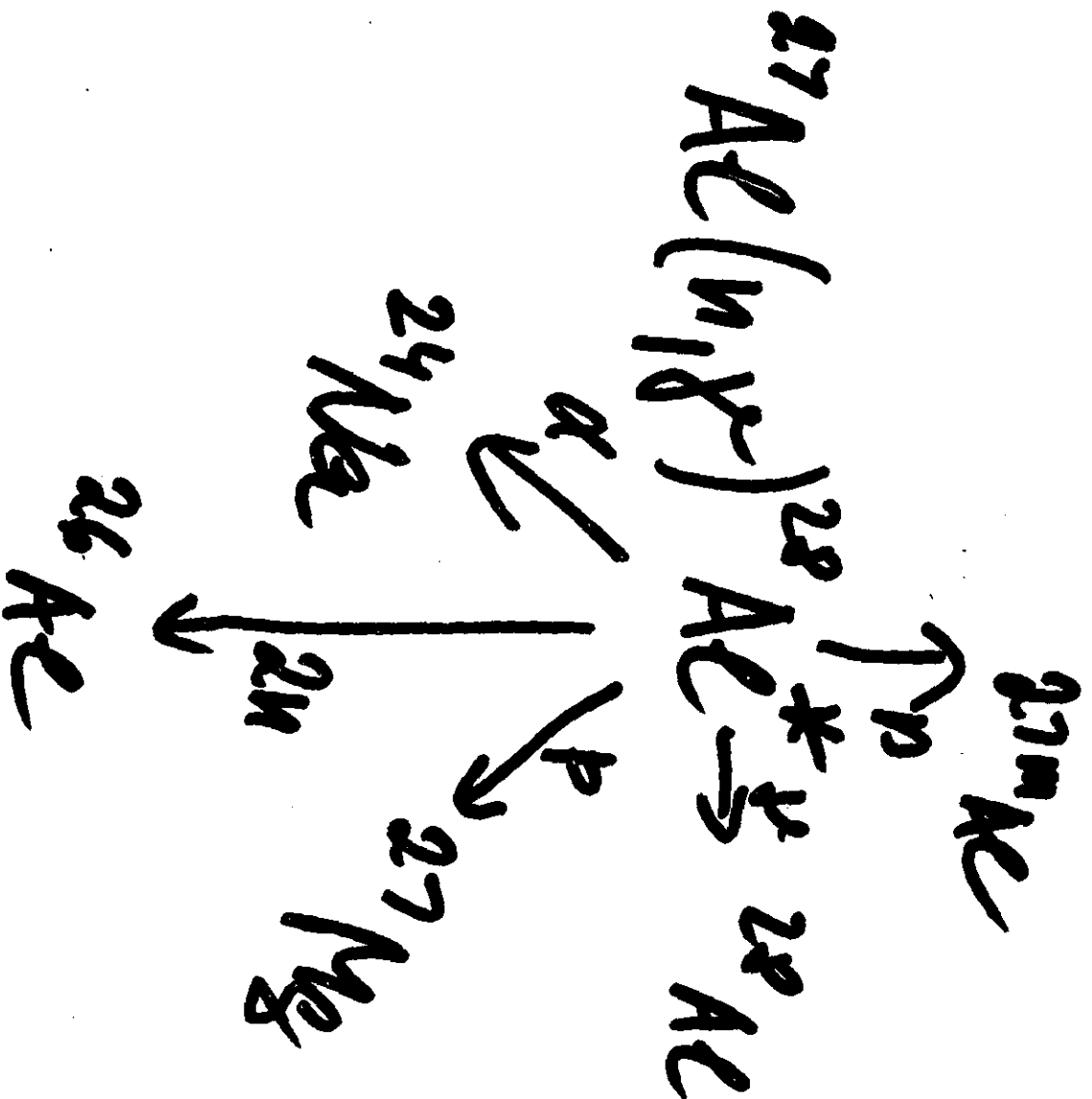
