

the relationship between sequence length and polymerization parameters for copolymers. The use of the "rotating frame" magnetic resonance method to study molecular motions was described by Dr Connor of the National Physical Laboratory. Dr Jennings of Queen Elizabeth College, London, described how electric fields could be applied to solutions during light-scattering experiments to give information on both the electric and geometric parameters of the solute.

ANTARCTIC GLACIOLOGY

Ice Sheets Laid Bare

from a Correspondent

A COMPREHENSIVE review of knowledge about the Antarctic ice sheet and of techniques for its exploration took place from September 3 to 7, at the Hopkins Center of Dartmouth College in Hanover, New Hampshire. The International Symposium on Antarctic Glaciological Exploration was staged by Dartmouth College and the US Army Terrestrial Sciences Center for the Glaciology Working Group of the ICSU Scientific Committee for Antarctic Research (SCAR), with support from the International Association of Scientific Hydrology and especially from the US Army Research Office. About 100 delegates and visitors attended the fifteen technical sessions, while the working group and its specialist sub-committees met in evening sessions to review progress and international cooperation in the analysis of ice cores, the study of ice shelves, and the planning of a major new study of the East Antarctic ice sheet.

Glaciological research has come a long way since the IGY and now involves advanced techniques of dating with stable and low-count radioactive isotopes, radar measurements of ice deformation and thickness and of internal layering and vertical penetration of the ice sheet by core drilling and melt sondes. In his presidential address, Dr A. P. Crary predicted that the exploration of the ice-rock interface and the study of the basal layer of "dirty" ice will form the key activities in Antarctic glaciology during the next few years. At the same time, the symposium showed that theoretical and computer modelling of ice sheets and field observations are now converging to the point where it will be possible to establish the present trend of the Antarctic glaciation and to clarify some of the history of this and earlier Pleistocene ice sheets.

ARCHAEOLOGY

Iron Age West Wales

from our Archaeology Correspondent

It now seems that the Demetae, a relatively impoverished iron age tribe living in Pembrokeshire, must have had some contact with peoples in the north of Scotland at least by the very end of the iron age. This is the surprising but inescapable conclusion from an excavation of a fortified iron age homestead a few miles from Milford Haven, which has been carried out by Dr G. J. Wainwright of the Ministry of Public Building and Works this summer. The site, which was excavated completely by a team of up to ninety

people working from April until September, is a roughly half-acre circle enclosed by a single bank and ditch and is superficially typical of many others in Pembrokeshire, Cornwall and Ireland. But in spite of being so very common in Pembrokeshire, virtually nothing was known about these sites before this summer's dig. Estimates of their age, for example, ranged from 500 BC to AD 1500.

Within the enclosure, at the level of the subsoil, Dr Wainwright and his colleagues have found the post holes of six roughly circular huts, 20 to 50 feet in diameter, which must have been made of timber and wattle but not daub. Apart from typical late iron age pottery, disappointingly few domestic artefacts, no coins and not even a single bone have been recovered, presumably because remains had been destroyed by the very acid soil. But the pottery and a single glass bead, characteristic of those probably made in Somerset, date the settlement to the time of the BC/AD boundary. Because only one of the six huts shows signs of having been rebuilt, the settlement probably lasted only fifty or sixty years. Although no iron or bronze implements have survived, iron and bronze slag, pottery crucibles, lumps of baked clay and coal prove that the people worked metals. There are coal outcrops close to the homestead, but the closest source of good ore is in Glamorgan, then the territory of the Silures, so the people may have used the local limestone, a poor quality ore. The only clue to their agriculture is some stone querns, which prove that cereals were cultivated.

The evidence for some sort of contact with northern Scotland is two-fold. First, a spindle whorl made of steatite has been unearthed and in Britain steatite only occurs in Scotland. Second, immediately within the earth bank, which had a single stone gateway, there were three concentric rings of post holes (each post hole being 2 to 3 feet in diameter) extending some 15 feet into the enclosure. Dr Wainwright believes these posts supported a roof running all round the inside of the enclosure, and this style of building is characteristic of the smaller and stone-built brochs in Scotland. It was under this roofed area that the traces of metal working were found—clearly the inhabitants used the covered area for their industry.

Luckily, part of the ditch lies below the water table and a few water-logged wooden objects in the ditch were perfectly preserved. As well as an oak post and some birch wood complete with bark and buds, a wooden spear has been recovered. This spear is stylistically quite different from metal spears of the period and is not likely to have served as a pattern for metal workers. This find raises the possibility that the inhabitants of the homestead were so poor that they sold most of their metal work and used wooden weapons themselves. Of course, because the acid soil has presumably destroyed most evidence, it is easy to over-interpret the few artefacts that have survived. Nevertheless the overall impression of the site is that the inhabitants were impoverished. Superficially, at least, the settlement looks characteristic of the many neighbouring contemporary sites, but there is always the chance that it is atypical. Only further excavations can prove that and throw more light on the contact with Scotland, but it may be no exaggeration to say that the dig has opened up a new field for archaeology in West Wales.