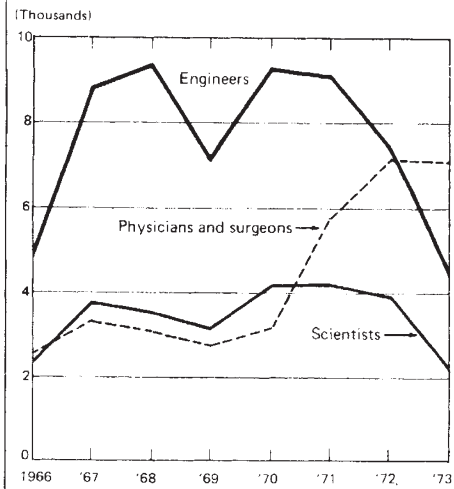
Brain drain reduced to trickle



THE huge influx of scientists and engineers into the United States during the late 1960s, which became popularly known as the 'brain drain', has been sharply curtailed by restrictive immigration regulations imposed by the United States Department of Labor. At the same time, however, physicians and surgeons are flocking to the New World in record numbers.

According to statistics published by the National Science Foundation, some 6,600 scientists and engineers entered the United States between July 1972 and June 1973—the first year in which the full force of the new regulations was felt. This compares with an annual influx of from 10,300 to 13,300 between 1967 and 1972. As for physicians and surgeons, 7,100 were admitted to the United States last year, more than twice the number corresponding in the late 1960s.

Designed to protect the jobs of American citizens against competition from cheap foreign labour, the new immigration regulations specify that an alien can work in the United States only if he has been offered a job which cannot be filled by a suitably qualified indigenous worker. Since there has been considerable unemployment among scientists and engineers stemming chiefly from cutbacks in expenditure on aerospace activities in the late 1960s, non-American citizens from those professions have a tough job getting round the regulations. By the same token, however, because there is a shortage of physicians and surgeons in the United States, qualified doctors are flooding into the country in increasing numbers.

The sharpest reduction in immigrant scientists and engineers between 1972 and 1973 was in the number of qualified Asians allowed to enter.

One sad irony is that scientists and engineers from India, for example, are being refused entry to the United States although there is massive unemployment among college graduates in India. At the same time, physicians and surgeons are flooding into the United States when they are badly needed in their home countries.

have gathered in Moscow to honour the Soviet Academy as a member of the international fraternity of science. With Academician Sakharov pilloried in the Soviet press as unworthy of the dignity of a Soviet scientist? With Jewish scientists who dare to apply for a visa for Israel submitted to all forms of harassment, from dismissal from their posts to petty and often puerile vexation, such as the ostentatious shadowing for no reason but to annoy? With an "opposition" seminar planned to be held in July in the Moscow apartment of one such dismissed scientist, Professor Aleksandr Voronel? With the British Royal College of Psychiatrists demanding in no uncertain terms last November an "impartial commission of enquiry by a broadly based group of psychiatrists of international repute, drawn from a number of countries", to investigate "the reports it has received about the alleged abuse of psychiatry in the management of individuals who take up a position of political dissent" in the Soviet Union?

In such circumstances, an international gathering might well prove too explosive a celebration. But the postponement announcement does not have the air of simply waiting for the tension to cool. The return to the grass roots, to the factories and farms, has the air of a total rethinking of how the event should be celebrated. If the outside world is critical of how the Soviet Union conducts its science, the Academy is willing to go out into the highways and byways and celebrate with the workers and peasants.

Start for UK on radiation

from our Solid State Physics Correspondent

BRITAIN had its first meeting on radiation effects in electronic devices on April 24—a one-day event organised by the Institute of Physics (IOP) at Imperial College, London. The meeting is notable mainly because of the general issues it raised. In the United States there has been an annual three-day meeting on this topic since 1964, the proceedings of which run to 250 pages but ten years later, the United Kingdom has had a mere one-day meeting with no published proceedings. The organiser, Mr K. J. S. Cave of the IOP Electronics Committee, termed the lag "regrettable".

Why are the levels of interest so disparate in the two countries and is this apparent lack of interest within the United Kingdom justified? In answer to the first question, the main difference could derive from differences in the size and philosophy of defence and space programmes in the two countries, rather than from differing extents of use of radiation sources for more mundane purposes (such as nuclear reactors, processing irradiators, ion implantation, radiography or basic research). A fair proportion of the physical investigations has been done in the course of producing 'radiation-hardened' semiconductor devices for the United States Department of Defense and, to a much lesser extent, for the National Aeronautics and Space Administration (NASA). The equivalent bodies in the United Kingdom government are not such expansive customers, although a few exploratory development contracts have been let by the Ministry of Defence. The difference here lies in the fact that United States strategic missiles must withstand nuclear attack, whereas the United Kingdom government has no such requirement. Space agencies in general seem to sponsor less work in this field in proportion to their need, partly because only a certain group of satellite trajectories intersect space radiation belts and perhaps the planners presume that they can avoid these—or fudge a solution.

As to the second question, the measure of justifiable interest for physicists should be the degree of understanding of physical processes which derives from the research. It is widely agreed that the physicist who studies the effect of radiation in an electronic device usually ends up by knowing more about that device than the man who designed it. Thus, we can say that the device physicist should gain benefit from such studies. Furthermore, it is common that investigators have to improve the general level of knowledge of radiation-induced defects in solids in order to formulate improvements in the 'radiation hardness' of a device. Thus, the phycist with an interest in the defect state of solids should find such work a suitable challenge. Similar arguments can be developed for ceramics, metals, plastics and other bulk materials and it can be said that the return in basic