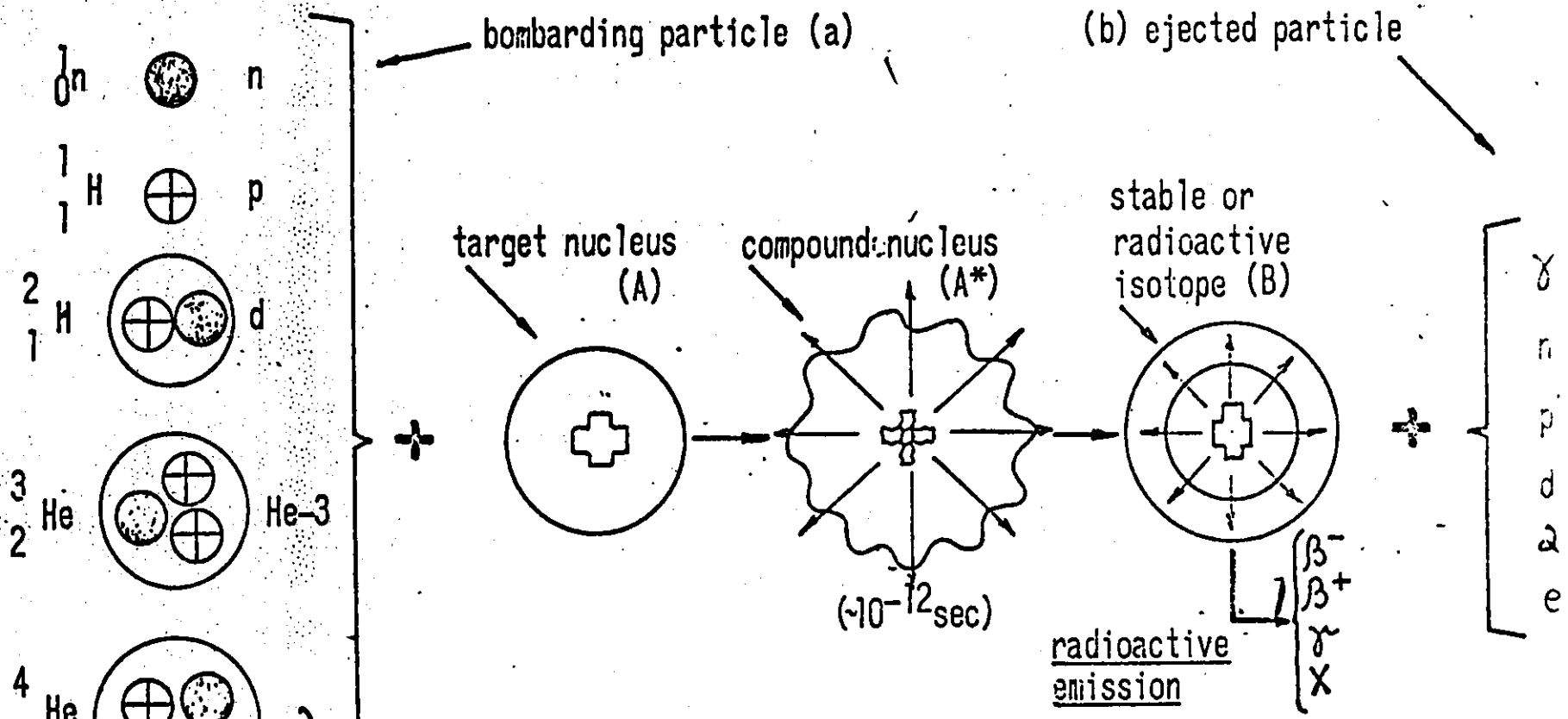
THE NUCLEAR REACTION AND TYPES OF NUCLEAR PARTICLES EMPLOYED



n_{th} { Thermal neutrons are slow neutrons (0,025 eV at 25°C). Any nuclide can capture such a neutron by (n , γ) process. (sources : nuclear reactor, californium-252, ...)

