

right to point to the anomalies which spring from the great fragmentation of many industries. But simply to arrange for mergers will not guarantee a cure. In exactly the same way, research and development by itself is not a sufficient condition for industrial prosperity. It is also necessary to arrange that industry has some attainable goal towards which to work. In fostering the development of computers, for example, the British Government would be well advised to spend at least as much energy (and possibly more money) on the encouragement of use as on the development of innovation. And the best way of bringing about mergers is to arrange that the economy should become thoroughly competitive. In other words, the economists have as much to say about technological improvement as have the technologists themselves. If this is how the Ministry of Technology is thinking, everybody will be delighted.

MONEY FOR RESEARCH COUNCILS

THE Council for Scientific Policy seems to have won a fair settlement from the British Government over the budgets for the research councils in the financial year immediately ahead (see page 749). Less than a year ago, when the council produced its first annual report, there were some grounds for fearing that the spending of the councils would be kept on a much tighter rein. The possibility was real that the research councils might be kept on such short commons that they would be unable to take on new projects. Since then the economic situation has not improved, to say the best of it. In the circumstances an increase of 9 per cent in the aggregate budget of the four research councils operating in the natural sciences is as much as could reasonably have been expected. It is true that much of the extra money will be eaten up by the steadily increasing cost of keeping skilled men efficiently at work, and the Science Research Council will be particularly hard pressed by the welcome growth of the postgraduate population at the universities. But there should be something left over with which to break new ground. That is something to be grateful for.

There remains the problem of next year—and the one after. Will the Government be willing to underwrite the steady growth of the research councils which circumstances appear to make necessary? And are the research councils properly organized to do what is now expected of them? There is certainly a case for asking whether the medical and agricultural councils are right in spending a substantial part of their income on the direct support of research units and groups. More grant giving might give them more flexibility. And what should be the relationship between the research councils and the University Grants Committee? There is much to be said for Lord Bowden's argument that the research councils should be thought of as permanent supporters of university research, not merely as sponsors of new projects. But that

implies still faster growth. In other words, there are plenty of questions to occupy the Council for Scientific Policy in the year ahead.

DR. ROBERT OPPENHEIMER

It is sad but also inevitable that Dr. Robert Oppenheimer should have acquired the public reputation of the first designer of nuclear weapons. What went on at Los Alamos during the last war was too important to be forgotten. One of Oppenheimer's most remarkable achievements is that he was able to make bombs and still seem to remain on the side of the angels. In the years immediately after the war, he was well served by the way in which the respect and admiration of his colleagues, and indeed of the whole profession of physics, were somehow translated into public esteem. It is also remarkable that he survived so well the inquiry into the granting of his security clearance to work as a consultant for the U.S. Atomic Energy Commission. The inquiry may have been a public scandal, and a malign attempt on the reputation of a distinguished man, but it was also damaging. In the eyes of all but a handful of fanatics, Oppenheimer was acquitted of the serious but implicit charge of disloyalty, which is only right and proper. But he emerged from the inquiry a little more like ordinary mortals, with feet of clay. What did he really tell the security men about Chevallier? And was he right to accept security restrictions for others but not himself? These remain absorbing questions. It is a tribute to him that they never seriously diminished the regard in which he was held.

With Oppenheimer dead, however, it is a pity that these cloudy issues must for many people conceal what must in retrospect be his greatest achievement. His reputation among his colleagues rests not on weapons nor on quasi-judicial inquiries, but on the way in which, almost single-handed, he carried the quantum theory to the United States. In this esoteric field he was a kind of St. Augustine. In the early thirties, he gave his contemporaries and their students an opportunity to swim quickly with the new tide then sweeping through Europe. By his art as a teacher, he made them see how important the consequences would be. In doing so, he helped to lay the foundations for a community of physics in the United States which is one of the intellectual attainments of this past few decades. Oppenheimer himself may not have done the most spectacular work, but his collaborators and students were scattered everywhere. If he had been less modest, he could have claimed to have had a hand in most of what was done in the thirties to make nuclear physics intelligible. But Oppenheimer was more than just a physicist. He had a flair for seeing wider issues. He was a great talker, with a gift for putting things well. After the hearings on his security clearance, he sometimes seemed to be a remote and even lonely figure, yet he somehow retained a flair for seeming young. That is yet another reason why he will be acutely missed.