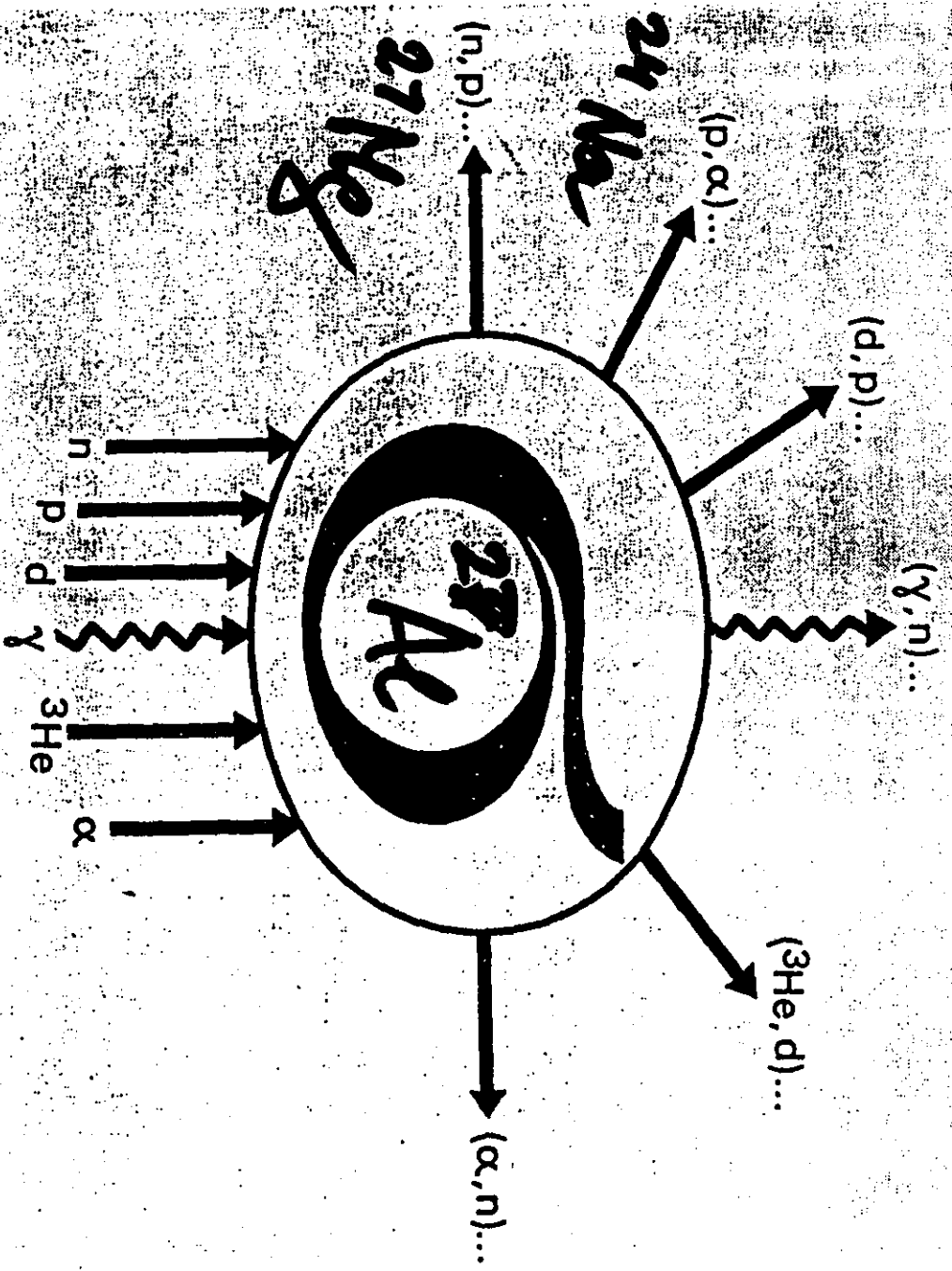


