Britain Confronts Its Technical Options

London, 26 November. When Harold Wilson was campaigning for the power that he and the Labor Party now have held narrowly for 5 weeks, his most striking promise was that his government would infuse greater technical sophistication into the administration of Britain's tired economy. Having created a new ministry of technology and imported economists and scientists from the universities into high places in the mandarinate of Whitehall, Wilson seems to have begun trying to deliver on the promise. It seems, then, that a time of crucial decisions has arrived for British science and technology.

But now that the decisions are being faced, it becomes clear that these choices are inseparable from the larger questions of whether Britain wishes to join the rest of Europe and compete with the United States, economically and militarily, or merge in an Atlantic community that would include the United States. In either case, Britain might be able to retain some of the highly specialized technical activities she has built up in the last 20 years as she sought, partly unconsciously, to retain some of the purposiveness, if not the grandeur, of a great power. If Britain chose, by action or inaction, to go it alone, the calculations would have different results.

It is little wonder, then, that the dawn has been uncertain for the British researcher hoping for wider horizons. On technical and other fronts the new Wilson administration has had to tackle immediate troubles first. Planning for a better climate for science and its application has only begun. Some of the initial actions have stirred widespread uneasiness, even though most of these actions seemed inevitable.

As soon as it took office, the Labor government saw that economics would have to dominate its thinking. For one thing, the excess of imports over exports was much worse than had been expected; for another, the Labor victory was so narrow that a new general election was at least a possibility, and so Labor needed to mobilize every ounce of political support it could. Trade figures that became available to the Laborites the day they took over showed that the deficit in Britain's balance of payments could exceed $2 billion for 1964. To the Laborites this spelled crisis. Immediately and without warning they imposed a 15 percent surcharge on all imports to Britain, a step contrary to the rules of the European Free Trade Association to which Britain belongs. To defend the value of the pound from a "run" that began developing in money markets, the government slapped two full percentage points on the rate at which the Bank of England lends money. As further deflationary measures and to help pay for social programs, the Labor government announced an immediate increase in gasoline taxes, and income and corporate tax increases for next spring. At the same time, the Labor government decided to push ahead with such social programs as renationalization of the steel industry, control of urban land development, ending of charges for prescription drugs, and an increase in pension payments. The ticklishness of the situation was emphasized when the balance-of-payments and sterling crises apparently forced the government to tell rank-and-file members of Parliament that pensions could not be boosted before spring.

Economic questions strongly colored the government's fire-brigade thinking about technological issues. The government began special reviews of the aviation industry and of defense-weapons-systems procurement. The Labor Party's announced intent to give up an independent deterrent for Britain, short-term concern over the balance of payments, and long-term ideas about improving Britain's performance in world trade all added urgency to the special reviews.

Abruptly, the Labor government announced that it was deeply worried about the total expense of the 50–50 English-French Concord project to build a Mach 2.2 airliner, and that it not only doubted that the governments would ever get back a dime from the project but also foresaw that airlines would have to be subsidized to run the plane.

Anguish such as is felt over the probable death of the Concord project is not a new feeling in Britain. In an effort to remain a major military power, Britain has paid for large aviation and atomic energy programs since World War II. Each has yielded civilian by-products. But in recent years several large military projects have had to be killed because the expense was just too great, and a number of civilian projects have proved uneconomic. So when they took power, the Laborites faced an ironic situation for a party that had promised to spend boldly to stimulate the civilian economy through technical fallout. The Labor ministers have had to begin their days looking at projects with a cold eye, from the viewpoint of cost-effectiveness.

As the cold eye fell on the Concord, the TSR-2, a treetop-skimming supersonic nuclear bomber, and the vertical-takeoff fighter P1154, the reaction from the British aviation industry, labor unions, and the French Government was sharp. If the Concord project was stopped, said one British aviation leader, "we might as well put up the shutters." The French Government refused to talk over Concord, when such talks were suggested, and just kept tapping its foot, waiting for the British to kill the project outright.

