had strong contingents from Princeton and Israel, can become annual.

The center of high energy work in Scandinavia lies in Sweden, where there are three strong groups, at Gothenburg, at Lund and in Stockholm. There are also well established groups in each of the other three countries.

Whether or not they produce any really seminal work is, domestically, not of the first importance. The point is that all the main Scandinavian groups are big enough to produce first class work, given native ability, while at the same time they ensure that Scandinavia is fully conversant with the most advanced theoretical work, in itself a victory for the physicists. *H. J. Barnes*

FROM BRITAIN

Alone or together

Pending the decision on how closely to tie to the 300 Bev, scientists proceed with development of a national program

In June, Britain opened her second big laboratory for nuclear research, the Daresbury Nuclear Physics Laboratory. It seconds the Rutherford Laboratory at Chilton in Berkshire which has been a mecca for physicists for decades.

The accelerator at Daresbury is known as NINA, National Institute Northern Accelerator. It was built in record time by Prof. Alec Merrison and his colleagues. NINA, an electron accelerator, is petite in comparison with other atom smashers. It is a mere 70 meters in diameter, having magnets totaling only 500 tons, compared with 7,000 tons for the 7 Bev proton NIMROD, and 27,000 tons for the proposed 300 Bev.

NINA, however, packs a powerful punch: a high density electron beam of four Bev with which to probe the structure of the nucleus.

One experiment planned for NINA is to accelerate positrons, the antiparticles of electrons, to see whether the same physical laws obtain in the looking glass world—appropriate enough for scientists working at the birthplace of Lewis Carroll.

There is hope of using NINA's powerful electron beam as the input for a far more powerful machine, of 15 Bev, that would encircle the present one. But this is a project that must await Britain's final decision whether or not to participate in the big machine, Europe's proposed 300 Bev proton synchrotron.

Much nearer fruition at Daresbury is a scheme to put NINA on-line with its big computer.

Meanwhile, among the work in hand at Daresbury are studies, by the laboratory's own staff, of electromagnetic interactions over very small distances, among a class of particles known as leptons.

In addition, a number of nearby universities have experiments running. Liverpool scientists are investigating the photoproduction of zero-charged pi and eta mesons. A Manchester team is measuring the cross-section for photoproduction of kaons from photons in a liquid hydrogen target. And the Glasgow group is measuring the polarization of protons in elastic electron-proton scattering.

Although Europe's sights are set on the proposed 300 Bev machine, the site for which is expected to be chosen finally by the CERN Council early next year, there is no lack of activity this side of the Atlantic. CERN already has well in hand two major pieces of technology. One is a large hydrogen bubble chamber, being developed by groups from Geneva, Heidelberg and Saclay. The other is the construction of intersecting storage rings, two huge magnet rings that will allow beams of protons to meet head on.

Nevertheless, British and European physicists make no secret of their belief that the future of high energy physics in Europe depends upon their building the big machine. This, according to the CERN Study Group, will take six years to construct (SN: 7/8) and, says Prof. Eduardo Amaldi, chairman of the European Committee for Future Accelerators, if authorized next year "would be in a condition to start producing physics in 1977." It would then need a staff of around 2,500, including 200 experimental physicists.

But physicists still see importance in national support in the shape of smaller or more specialized machines; in other words, a club that would constantly interchange staff and techniques with CERN. The club will probably include a 45 Bev proton machine, most likely in France, in addition to the two accelerators in Britain, the 7 Bev electron machine in Hamburg and another in Bonn, and a meson factory that Switzerland is to build. *David Fishlock*