Science Policy Shapes Up as Issue in Coming British Election

Dissatisfaction with economic position causes major parties to pledge greater emphasis on research.

John Maddox

It is now certain that science, and the public administration of science, will play a dominant part in the General Election that must be held in Britain later this year. Both the Conservative Party and the Labour Party have declared they will establish policies for the economic future of the country on the use that should be made of science and technology. Even the Liberal Party, whose representation in the House of Commons is so small that none of its M.P.'s can afford to be an expert on anything, has now acknowledged that science is important. Politicians are rapidly extending their vocabularies to include such jargon words as "R-and-D." In political speeches it has become as necessary to refer to British achievements in molecular biology as to British interests East of Suez. The reasons for this transformation are important in themselves.

The overriding concern is to find some means of making the country as a whole more prosperous. The cruel winter of a year ago, with its bitter cold and the shock of rejection by the Common Market, has set in train a thorough reexamination of the capacity of Britain to survive in the modern world. Realism has become fashionable. People are asking whether the country has not overextended itself in its military commitments abroad. They are asking whether British industry can hope indefinitely to earn a living for a country whose population is growing steadily and whose need to fight in export markets abroad is greater than it has ever been. The invariable answer seems to be that those parts of British industry which appear not to have changed since they were founded a century or more ago should rapidly be modernized. A host of analysts have concluded that British industry does not make sufficient use of science. The clamor is so loud that no politician can ignore it and feel safe.

Another factor contributing to the increased attention to science is the current concern for education, and especially for increasing the population of students in universities and other institutions of higher education. The proportion of the population receiving full-time higher education of one kind or another has increased from 1.2 percent at the beginning of the century to 8.5 percent in 1962. But now, largely because of the weight of evidence collected by a specially appointed Government Committee on Higher Education, under Lord Robbins, it is recognized that a further massive expansion must be started. The population of students in all branches of higher education is to be increased from roughly 200,000 to 500,000 by 1978, and possibly to 632,000 some 20 years from now. Science and technology, but especially technology, are to be given particular attention, for the Robbins committee has now lent statistical backing to the long-standing suspicion that technology is foolishly neglected in Britain. Of all science degrees awarded, for example, just over a third are in technology, compared with more than two-thirds in Western Germany and about a half in the United States.

Another reason why science has become a public issue is linked with a reappraisal of the character of British government. The Civil Service uses a high proportion of the country's talent, and its flair for administration, like its capacity to make disinterested judgments, has survived intact the ups and downs of the postwar world. Yet it remains, for practical purposes, a band of professional amateurs. At last it seems to be dawning on the Government that a great many of the problems of modern administration are too complicated, and too technical, to be solved by inspired hunchwork. In transport, building, and a host of other fields of government, it is recognized that some means must be found for making greater use of science.

If it were necessary to fix in time the beginning of this self-conscious reappraisal of the relationship between science and government, the date would be a few months before the last general election, in October 1959. In that year the British Labour Party announced that, if it were successful in the election, it would create a new government post for a Minister of Science. The Conservative Party, which eventually won, declared its faith in the future of science by promising to appoint a Minister *for* (but not *of*) Science. In the event, Lord Hailsham, who has since metamorphosed into a commoner called Mr. Quintin Hogg, became the first holder of that office. To a large extent the present wave of concern for science is colored by his doings, partly because he has appointed committees and produced books and a great many speeches, and partly because his obstinate refusal to bow to his critics on important issues has maddened them into energetic and vociferous activity.

Historically, the relationship between science and government in Britain can be traced back at least half a century. Since World War I, the British Government has become increasingly involved in the support and even the conduct of research and development. Now the government supplies the lion's share of the money for research and development, and also carries out, in laboratories directly under its control, a large proportion of this work. Specifically, in 1961–62 the British Government supplied 60.7 percent of all the funds spent on research and development and carried out 28.1 percent of the work in its own laboratories. These figures alone would ensure that the question of how best to organize the government's activity in research and development should be a matter for constant concern.