Figure 1.5 A schematic representation of the nuclear potential energy of a target nucleus as a function of the separation distance from the irradiating particle α . Particles with less kinetic energy than V_c may be absorbed by the nucleus according to quantum mechanics principles, leaving the nucleus with excitation energy equal to the incoming kinetic energy $V_E - V_0$, plus the binding energy $V_0 - V_B$.





NUCLEAR REACTIONS COMPOUND NUCLEUS

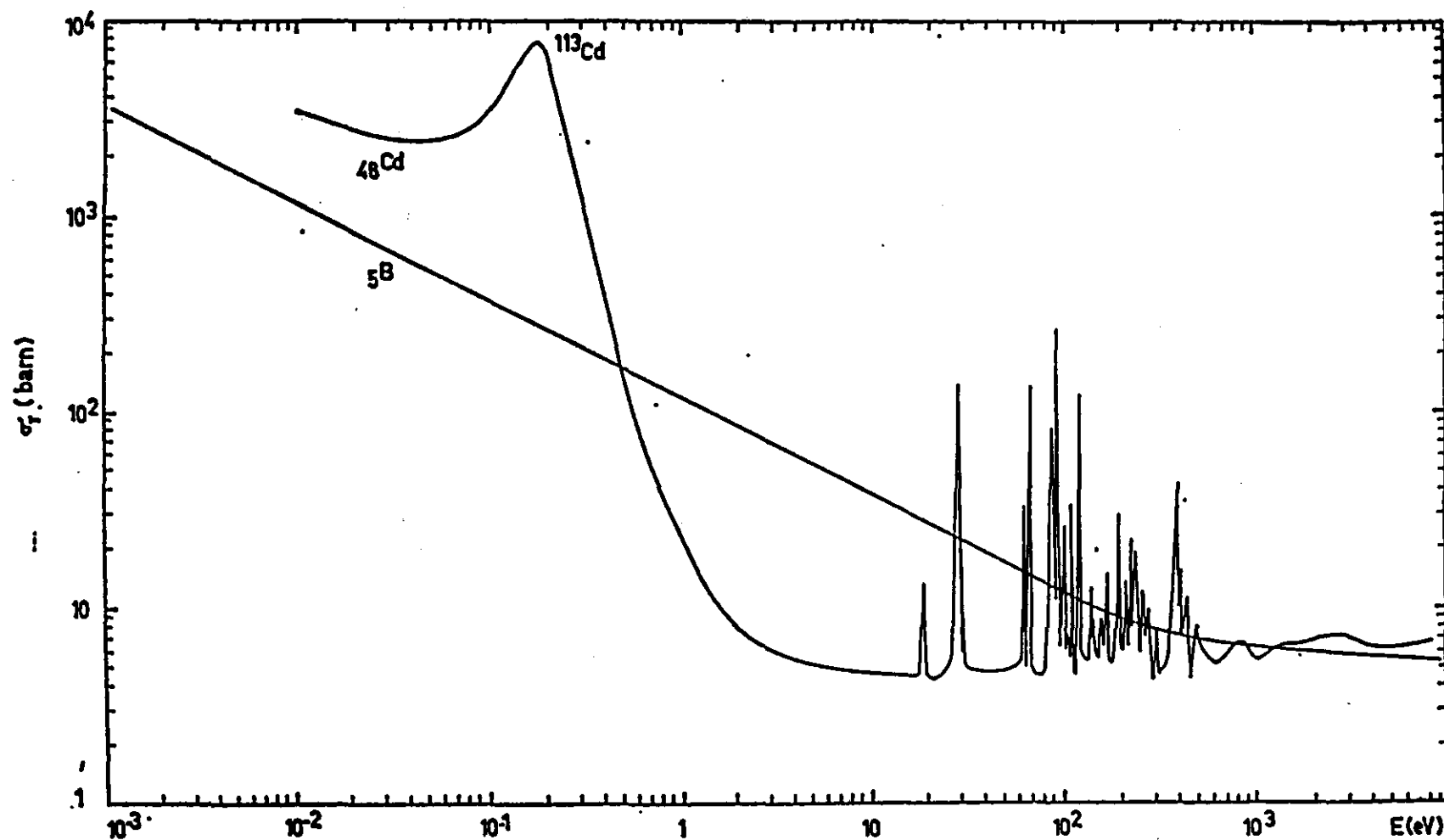


Fig. 3.4. Some typical forms of resonance (13).

