That CIRIA is not making a success of its information service, set up in 1967 when the association changed its name from the Civil Engineering Research Association, has been known for some time. But it is understood that the association will retain the wide range of research interests implied by its current title. The suggestion that the construction industry should pay a levy to keep the information service going, considered by the National Consultative Council, seems to have met with the advice that only those who want information should have to pay for it. That the industry is already paying a levy of 1 per cent of its payroll probably also had something to do with the decision.

How the Building Research Station will finance the new information service is not yet known, but one possibility being considered is to run it along the lines of the Automobile Association, with a large number of subscribers who might need help paying a small annual fee. On the other hand, CIRIA with its 260 member firms and 180 local authorities feels let down by the industry. One reason given this week for CIRIA's lack of success is that too much money has been spent developing sophisticated information retrieval techniques, when what is needed is some way for advice to percolate to the grass roots of the industry—the "back-street" operators employing five men or less which make up the majority of the 80,000 building firms in Britain. The Building Research Station hopes eventually to adopt a more aggressive policy for the information service, with advertising (at present the station's service is not publicized) and possibly even advisers visiting the building firms.

TECHNOLOGY

Machining Stubborn Alloys

THE versatile International Research and Development Company at Newcastle upon Tyne is expanding its materials technology programme with a contract for £20,000 from the Ministry of Technology to develop a cheaper technique for electrochemical machining. The aim is to use alternating current instead of the conventional direct current. Electrochemical machining is chiefly used in the aircraft industry to form components with complicated shapes from the newer high strength alloys which are otherwise difficult to machine. It involves the removal of metal by electrolysis. The rate of removal, which can be up to one cubic inch per minute, is independent of the hardness of the metal but proportional to the current density. With direct current, something like 40,000 amps is required and the cost of equipment to control currents of this magnitude can exceed £40,000; if alternating current can be used the cheaper power supplies should reduce these costs by about two-thirds while the operating costs should be much the same. Mr D. J. Brown, who leads the research team dealing with e.c.m. at IRD, hopes that this will mean that the technique will become competitive in industries where the high capital costs are at present prohibitive.

IRD plans to divide the work into two stages—first it will try to define the basic problems using small scale experimental equipment. The technique at present is to pass the direct current through an electrolyte pumped through a gap between the component and a shaped cathode, generally copper. The current densities are highest opposite high spots on the cathode, so that the workpiece gradually assumes the shape of the cathode, which is moved forward to keep the mean gap constant. With alternating current, the electrode has to be inert at this stage or it would be eroded on the reverse half cycle, and graphite seems a suitable material to use. The wasted reverse cycle reduces the efficiency of the process, but Mr Brown hopes that most of the problems will be ironed out within the next six months and that efficiencies close to the theoretical maximum of 50 per cent will be achieved. The next step will be to build a large machine to study the feasibility of using the technique on an industrial scale, and it is hoped that this will be completed within a year.

PUBLICATIONS

Welcome New Journal

from our Geophysics Correspondent

So many new journals appear each year that scientists are annoyed and librarians infuriated by the growing proliferation. The editorial boards may contain a star-spangled list of names, but often these boards never meet and their members are only mildly in favour of the new journal—and that sometimes because they get a free copy. The view that journals are licences to print money, with a compulsory library subscription list, is prevalent and not without justification. It is pleasing therefore to record a new arrival which is highly welcome.

Journal of Geophysical Research has by its size mirrored the enormous growth in the earth sciences in the past twenty years. The International Geophysical Year, the Upper Mantle Project, nuclear tests and their influence on the environment, rockets to the upper atmosphere, weather satellites, the lunar programme, oceanography as an economic prospect and in its defensive role—all have led to an investment in the Earth and its environment of staggering proportions. *Journal of Geophysical Research* has dominated and shows every sign of doing so for years to come. Some figures illustrate this. In 1950 it was a quarterly, chiefly devoted to terrestrial magnetism and the ionosphere; 550 pages appeared that year. The figure had only risen to 650 by 1957, but the IGY, among other things, ensured that by 1959 it was a monthly and the number of pages per annum had quadrupled. In another year it was up to 4,200 pages, by 1963 it was coming out semi-monthly with 6,500 pages and in 1968 it was up to 7,700 pages. By this stage subscribers opted for the twelve monthly issues reflecting their interests—outer atmosphere and inner space or inner atmosphere and solid earth, a sensible option which took some of the weight off their bookshelves. And plaintive editorial pleas for brevity were issued as pages became more tightly packed.