Although many commentators pointed out that Britain and France would have a much better chance of successfully competing with America if they switched to construction of a really large subsonic passenger plane, many people said the end of the Concord project meant severe contraction in the British aviation industry. This industry now employs 260,000 people. It has

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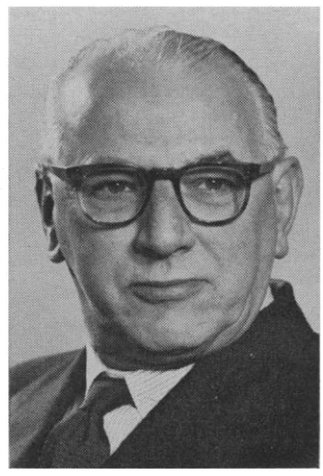
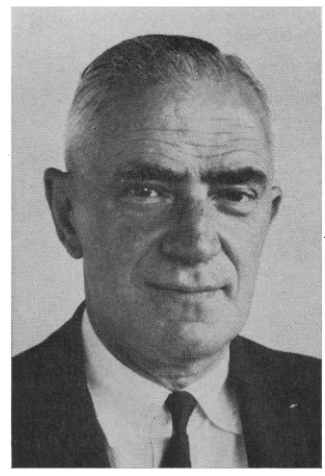
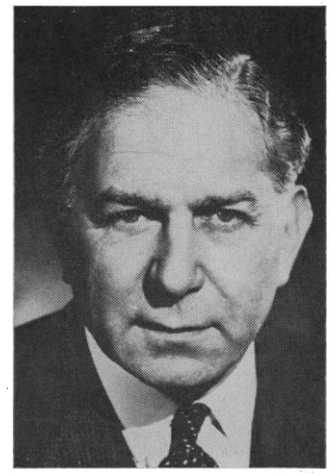
Roy Jenkins



Frank Cousins



Michael Stewart



Solly Zuckerman

earned $4.2 billion from exports since World War II, $1.65 billion of it from engines. It provides work for a large group of Britain's scientists and engineers; the Ministry of Aviation employs 1200 scientists and 110 engineers in research and development. Hence, it was a shock, if not much of a surprise, to learn that the Labor government wanted to kill Concord before Christmas, to halt development before big money and manpower commitments were made. Only about 3000 people are working on Concord in Britain now; the numbers in France are larger.

Despite great pressure to keep the project alive, or at least to build prototype planes, the Concord seemed ripe for death for many reasons. Some aviation experts doubt that any supersonic airplane can make money. Notable among these is Bo Lundberg, director of Sweden's Flygtekniska Forsöksanstalt. Lundberg and others note that supersonic planes would have to fly part of the time at hours when people prefer not to arrive or leave. The problem of sonic booms might restrict operation of the planes to sea routes. The number of hours of operation at supersonic speeds would be small, and the number of new systems to be introduced simultaneously with use of such planes would be large. Aside from these general problems, the Concord probably would be only an aircraft of transition, to be flown for a few years until the American Mach 3 airliner came into service. As if this were not enough to make the project look doubtful, the estimated total cost of the Concord rose this year from $400 million to $1 billion, partly because the design had to be changed to extend the plane's range. Despite this extension, the Concord still would not be able to make nonstop flights from Frankfurt or Rome to New York, and this would rule out purchases by German and Italian airlines, which are important customers for a European supersonic airliner. The changes of design also reduced the Concord's time margin over the American model.

The parliamentary debate over this exemplar of the technical issues Britain faces has just begun, but some of the exchanges have been interesting.

On 5 November, Quintin Hogg, the recently departed Conservative minister for science, said:

"The Americans are very good allies, and being half American, I trust them and love them as no other foreign nation in the world, but make no mistake about it, when it comes to technological advance they are not on the side of European technology.

"We need to recognize this fact. They will drive us out of the aircraft market if they can. They will drive us out of the generation by nuclear power of electricity if they can. They will do so, no doubt, by legitimate means; but if we care, as I care, and, as I believe, Labor members care no less for the real technological advance of this country, we are not going to let them do it."

In building up the economies of less-developed areas, Britain was creating competitors in established technology, Hogg maintained, and so advanced nations would have to bet money on complex enterprises like Concord, some of which would fail.