Fluxes and Beams

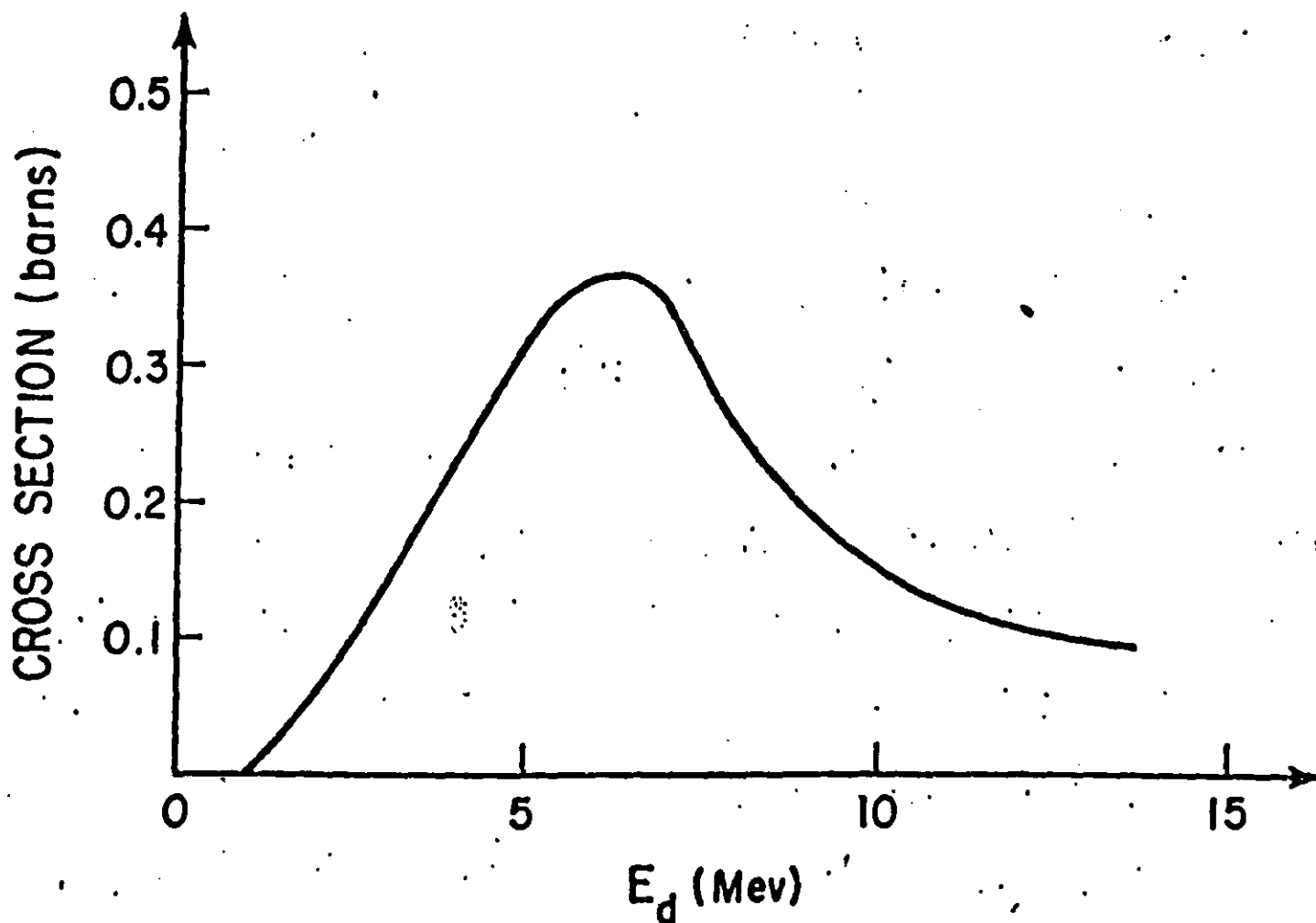


Figure 2.2 A typical excitation function curve.