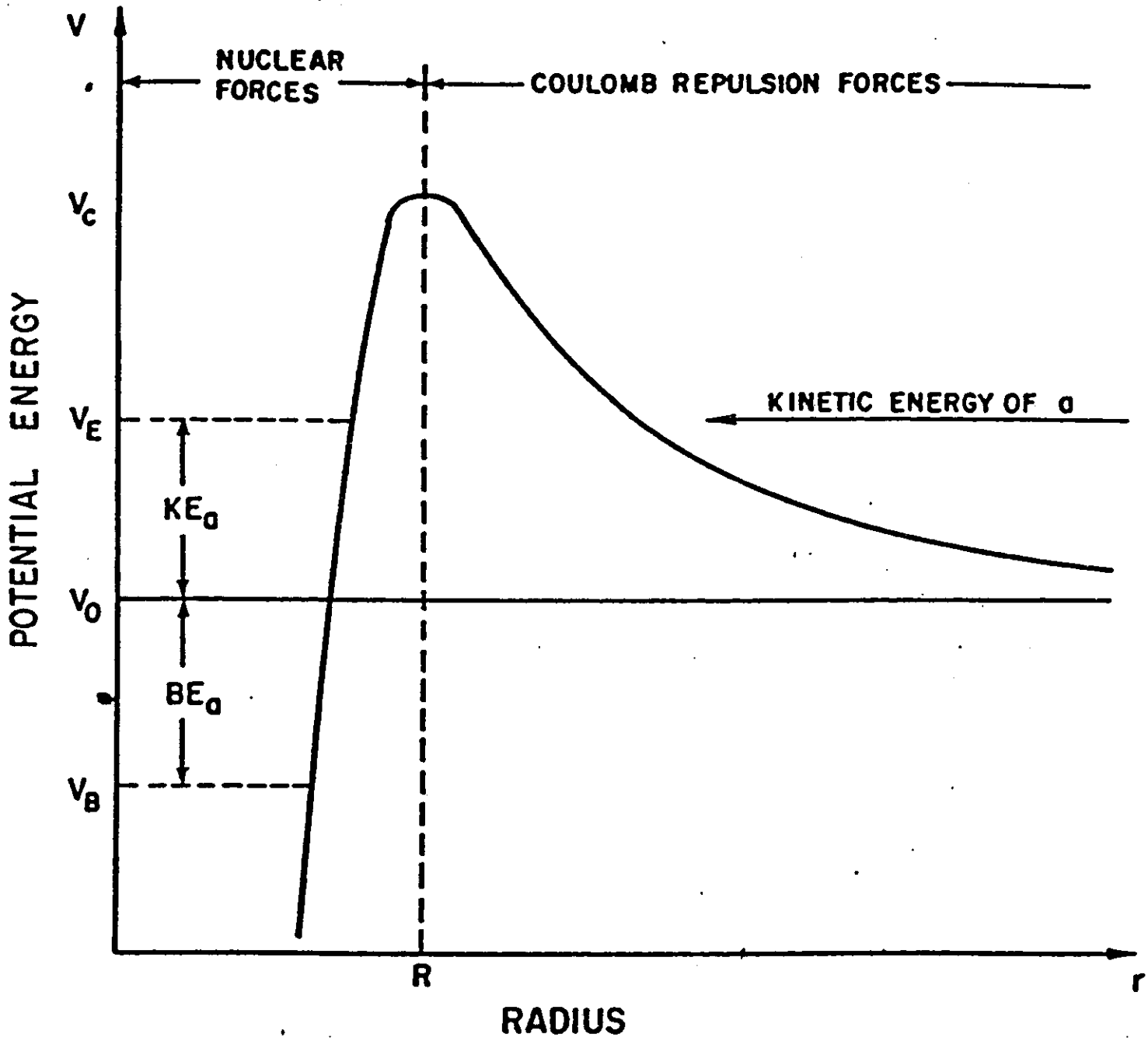
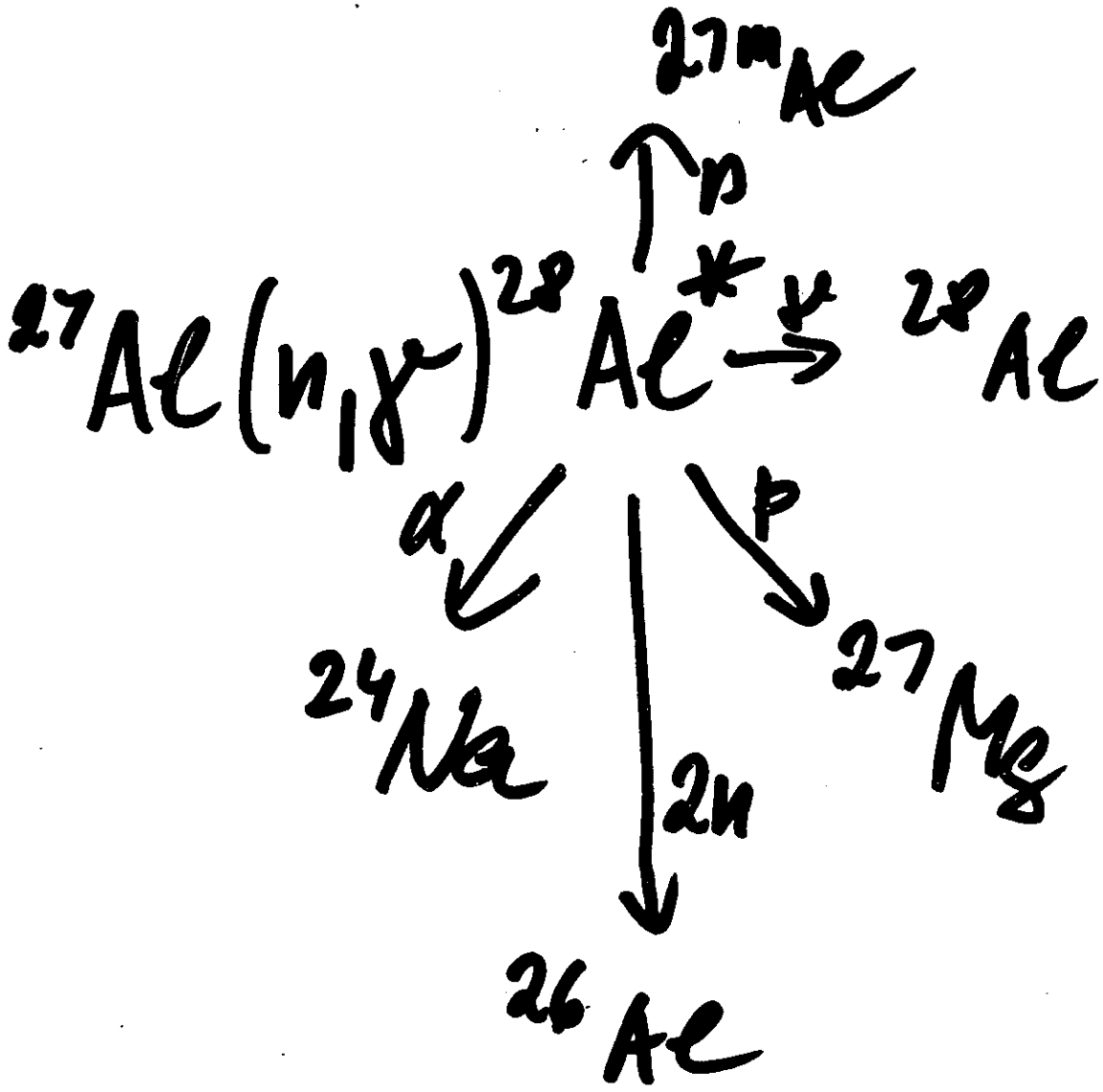