Now another fission has been necessary, and meteorology and physical oceanography have their own monthly issue with a three way option open to readers. The emergence of the new issue, maintaining the high standards of its parents, seems sensible. Financial difficulties obviously dictated it, but the division is reasonable. For all that an awareness of neighbouring disciplines is very desirable, it is dubious whether this

awareness is fostered by high powered journal articles; the *Journal of Geophysical Research* already has a sister—*Reviews of Geophysics*—which is a better vehicle for scholarly exposition.

Such a booming industry is bound to have its snags. One is the perennial page charge problem. Fifty dollars a page is the current rate, which doubtless is no small influence in making the content almost entirely of American origin. There are clear signs that journals outside the United States which do not ask for page charges are gaining contributions from economically minded laboratories in the States. A second snag is the sheer numbers of pundits in the States, which can prevent speedy publication. The recent issues of the *Journal of Geophysical Research* contain few papers not revised after submission—perhaps the referees and editors are being a bit too dutiful in the maintenance of very high standards. Be that as it may, the journal continues to grow in quality and quantity. What shape it will have in 1980 is anybody's guess.

HIGH ALTITUDES

Pamir Research Station

THE announcement that a permanent high altitude research station is to be set up in the Pamir region of the Tadjik Soviet Republic in the Soviet Union emphasizes the importance being given to high altitude research programmes. Two of the official contributions of the Soviet Union to the IBP centre round human adaptation to high altitudes. There have been several annual expeditions to the Pamirs, the Tien-Shan region and the Caucasus. In 1967, one expedition placed a prefabricated research station on top of the 5,621 m Mount Elbrus in the Caucasus from an aircraft, and another involved the ascent by an international team of the 7,134 m Lenin peak in the Pamirs. There has been a good deal of monitoring of circulatory and respiratory parameters of native highlanders and members of expeditions. Reports submitted to the IBP this year, for example, say that one in four of the inhabitants of the Pamirs and Tien-Shan regions living above 3,600 m have hypertrophied right ventricles, while at 2,000 to 2,500 m, 5–10 per cent of the population show this condition.

The effort in high altitude biology is not restricted to human physiology. In the Pamirs, the Tadjik Academy of Sciences has sponsored research into the physiological adaptation of vegetation to high altitudes and has produced geobotanical maps of 2·5 million hectares. The new Pamir High-Mountain Biological Institute which is to be set up will, according to M. Asimov, president of the Tadjik Academy, grow out of the facilities that the academy has already set up in the Pamirs. It will have, however, far more than regional significance. The institute has been given the job of coordinating all biological research on the use of high altitude regions throughout the Soviet Union. It will be specifically concerned with high altitude agriculture and the breeding of varieties of crop plants that mature rapidly and resist frost. It may even produce the occasional cosmonaut, for the medical scientist Academician Vasily Parin has claimed that "it is best to select cosmonauts from among people who were born at an altitude of 2,000 to 3,000 m above sea level. They use less oxygen when doing the same physical work as lowlanders."

FORESTRY

War on Wasps

THE steam engine may be dead, but for Emmett connoisseurs there is always the wasp mistblower. This is one possible solution to the problem of getting rid of wasps from tall trees, designed by Drake and Fletcher Ltd of Maidstone for spraying insecticides to high levels, and tested as part of a research programme by the Forestry Commission. A special "coconut outlet", originally used for palm trees, injects the spray liquid into an air blast. Other methods investigated include rotating sprinklers attached to the tops of individual trees, and a mobile sprinkler which reaches suitable heights with a telescopic mast. Only the mistblower, which is mounted on a tractor, seems feasible for large-scale applications—the respective disadvantages of the other two are a dearth of skilled climbers to install the machinery, and a time-consuming erection process for each operation. Balloon-based sprinklers, tethered by three lines to the ground, were also considered, but their spectator value was outweighed by difficulties of control, and they were not tried out. The Forestry Commission has, in fact, now ordered some mistblowers of an improved type from the same company.

Wasp mistblower with "coconut" outlet in use.