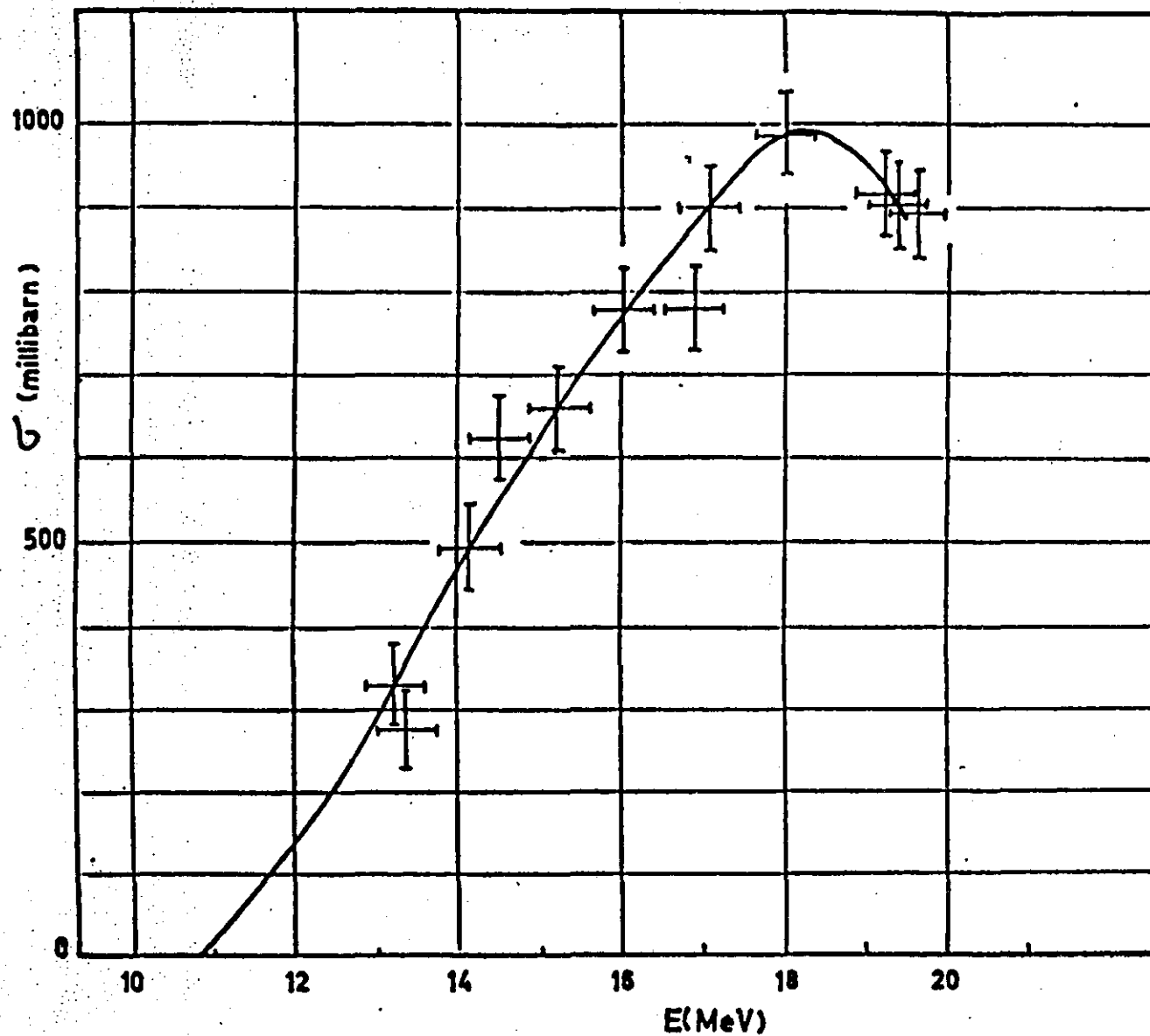


Fig. 3.6. Energy dependence of the reaction cross section for $^{63}\text{Cu}(n,2n)$ ^{63}Cu (20).