Public money finds its way into research and development through a great variety of channels. The Ministry of Defence, the military service ministries, and the Ministry of Aviation (which

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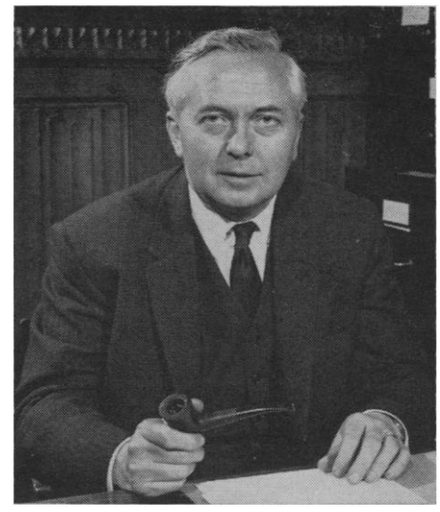
still retains many of its functions as a procurement agency for the defense departments) are the biggest spenders, as are the comparable agencies of government in other countries. In 1961–62, no less than 38 percent of all research and development was in the area of defense, and, of this total, exactly one-third was spent in government laboratories. In civil research, the separate ministries of the government support laboratories in fields such as agriculture and civil aviation. Then there are agencies such as the Atomic Energy Authority (which consumes a third of the government's spending on civil science, and roughly a twelfth of all the country's research and development), the General Post Office, and the other nationalized industries. In the universities, the government's contribution to research is more than 20 times as much as the universities pay out of their own resources.

Despite all this public support of research and development, British industries have not advanced technically at the pace that the economy requires. This is why concern for the administration of science now centers on the government organizations closest to industrial research and development.

These form a complicated pattern. There is the National Research and Development Corporation, which lets development contracts to industry and hopes to recover its investments in patent royalties. It is responsible to the ministry concerned with commerce and industry. There are similar organizations responsible to the Minister for Science. Since the war their budgets have increased, in total, eightfold. The largest of them is the Department of Scientific and Industrial Research (DSIR), which maintains 12 large laboratories of its own, supplies research grants to the universities, and helps support 53 laboratories, known as research associations, which are intended to conduct basic research for collaborating groups of industrial companies. The Medical Research Council, the Agricultural Research Council, and the Nature Conservancy function in similar ways, though on a smaller scale, and without being concerned with cooperative research.

Over the years, but especially in the last five years, the fitness of these organizations for their intended purpose has been questioned ever more insistently. It is common ground between the political parties that the Government must have some means of exerting a creative influence on the pattern of scientific advance, in industry as well as in the universities. It is even agreed that the existing machinery is not sufficient for the job. There is, however, profound disagreement about the kind of organization that should be created in its place.

Quintin Hogg



Harold Wilson

There are also less tangible disagreements on whether government support for research and development is adequate. The total spent by public and private agencies on research and development in 1961–62 is estimated to have been $1775.2 million, which works out as 2.7 percent of the gross national product for that year. This compares favorably with the proportion of the GNP devoted to research and development in every other Western European country, and falls not far short of the 3 percent devoted to research and development in the United States. The proportion of the British GNP being spent on research and development is also increasing rapidly. If growth continues at the present rate, the proportion will double in 11 years. On the face of things the record is a creditable one, and the Government has not been slow to point this out.

Not everybody is cheerful, however. The Advisory Council on Scientific Policy, whose duty it is to provide the Minister for Science with advice, let it be known a year ago that the increase in the proportion of the GNP spent on science and technology might "reflect a failure of production to respond to increasing investment in research and development." The alarming rate at which trained scientists, and especially Ph.D.'s, are leaving Britain (usually for the United States) is taken by many to be a proof that more money needs to be spent in the universities, to make research there more attractive. The leader of the Labour Party, Mr. Harold Wilson, has roundly declared that any government of which he was Prime Minister would invest much more in research and development. Mr. Wilson's plans are still ill defined, but there seems no doubt that he has in mind a radical transformation of the pattern of British industry with the help of science and technology. He talks of the creation of "new industries," and he is evidently looking forward to such a rapid process of innovation that there will be, among British companies, a drastic process of natural selection in which the fittest for survival will be those companies best able to turn science and technology to a creative purpose. Whatever happens, his theme is bound to play an important part in the election that lies ahead.

Eventually the Government has no intention of being caught unawares. Already a new pattern is taking shape in the administration of public science. The most noticeable change is that Mr. Hogg has been converted to the view that a Science Minister must play an active part in the initiation of research and development. At the beginning of his term of office the Minister was anxious to be looked on as an impresario for science, not as a director of research. He used to describe himself as a "midwife," by which he meant that his role was that of providing the scientific community with its material needs, but not with its marching orders.