Roy H. Jenkins, the Minister for Aviation, replied that there was no fierce consumer demand to get to New York in 2.5 hours instead of 6.

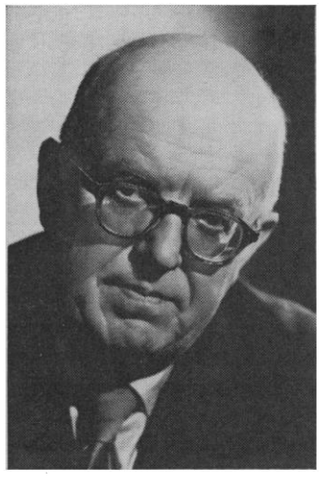
"There is no urgent human need to be met and no human suffering to be eased. That does not mean that the supersonic age should or would not happen but it does mean that whether or not we make it happen should be judged on the basis of hard-headed commercial consideration. . . .

"We must not automatically think that everything which is new, everything which is advanced and everything which sounds exciting is necessarily the best way to deploy our scarce resources. The aircraft industry has in recent years absorbed a very large part of these scarce resources."

It is in this frame of mind that Jenkins will be considering whether to divide up his ministry, which since World War II has combined supervision of civil aviation with research, development, and the supervision of aircraft production. His review of the aviation industry will cover this question, as well as the future of the private firms that were sharply concentrated a few years ago by a combination of government pressure and such bait as the VC-10 airliner order.

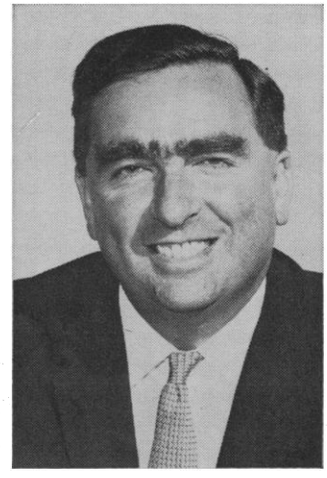
Studies of reorganization and rumors of more have not been restricted to the aerospace field. Reorganization has been in the air around Whitehall since the new officials responsible for British research and development policy were appointed.

Besides Frank Cousins, the new minister for technology, and Michael Stewart, the new minister for education and science (whose appointments were noted



Lord Snow

Lord Bowden



Denis Healey

Lord Chalfont

in *Science*, 23 October), other major figures are as follows.

1) Sir Solly Zuckerman, professor of anatomy at Birmingham University and student of primate morphology. Zuckerman has advised successive governments since 1939, and was science advisor to the Pentagon-style integrated ministry of defense created last spring by the Conservatives. In the new administration he keeps this job and adds two more: those of advisor to the foreign ministry on the scientific aspects of disarmament and scientific advisor to the cabinet office. In this last job Zuckerman shares with economist Thomas Balogh the privilege of direct access to the prime minister. Zuckerman is reputed to have helped kill the idea of using Skybolt missiles on British bombers, and is said to want to cancel the TSR-2 project.

2) Lord Snow of Leicester, Cousins' deputy at the ministry of technology. The well-known novelist and commentator on science and public affairs has rejoined the government 5 years after he left a position on the Civil Service Commission. He specialized for many years in recruiting scientists to government service. Snow has talked a great deal about raising the prestige of engineering in Britain, and the new ministry will study ways of doing this. In his first House of Lords speech he discussed improving business management and urged Britain to learn how to deal as well with creeping crises as it deals with sudden ones.

3) P. M. S. Blackett, the almost-full-time deputy chairman of the advisory council for the ministry of technology, which Cousins heads. The council, which includes such men as Sir Leon Bagrit, head of Elliott Automation, is deliberately composed of people "who don't have any spare time, the ones who are making progress," according to Cousins. Blackett won the Nobel prize in physics in 1948. A professor of physics at Imperial College, London, Blackett is the leading scientific advisor to the Labor Party and has written often about ways of stimulating programs for temporary assignment of British academic staff members to universities in the underdeveloped countries. Blackett will have much to do with studies, to be launched soon, of the machine-tool, electronics, and computer industries.