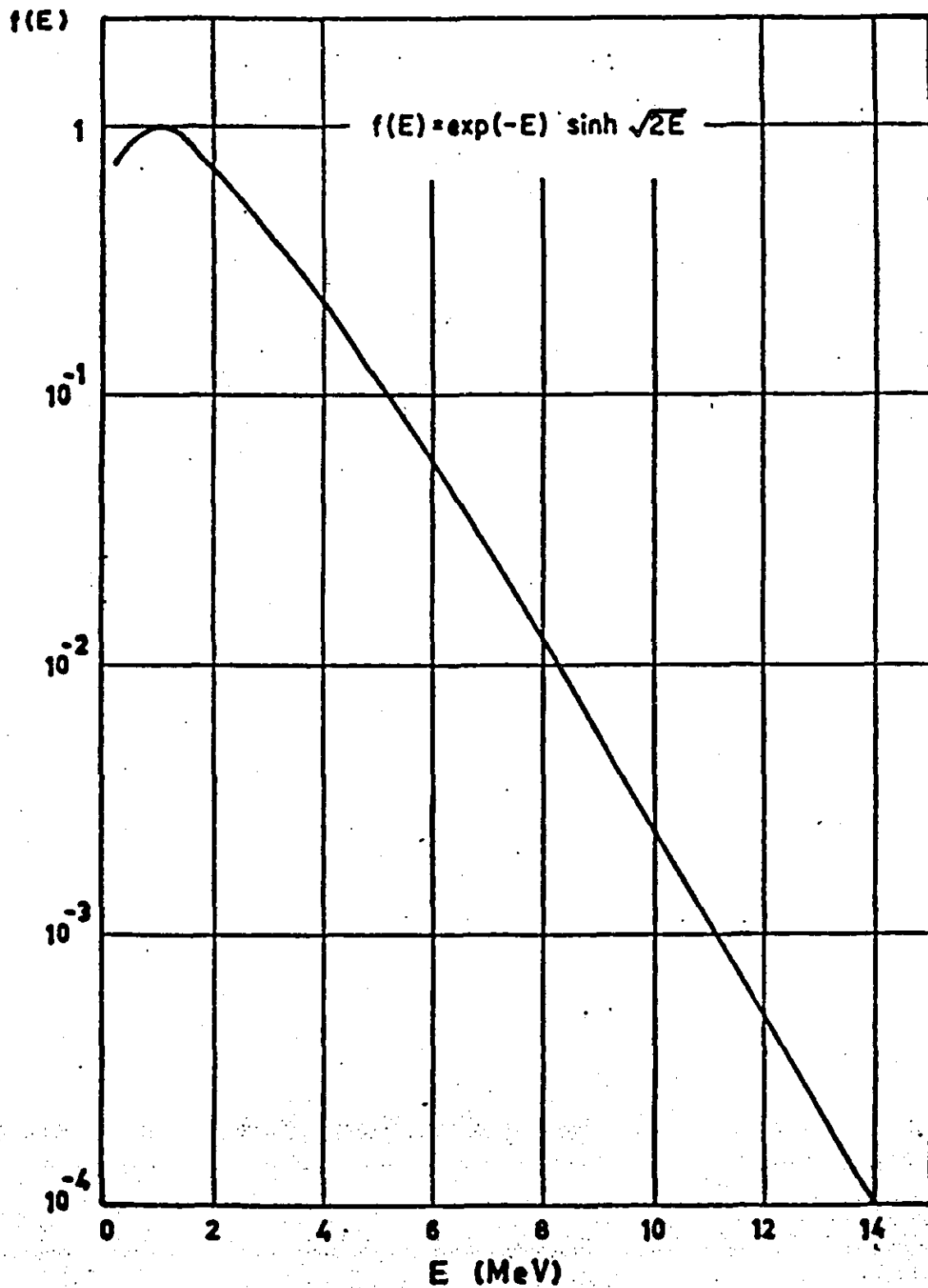


Fig. 3.7. Energy distribution of fission neutrons from ^{235}U (Watt distribution) (2) (Permission of Hughes, D. J., *Pile Neutron Research*, 1953, Addison-Wesley Reading, Mass.)

