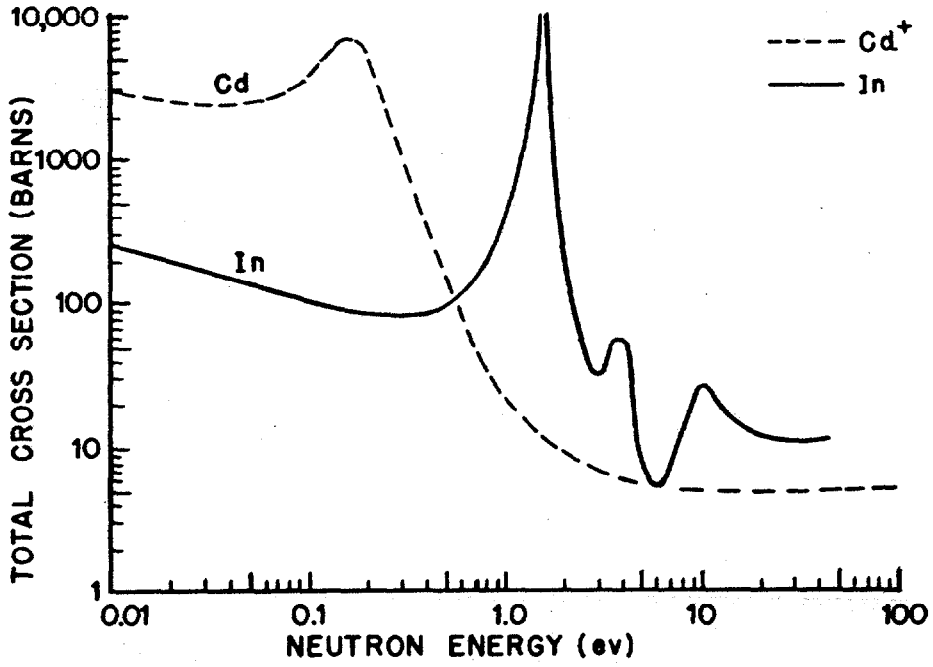

Figure 33. Cross section versus energy curve for indium.

Returning to the neutron source in the tank of water, it is apparent that the investigation of the distribution of 1.44-ev neutrons (indium resonance) may be made* by placing indium foils sandwiched between cadmium foils at various positions in the tank. The degree of activation of the indium (taking into the account the decay of radioactive indium during the period of exposure) in the various positions is proportional to the density of 1.44-ev neutrons at those positions. If the cadmium foils were removed and the difference between the activation of the bare indium foil and the activation of the sandwiched foils (Cd-In-Cd) were computed, then the relative densities of thermal (cadmium) neutrons can be determined for the various tank positions. The spatial distribution of $\simeq$ 37-ev neutrons can be determined using an iodine detector.† Putting all these curves together yields the radial distribution of the density of the various energy neutrons in the water, as sketched on Figure 34.

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* For details see "Ra-α-Be Neutrons in Water" by J. N. Rush in Phys. Rev. 73:271(1948).

† For iodine resonance see Phys. Rev. 71:174(1947). There are apparently two resonance levels, $\simeq$ 32 ev and $\simeq$ 42 ev.

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