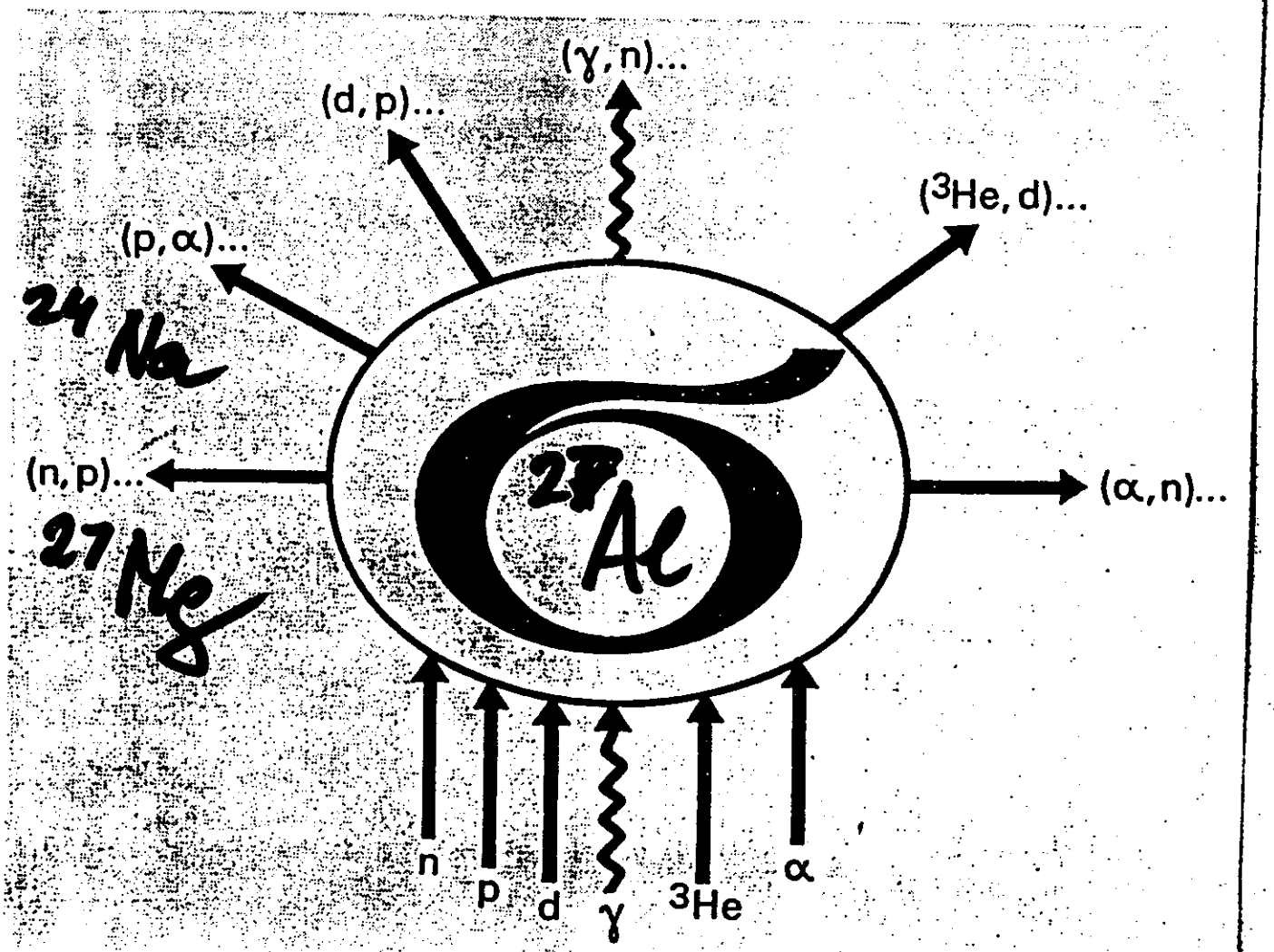


