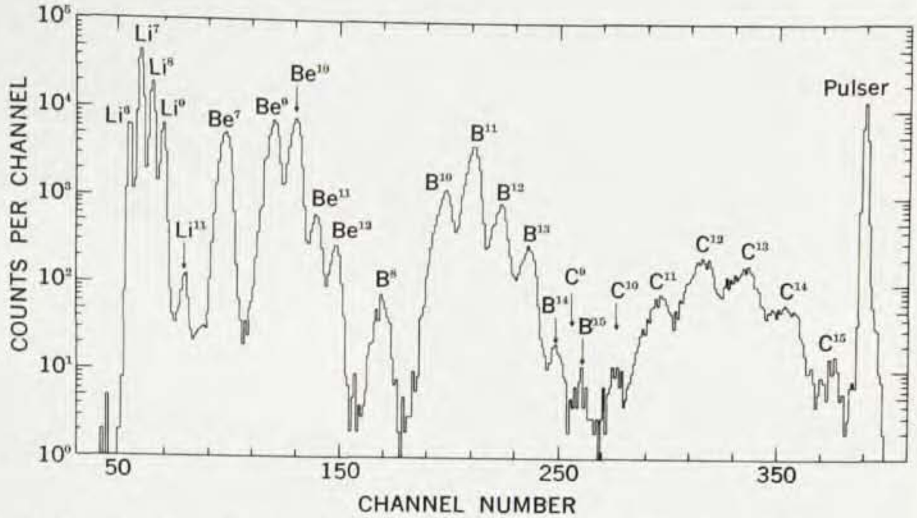
achieved by Fred Goulding, Donald Landis, Cerny and Richard Pehl, who used it to demonstrate the existence of He^8. The method uses several semiconductor detectors to measure the energy loss rate and total energy of nuclei ejected from the target with a circuit that identifies charges and mass numbers of the nuclei. By measuring the energy losses in two separate transmission detectors and thereby getting two separate identifications of each event, the Berkeley experimenters acquire improved isotopic resolution; they reject events in which the two identifications do not agree.

Among the isotopes identified are He^6, and He^8, Li^9 and Li^{11}, and B^{14} and B^{15}. These nuclides are all particle stable; they decay only through weak-interaction processes by beta emission with relatively long half-lives measured in the tens of milliseconds. Some predictions by Gerald Garvey and Itzak Kelson suggested the existence of B^{14} and B^{15} but L^{11} was predicted to be particle unstable.

The significance of the work at LRL, Poskanzer stated, is twofold. First, the determination of which nuclei are particle stable and which are particle unstable sets certain limits on their masses that are useful in testing mass relations. For instance, the particle stability of Li^{11} indicates that its mass is at least 2.5 MeV lower than the most reliable prediction. Thus, one has the surprising result that the configuration of three protons and eight neutrons appears to be considerably more stable than one would predict by extrapolation from nuclei closer to beta stability.

The second reason is in the demonstration of the technique developed for the identification of nuclei. The accompanying graph demonstrates the type of identification now possible. It shows all the isotopes from Li^6 to C^{15} with the exception of only C^9. This technique has application in fields such as cosmic-ray and heavy-ion studies. In particular the LRL group will study the details of the production of these nuclei at the Bevatron to determine whether a fragmentation or an evaporation mechanism is a better description for their production.

It is almost as interesting to note the isotopes which did not appear, for example Li^{10} and Be^{13}. These are predicted to be particle unstable by Garvey and Kelson and there is no trace of them in the energy-loss spectrum.



ENERGY-LOSS SPECTRUM obtained with multichannel analyzer shows a peak for every isotope produced in the proton scattering process.

3-km Radio Telescope to be Built by Univ. of Maryland

A unique radio telescope with an aperture of over 3 km is being built by the University of Maryland at Clark Lake near Borrego Springs, Calif. The construction, which will take approximately two years, is being supported by the National Science Foundation and the Maryland school.

Its design is quite different from the radio telescopes now in use. Approximately 1000 individual antennas will stretch across the dry lake bed in the shape of a large T. The Maryland telescope will be fully steerable even though it will have no moving parts. Instead of a mechanical tracking system, sophisticated electronics will be used to steer the device. This unique characteristic will help radio telescopists detect many weak sources in the decameter range and monitor more than one radio source simultaneously. William Erickson, the project director, said that this new instrument will be the first steerable array telescope of its kind. It is comparable to a dish-type telescope with a 3-km diameter; at present the largest dish radio telescopes have diameters of 183 to 305 meters.

Planned projects for the Maryland radio telescope include cataloging and measuring 8000 known extragalactic radio sources to better understand the mechanism of radio emission. A study of supernova remnants, believed to be an important source of cosmic rays, also will be undertaken. Other research will include solar observations that should produce a complete picture of the sun's radio emissions each second, measurements of the scattering of radio waves in the solar corona and correlation of this information with that obtained optically from spacecraft or balloons.

The radio telescope will also monitor the planet Jupiter, as yet the only positively identified planetary radio source emitting decameter wavelengths. Because of the sensitivity of the new telescope similar radio signals emanating from other planets may be found.

JPL Suggests Bouncing Off A Planet to Reach Another

Space-age Tarzans will substitute gravity for vines. Just as the Jungle Boy uses the tension in a conveniently placed suspension to lose potential energy he doesn't want and gain a momentum directed toward the place he wants to reach, interplanetary explorers should use gravitational acceleration from appropriately placed planets to whip them around into the trajectory they need. So says Gary Flandro of Jet Propulsion Laboratory, who has