flux limits given in Table 1 were calculated. The limit set for 1 MeV neutrinos, barely over threshold, is not very low. On the other hand for 10 MeV neutrinos where the super allowed capture process to form the 5.2 MeV excited state in argon-37 is important, an upper limit of 1×10^8 cm^{-2} sec^{-1} can be set. This limit allows us to conclude that less than 0.2 percent of the solar energy cycle goes through the formation of Li^4. If Li^4 were stable one would expect its beta decay to He^4 would produce energetic neutrinos which would dominate the solar neutrino spectrum and these would have been observed by the experiment. If the central temperature of the sun were somewhat higher than 16 million degrees the B^8 production would be higher. Using the flux limits tabulated, one concludes the central temperature of the sun is below 19 million degrees.

The limit is given for 100 MeV neutrinos, but above a few hundred MeV the Cl^{37}-Ar^{37} radiochemical method would not be particularly sensitive. This is because the nucleon struck by the incoming neutrino with several hundred MeV energy would leave the nucleus and argon-37 would not be the final product nucleus.

PLANS FOR A LARGE SCALE EXPERIMENT

The sensitivity of the Cl^{37}-Ar^{37} method can be improved by increasing the volume of perchloroethylene used in the detector. We are now planning an experiment using 100,000 gallons or 610 tons of perchloroethylene. A volume of liquid of this magnitude can be processed to remove argon by the same helium sweeping method used in the pilot experiment. However, to accomplish the task in a day it is important to make the process more efficient by improving the contact between the helium gas and the liquid. This will be accomplished by the use of a pump-eductor system, and we plan to be able to remove the argon-37 in 10 hours with better than 90 percent efficiency.