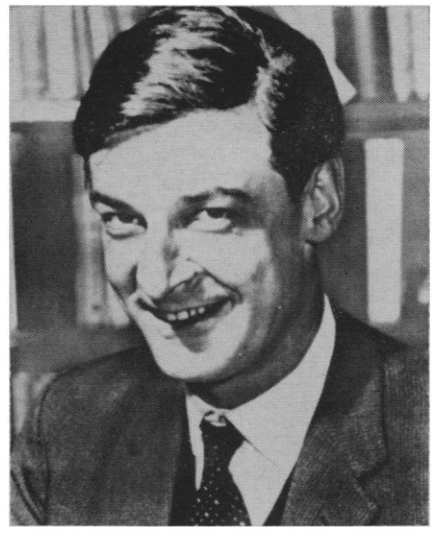
tee that channels both government and private money into research. Proposals recognized to be entirely reasonable may nevertheless take many months or even years to win approval. Sometimes restrictive conditions are attached to grants. Thus, Hoyle complains he was required to change from one computer to a cheaper one in the middle of a program of computation, and in the end used free time in the United States instead. Research scientists as a class feel they spend too much energy negotiating with public committees.

Others complain of the squalor of academic life. The universities lack the funds needed to provide backing for research. Secretaries, technical assistants, and equipment for teaching undergraduates are all scarce. The result is that physicists working with equipment costing millions of pounds may still have to write letters in longhand. Bush and Paul complain of the accumulation of these irritations. Their comments betoken a sense of neglect running through British academic life which is irksome to a generation brought up to expect that scientific inquiry should be part of a zestful intellectual adventure.

Some departing scientists, however, make no specific complaint of this kind but say they will be able to do better work in the United States. Pople is in this category. He says that the community of people working in his own field



Ian E. Bush

of molecular physics is more vigorous and more stimulating in the U.S. The question has also been raised of whether the conspicuous lack of graduate schools in Britain may not be a part, but only a part, of this trouble. But in any case these comparisons have been a cruel blow to a country which has fondly imagined that all the more obvious defects of its universities were compensated for by their intellectual virtues.

There are also more material motives for the emigration. Scientists leaving for the United States are shy about saying what salaries they will receive, but these are much higher than in Britain. Pople, for example, has been earning 4085 pounds ($11,438) a year, which is almost as much as any scientist here can hope to earn, whatever his age. In the U.S. he will earn nearly twice as much. At the other end of the scale, many of those who emigrate almost before the ink is dry on their Ph.D. certificates do so to escape several years of deprivation. There is no question that the new pilgrims can enjoy a much more comfortable life in the U.S. than Britain will be able to offer them in the foreseeable economic future.

It is unrealistic to expect that Britain can compete in ways like these, and that is the cornerstone of the Government's defense against its critics. Yet it is hoping to slow down the emigration by giving the universities money toward the overhead cost of graduate education and by creating professorships in the gift of the Royal Society. The Labour Party promises a more expensive remedy, and would distribute up to 30 million pounds ($84 million) a year to the universities for the support of research in the humanities as well as the sciences.

The sociology of the emigration is by no means understood, and it remains to be seen how effective these policies will be. Statistical information is sketchy. Everybody knows that one in eight of

Brain Drain—The View from This Side of the Atlantic

The fact that the British are coming is understandably no source of distress to the American institutions that will benefit from their presence. And the prevailing view among government science advisers is that, in the long run, British science will benefit from the agitation over the "brain drain." "They needed something like this to shake them up," said one administration official in recalling the lamentations he has been hearing for years from British colleagues.

As for the possibility that the U.S. might lend the British a hand in stemming the flow, the answer was succinctly stated by a staff member of the State Department's science office: "What can we do?"

At the Worcester Foundation, destination of the Bush team, executive director Hudson Hoagland offered the view that "Bush's departure may do some good for Britain." He added that Bush and his colleagues are expected to arrive about 1 September and that they will occupy a research building now under construction.

"They will be supported with our own funds at first," he explained, "but we hope that they will soon receive an NIH grant to continue their work"—a prospect that may lead the British to conclude that the U.S. Government is not altogether disassociated from the westward migration.

The arrangement for Bush to join Worcester was completed about a year ago, according to Gregory Pincus, research director of the institution. "Bush is an old friend of mine," he said. "He remarked to me that he was about ready to leave England, and I said, 'Why not come to us?' And that was that."

At the governmental level, the only action so far has been to bring some of the migration numbers up to date. These show that the number of British scientists and engineers seeking citizenship here totaled 575 in 1961; 664 in 1962, and 912 in 1963.

The view that the exodus may be a blessing in disguise is not particularly palatable to the British Government. As Winston Churchill said when told that his electoral defeat in 1945 might really be a blessing in disguise: If it is, it is very well disguised.—D.S.G.