Several developments have forced him to abandon this position. For one thing, the old machinery has proved unwork-

able. One frequent irritation has been that working scientists used to be forced to argue their demands for money before people quite unaware of what science is for, or what it is like. Frequently the scientific community was left with the uneasy feeling that its essential needs were dependent on the arbitrary goodwill of the Civil Service. A more serious development has been the recognition that Britain has no effective machinery for deciding how to allot priorities for scientific research and technical development. How much should be spent on space research? How far should Britain go in the building of still more powerful particle accelerators? Is it right that the Atomic Energy Authority should be spending $140 million on research and development? The Advisory Council on Scientific Policy, which might have given advice on matters like these, has been quite ineffectual.

Finally, there has been the problem of industry. There has been no mechanism by which the government could channel public funds into industrial developments of its own choosing. The National Research Development Corporation has dabbled in a great many fields, from helicopters to antibiotics and from electronic computers to hydraulic transmission systems, but has been investing at a rate of only a million pounds a year or so, and has been uncomfortably hampered by the requirement that it should aim to recover its investment in patent royalties. The Department of Scientific and Industrial Research has tried to let development contracts with industry, but its tiny successes have served chiefly to demonstrate that much better machinery must be designed.

The Labour Party has made much of these shortcomings, and will no doubt continue to do so. It remains a sober truth that the Conservative Government could have waked up to these deficiencies much earlier. But now, with the General Election less than 8 months away, it has embarked on a radical transformation of its machinery for science.

The blueprint for this transformation is the report of a committee appointed by Mr. Hogg 2 years ago, and called, after its chairman, the Trend Committee. The nub of this complicated set of recommendations was the proposal to create a powerful government department to be known as the Industrial Research and Development Authority. This is intended to replace the present Department of Scientific and Industrial Research, and is to be provided with the powers and the funds to take over the Government's existing interests in the civil field of industry. Support for research in the universities, at present the responsibility of the DSIR (in the physical sciences at least), is to be transferred to a new body called the Science Research Council.

As a preliminary to the radical recasting of the machinery for supporting civil science which the Trend report implies, Mr. Hogg has been made the minister in charge of the whole of education and the whole of science as well. Only the National Research and Development Corporation remains outside this gargantuan administrative machine. The Government is hoping that by the beginning of April it will have been able to equip itself with entirely new instruments for influencing the course of research and development in the whole civilian field.

Its intentions would have made a greater impression if the report of the Trend Committee had been regarded as a complete set of Mosaic tablets. Unfortunately for the Government, however, and for Mr. Hogg in particular, this has by no means been the case. For one thing, the Trend report is suspect because it offers no prescription for making fuller civil use of the laboratories and people engaged in defense research, and often underemployed. The Trend report also overlooks the now widely recognized need to bring the work of the Atomic Energy Authority more closely into line with the pattern of research and development in fuel and power as a whole.

The response of the Government to the Trend report has been criticized not merely because of the report's defects but also because of the strange decision to lump education, science, and technology together in one great ministry. Even though Mr. Hogg is respected as being one of the most able members of Government, nobody seriously thinks that one man can oversee such a vast field as that with which he is now saddled.

In the opinion of the Labour Party, the Government's machinery for stimulating civil research needs to be linked closely not with education but with industry. If Mr. Wilson ever has his way, there will be a Ministry of Industry and Technology, and the organization for giving support to industrial research will be placed alongside the government offices responsible for such things as the location of industry within the country. At one time Mr. Wilson was talking as if he would use the Ministry of Aviation, which is responsible for a good deal of research and development for defense, as a nucleus for civil research and development, but this notion seems now to have been abandoned. Beating swords into plowshares just for the fun of it has been recognized not to be good policy.

Thus has arisen the curious paradox that the Labour Party, which has consistently made more fuss about science than the Government, would make many fewer changes in the machinery of government than are now in prospect. In recent months the Labour Party seems to have graduated to the view that the reform of institutions is much less urgent a need than the galvanizing of industry into the more rapid exploitation of scientific developments, in prospect and extant.

Just how this conflict will be resolved depends critically on the timing of political events ahead. The House of Commons is already overwhelmed with a great burden of legislation, and it is hard to see how the Government will be able to find time for a major revision of the machinery of government in the realm of science and technology if, at the same time, it decides to hold the General Election before midsummer. But if the election is held before midsummer, on the present showing of the opinion polls the Labour Party would form the next government. In the circumstances it is inevitable that the officials who serve the existing machinery should be torn by all kinds of conflicting uncertainties. It is therefore comforting and absorbing to note that all the talk there has been of the civil potentialities of science has already begun to affect the temper of research and development throughout industry. This is why some skeptical people suggest that Britain does not need a policy for research and development, but only occasional bouts of public discussion on this theme.