Figure 1.5 A schematic representation of the nuclear potential energy of a target nucleus as a function of the separation distance from the irradiating particle *a*. Particles with less kinetic energy than V_c may be absorbed by the nucleus according to quantum mechanics principles, leaving the nucleus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


27mAl
p
27Al(n,γ)28Al*
γ
28Al
α
p
24Na
27Mg
2n
26Al



NUCLEAR REACTIONS
COMPOUND NUCLEUS

3.4b

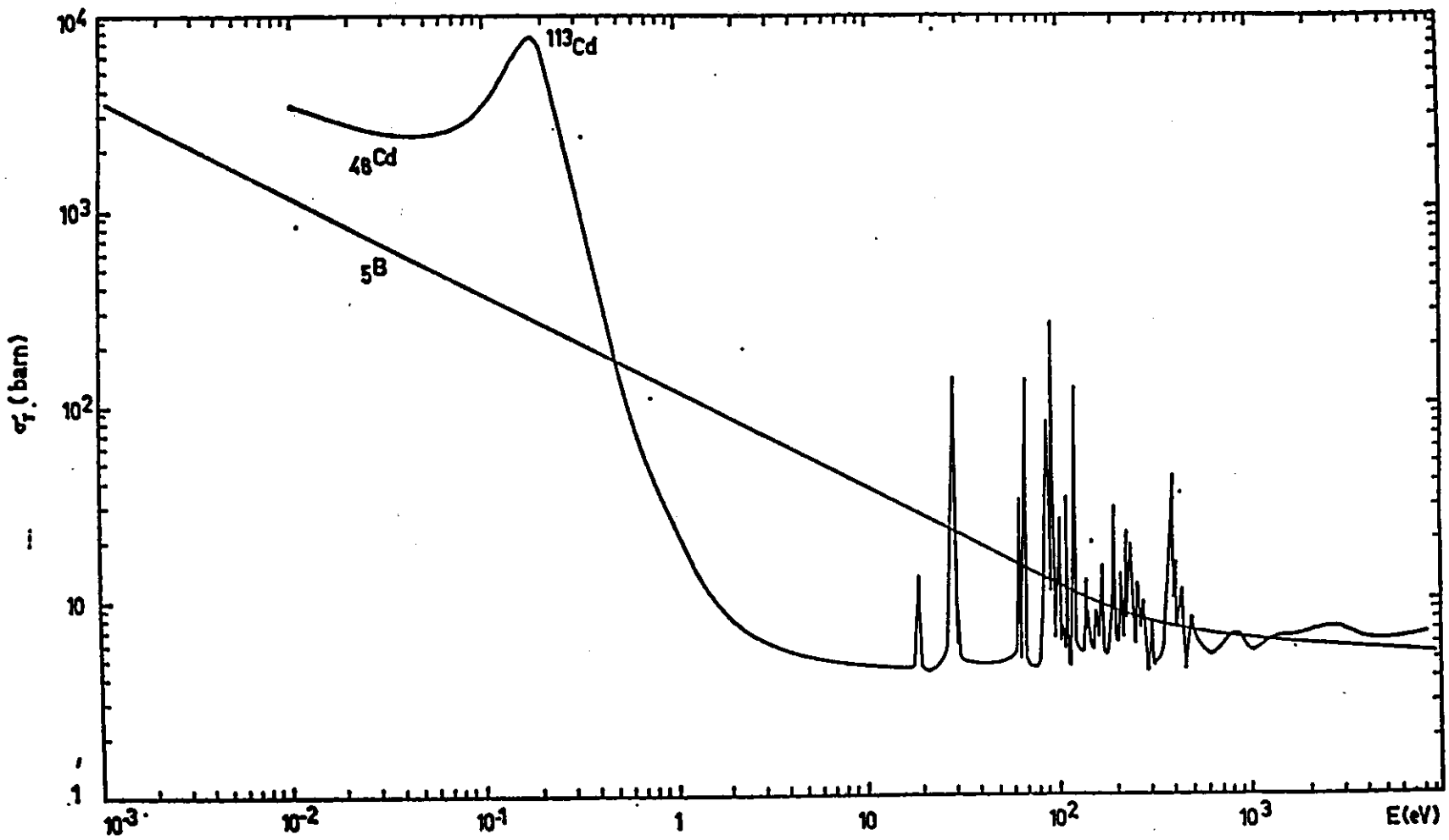


Fig. 3.4. Some typical forms of resonance (13).

