processes. Recently R. S. Raghavan of Bell Labs has proposed using the neutrino capture in ^{115}In to produce an isomeric state in ^{115}Sn that rapidly decays (3.2 μsec) by emitting two successive characteristic gamma rays. This unique delayed triple coincidence process could identify the neutrino capture event sufficiently to distinguish the process from various background events. The reaction has a low threshold and could observe the neutrinos from the H-H reaction. A particular arrangement of indium loaded liquid scintillation counters has been suggested,[18] but background effects must be carefully studied before feasibility can be clearly demonstrated. A detector based upon this reaction can in principle also measure the energy spectrum of low energy neutrinos.

One of the early processes considered for observing ^{8}B neutrinos was the capture in deuterium producing an electron with an energy above 7 MeV. A detector was built by T. L. Jenkins (Case) about 10 years ago that used 2000 liters of D_2O, but various background processes limited its sensitivity. We know now that the ^{8}B flux is below 1×10^{6} cm^{-2} sec^{-1} from the chlorine experiment so that observing ^{8}B neutrinos by this method is extremely difficult. Recently A. Fainberg (Brookhaven-Syracuse) has proposed building a D_2O Cerenkov detector of high resolution.[19] His present aim is to study backgrounds to determine if such a detector is capable of observing the low fluxes of ^{8}B neutrinos. A deuterium detector of this design is needed for observing pulses of neutrinos from collapsing stars. Present theories of stellar collapses predict an initial pulse of neutrinos a few hundredths of a second duration followed by a continued pulse of neutrino-antineutrino pairs that may last many tens of seconds. A 10-30 ton D_2O Cerenkov detector of the type proposed by Fainberg is the best means of observing this sharp characteristic pulse from a super nova event. Such a detector could observe the constant flux of energetic solar neutrinos.

Neutrino-electron scattering also has been regarded as a promising means of observing energetic ^{8}B neutrinos.[1] Observing the scattering event by a sandwich detector system made of alternating layers of thick plastic scintillator slabs and spark chamber modules has been recently suggested by H. Chen of the University of California, Irvine.[20] Studies of background processes have been made with a pilot system at the LAMPF accelerator that indicate a detector of this design would have a sufficiently low background to allow observing the ^{8}B flux. A detector of this design with the ability of defining the direction of the scattered electron would identify the sun as the source of the neutrinos that are observed. These various direct counting experiments look promising and perhaps in a future neutrino '80-'90 conference the direct observation of solar neutrinos will be reported.