nate plates are connected to a source of very fast high voltage pulse. The particle goes through. If it is electrically charged, it will leave a trail of free electrons in the gap. These free electrons will remain for up to 10 μsec if desired, or they can be swept away in of the order of 1 μsec. If, within that time interval, a high voltage pulse is applied, the electrons will be accelerated and will avalanche and cause a spark. If the gap contains neon gas, the spark will be red, and the track will light up like a neon light. The main feature of this device is that it is triggered. Only when the counters indicate that something has happened, is the high voltage pulse applied. It is active for a very short time and it shows what happened in the previous microsecond and that is all. The great advantage of this device is that if, for example, a million particles/sec are going through, if one of them does something interesting, the pulse can be turned on and only that one track will be seen. It can be picked out of a million other particles because of the very good time resolution.

Figure 10 shows how we made such spark chambers for the neutrino experiment. We used 4-ft-square aluminum plates. They are spaced to provide the gap by Lucite spacers with rubber O-rings and are stacked. The new spark chamber we are building for the second stage of the neutrino experiment will be very similar, except that part of the chamber will be made of 8-ft-square plates. There seems to be no limit to how large these can be made.

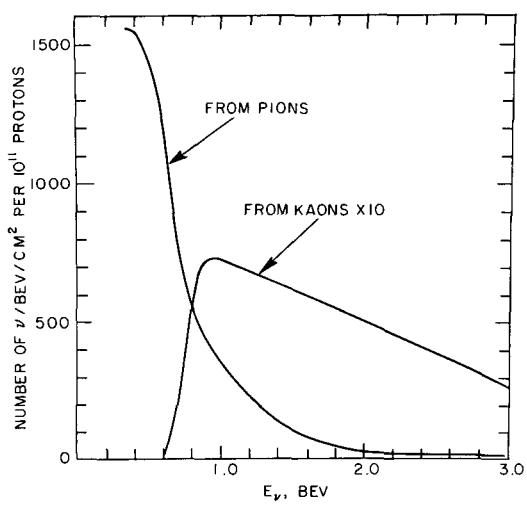

Figure 8. Number of neutrinos produced vs. neutrino energy.

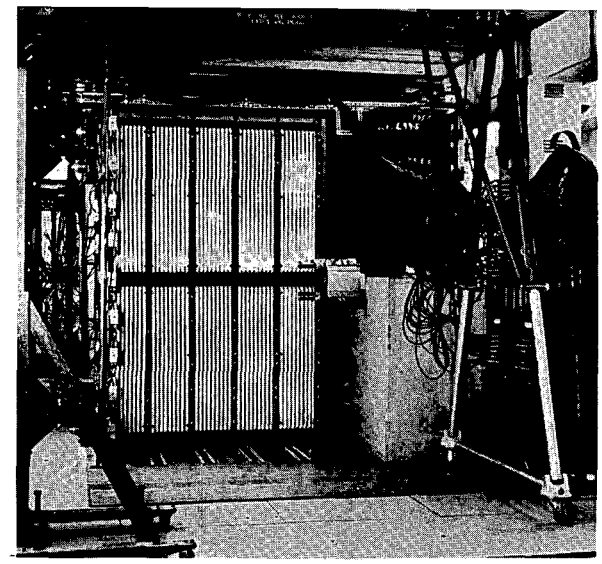

Figure 9. Spark chamber.

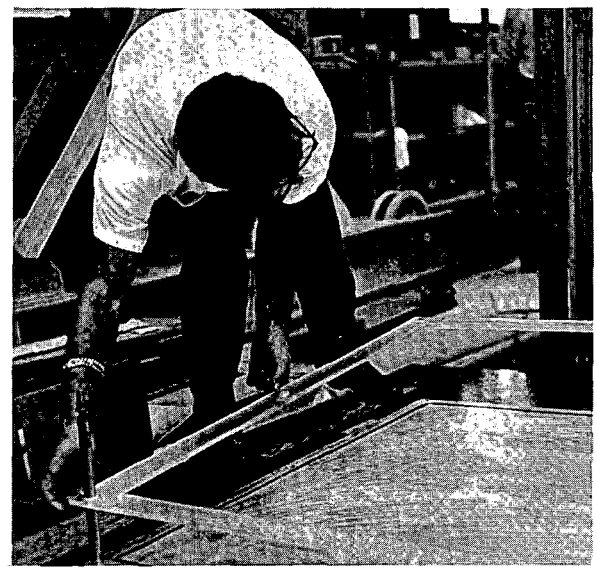

Figure 10. Process of assembling spark chamber.

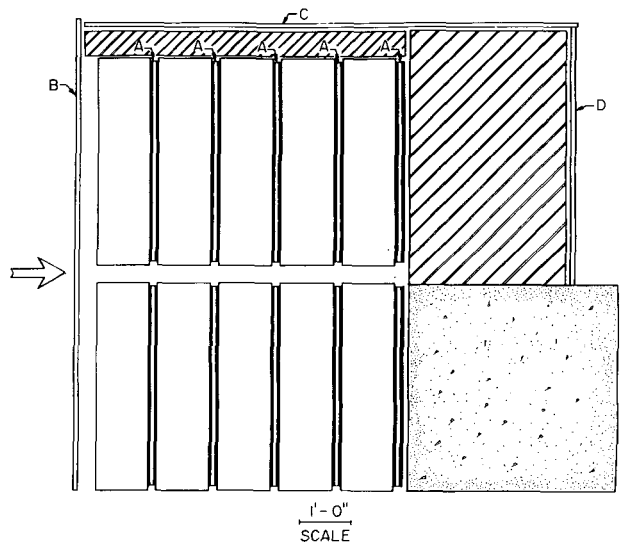

Figure 11. Schematic drawing of spark chamber. *A* represents the triggering counters. *B*, *C*, and *D* are counters in anticoincidence.