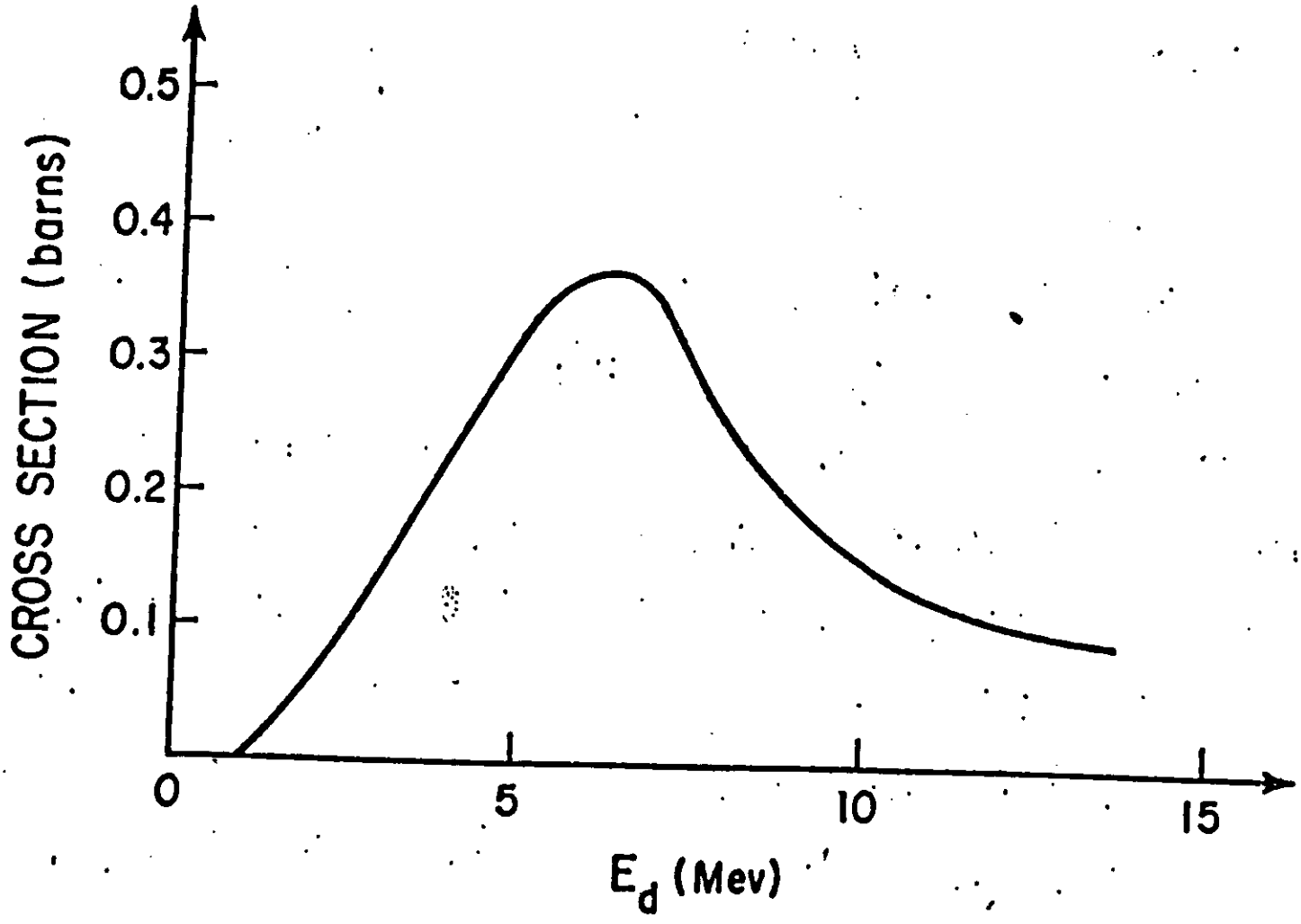


Figure 2.2 A typical excitation function curve.