3.5e

3. NEUTRON INDUCED REACTIONS

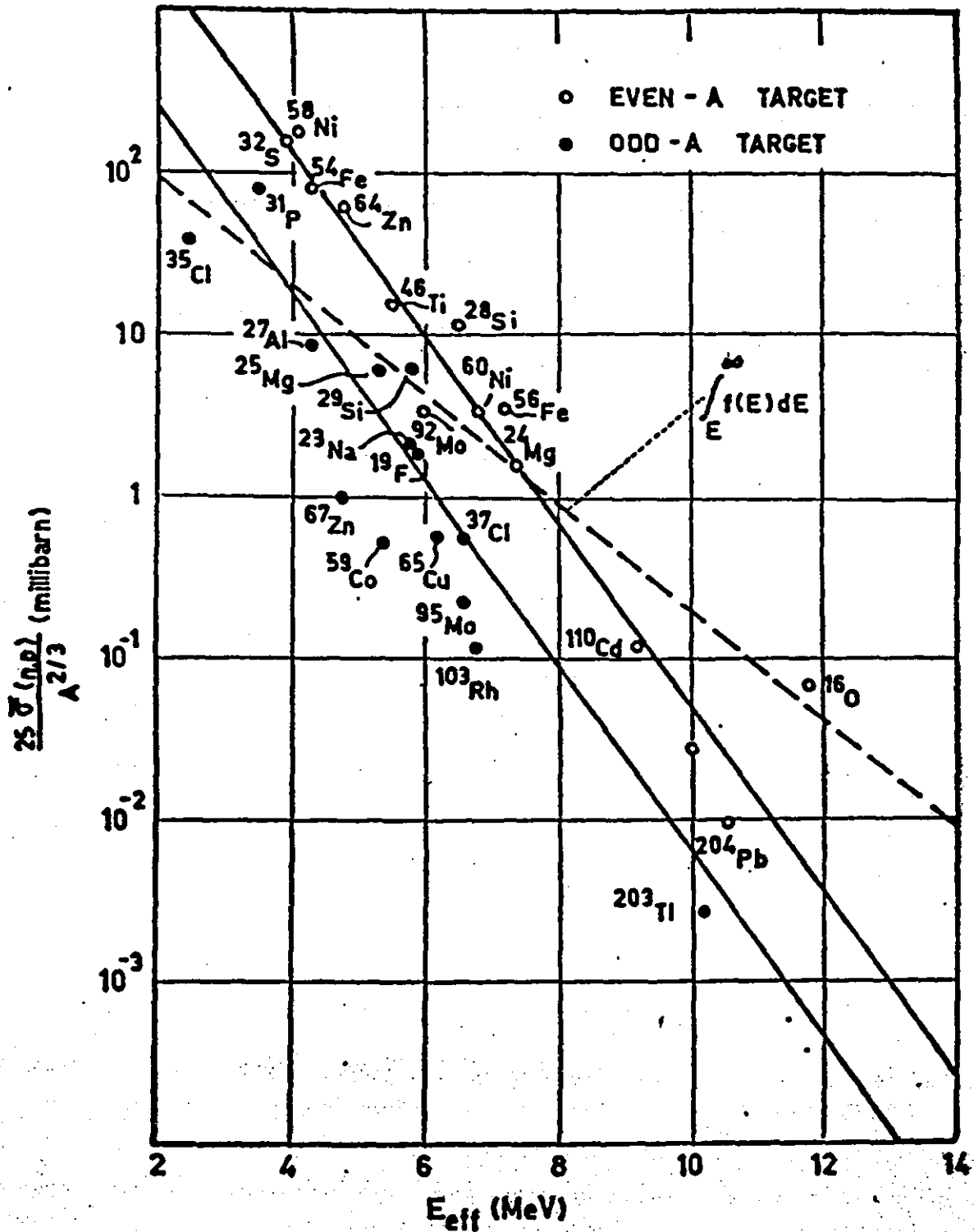


Fig. 3.9. Measured values of $\sigma(n, p)$ for fission neutrons, plotted vs. E_{eff} taken from Roy and Hawton (25). The dotted line represents the integral of the fission neutron spectrum.

3.5e