distribution of the light from bioluminescent sources is entirely different from that from cosmic rays, we do not anticipate difficulties in distinguishing the two sources.

Ocean Radioactivity - Finally, the radioactivity of seawater provides an irreducible minimum to the counting rate of a photomultiplier.[24] There are two independent sources of background counts: the first is the beta-radioactivity of the water, which is primarily due to K^{40}, which has an intensity of 13 disintegrations sec^{-1} per liter. The other is the gamma-ray background (manifesting itself as Compton electrons) due to neutron capture in seawater, primarily the fraction captured by Cl^{35}. The neutrons (and also some prompt, or nearly so, gamma-rays) arise from the minute amount of uranium found in seawater, namely 3 micrograms per liter. Most of these neutrons arise from spontaneous fission; some come from the (α,n) reactions induced in a few nuclides present in seawater, by a small high-energy fraction of the alpha-emitters of the uranium decay chain.

The effect of the rather high counting rate due to K^{40} is to make mandatory the use of coincidence techniques. The potassium beta-rays produce only a few photons; so the efficiency of detecting them is low, and only very rarely would two coincident detectors detect the same decay. Even without the K^{40} decay, the very low rates needed in individual modules, as we will show, would demand coincidence techniques.

The effect of the neutron-induced gamma-ray activity (and also gamma-rays from spontaneous fission) is to impose an energy threshold on detected electron pulses. The energies of the Cl^{35}