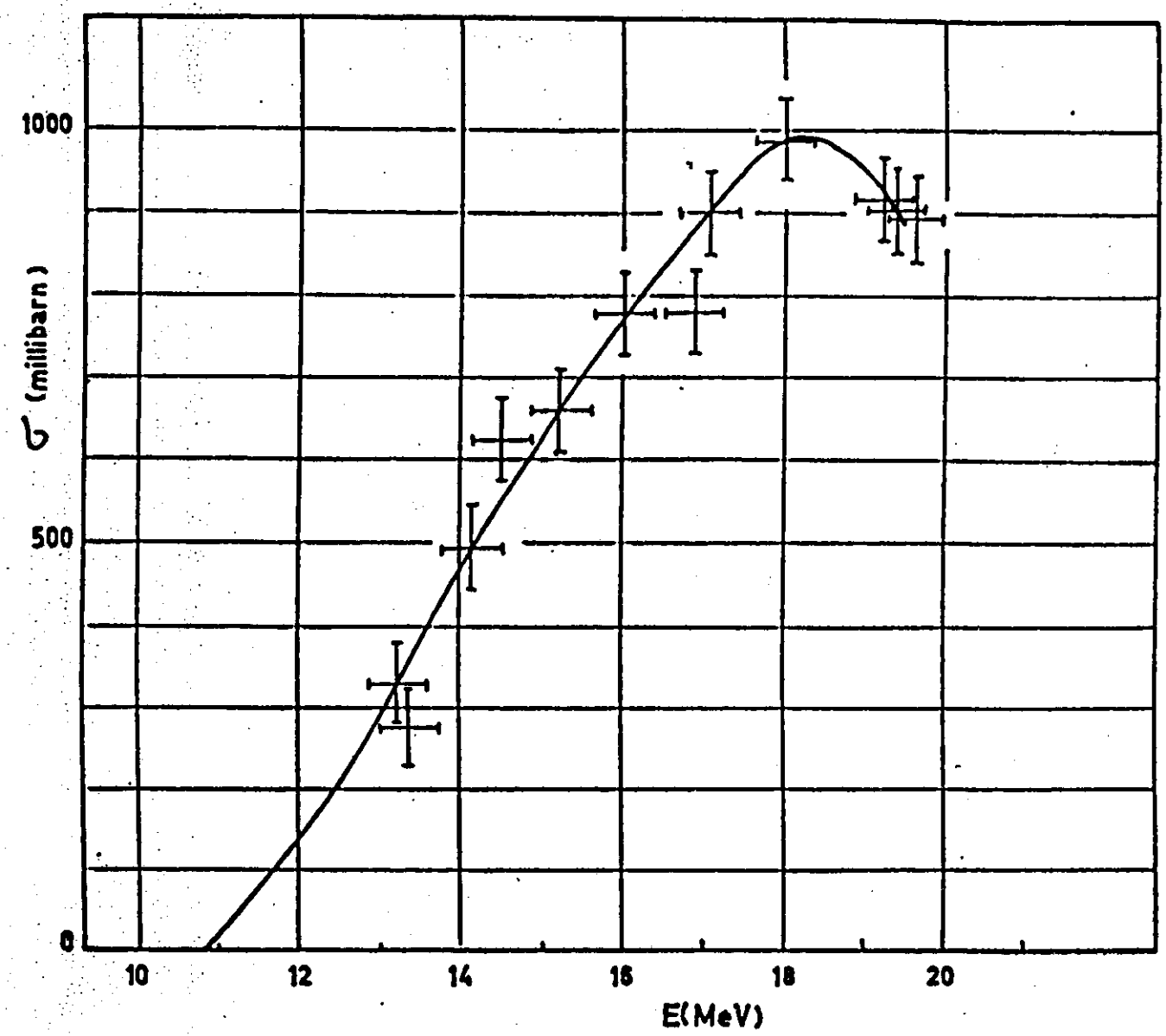


Fig. 3.6. Energy dependence of the reaction cross section for $^{63}Cu(n,2n)^{62}Cu$ (20).

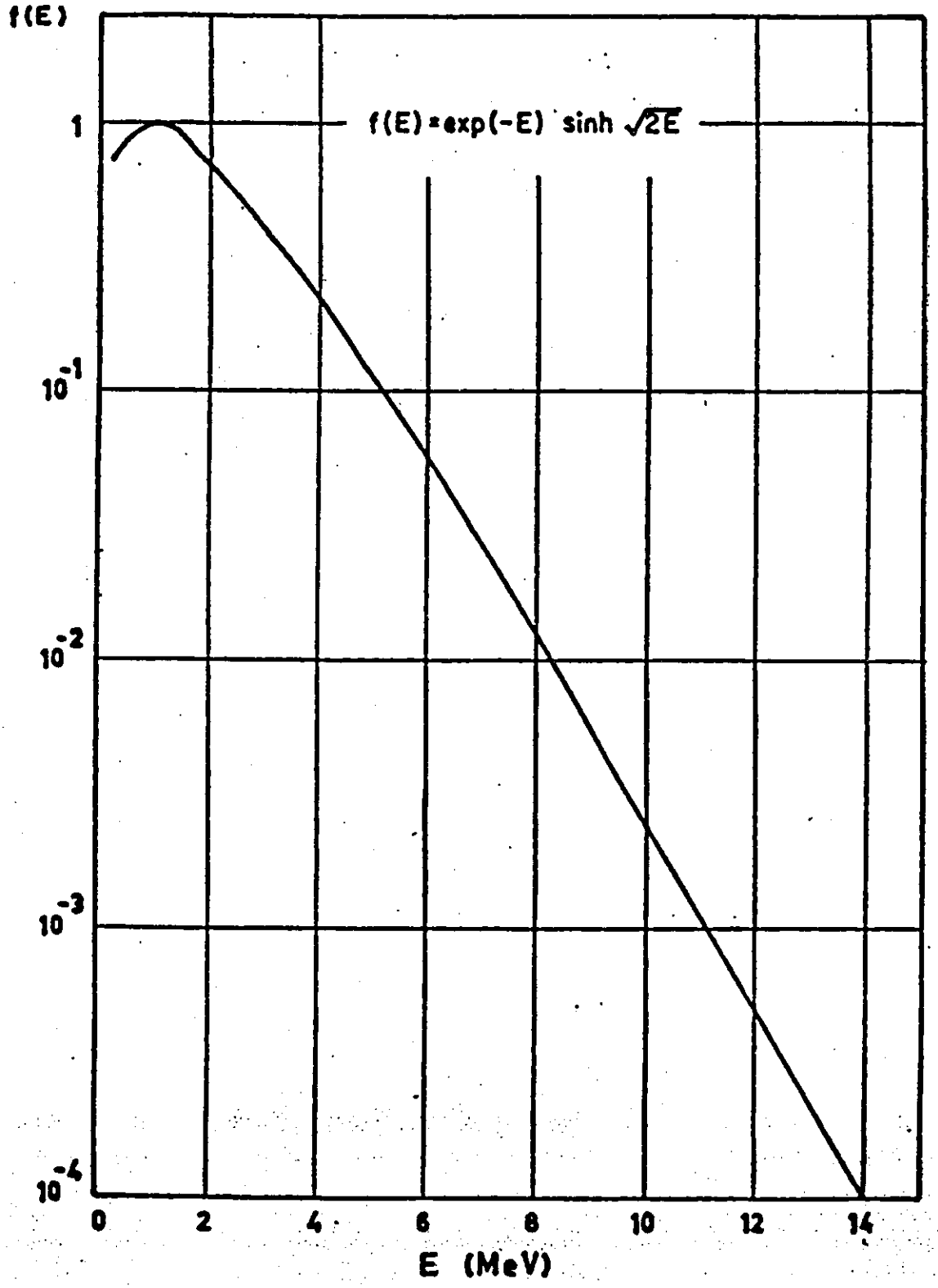


Fig. 3.7. Energy distribution of fission neutrons from ^{235}U (Watt distribution) (2 (Permission of Hughes, D. J., *Pile Neutron Research*, 1953, Adison-Wesle Reading, Mass.)

3.5e

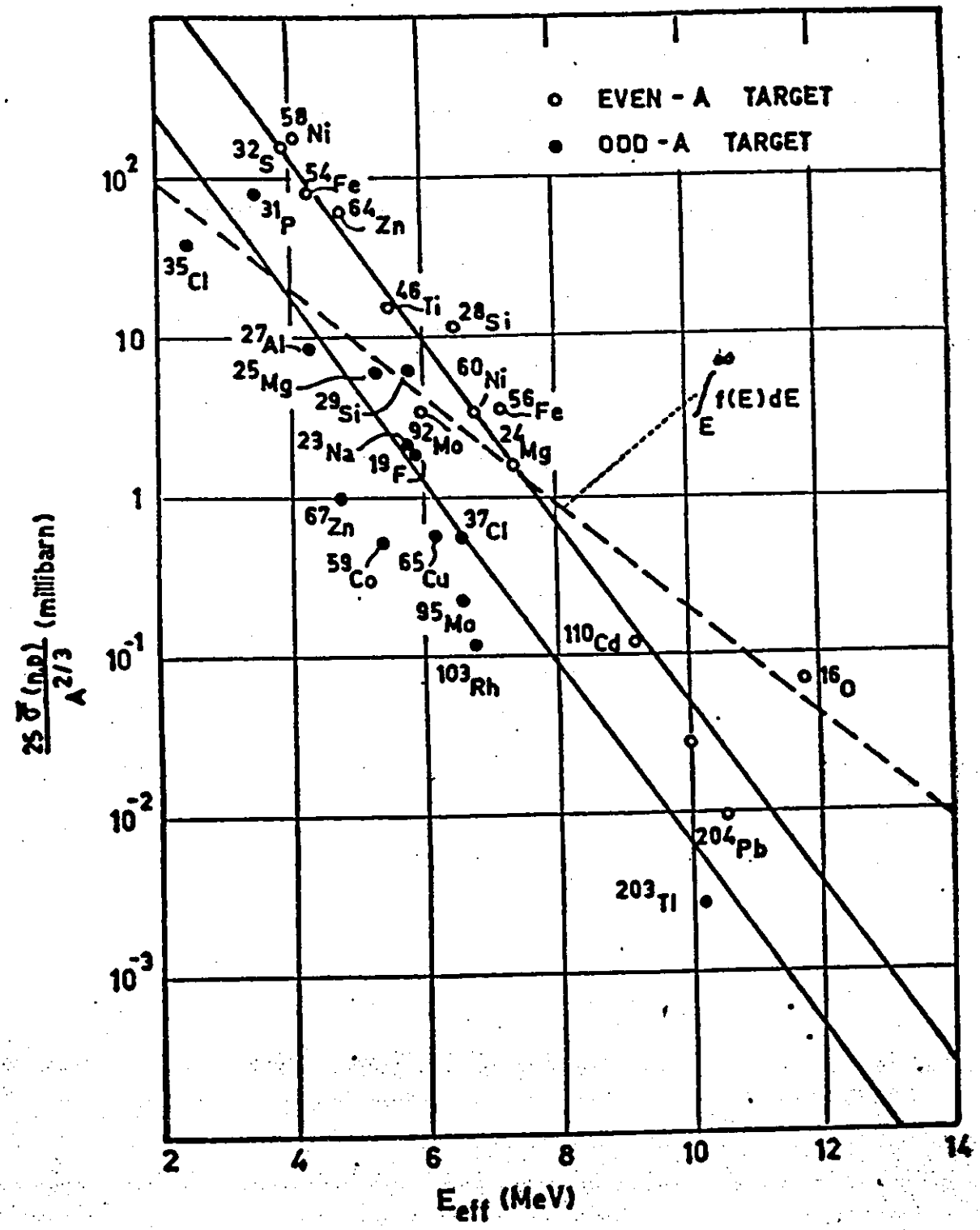


Fig. 3.9. Measured values of $\bar{\sigma}$(n, p) for fission neutrons, plotted vs. E_{eff} taken from Roy and Hawton (25). The dotted line represents the integral of the fission neutron spectrum.

3.5e