4) Lord Bowden, one of two deputies to Michael Stewart at the ministry for education and science. Bowden, who will be in charge of higher education and scientific research, is principal of the Manchester College of Science and Technology. He was made a life peer in 1963. He speaks often about the introduction of computers into industrial processes. He figured strongly in the Labor Party's consultations with scientists about the shape of the new ministry of technology. In his first speech as a member of the government he discussed British education in terms of cost-effectiveness, and the verdict was unfavorable.

5) Also of interest to scientists is the new minister of defense, Denis Healey, who is reviewing weapons systems commitments. The decisions he and the cabinet make about Britain's military role will affect profoundly the future of aerospace and atomic research. As one of the ministers of state under Foreign Secretary Patrick Gordon Walker, Wilson has appointed a special minister for disarmament. He is Lord Chalfont, who, until he was made a peer, was Allan Gwynne-Jones, military correspondent of the *Times* and a noted opponent of Britain's independent-nuclear-deterrent policy.

Most observers were surprised at first at the appointment of Cousins, a union leader, to a new technical ministry and the substitution of Stewart as scientific minister in place of Richard Crossman, who became housing minister. But the reasoning emerged quickly enough. Cousins is a powerful figure in the Labor Party, and one with strong views. For years he made the annual protest march to the nuclear weapons center of Aldermaston, with his wife. Cousins might have caused Wilson difficulty outside the government. But, more to the point, he had served on the advisory council to the old Department of Scientific and Industrial Research and was a member of its industrial grants subcommittee. Getting managers and workers to cooperate in technical change is as important as the actual stimulation of technical development, the Laborites feel. Cousins would be useful for this, and also in the effort to hold the line on salaries and wages. As for the Crossman-Stewart switch, the reasoning was equally simple. The massive transfers of agencies to the new ministry of technology gave only a secondary role in science to the department Stewart now heads. Crossman is a leading figure in the Labor Party and a fighting debater. In a cabinet that might have to call another election soon, Crossman might be more useful

in the front-line job of getting Britain's rate of dwelling construction above 400,000 units a year. Besides, he had been quarreling with the teachers last spring. Stewart, who had long been a Labor spokesman on education, seemed a natural to handle tactfully the massive programs of reforming British education which have been recommended in a stream of reports that is still flowing.

The shape of the reshaped scientific organization these men will supervise is emerging. In mid-November the Wilson government sent Parliament a draft bill dividing responsibilities between Cousins and Stewart, giving them formal responsibility over scientific budgets and leaving them much latitude to shuffle laboratories. The details of the shuffling came out in parliamentary statements and a press conference on 26 November.

The bill carves up the science-technology-education empire created last spring for Quintin Hogg. Higher education and basic science are left with Stewart. Cousins takes over a wide range of laboratories, to help him stimulate development, as well as the patent-exploiting activities of the National Research Development Corporation.

The draft bill not only gives Cousins the Atomic Energy Authority (AEA) but also specifically allows him to assign it nonnuclear work. At the press conference, Snow indicated that the AEA would not be broken up, as rumored. Instead, the AEA would be kept together as a reservoir of talent ready to tackle new problems. These remarks went beyond assurances Cousins gave earlier in a special meeting with worried AEA professionals. He told them that no decisions had been taken. The professionals have reason to worry, for not only have weapons development and manufacturing programs been cut to the bone but some sort of shake-out in reactor development, the authority's leading program, is likely. Some observers find it hard to see how Britain can compete with American water-reactor designs unless all the European reactor teams work together. The British government agency which buys power reactors from the three nuclear-power consortia (each consortium is a group of British firms joining to bid on construction of British-designed power stations) has announced that it won't place any more whole-station orders after next spring. The consortium members will have to bid on components, and the electricity authority will be responsible for the overall design. This will mean transferring reactor-design people to other work. And then it is possible that the electricity authority will insist on buying at least some American reactors for its next 5-year nuclear power station program.

The National Physical and National Chemical laboratories, where there has been discontent about a tendency toward more industrially oriented work, will be merged and moved over to Cousins' ministry. The laboratories do much work analogous to that of the U.S. Bureau of Standards. Difficulties at the National Chemical Laboratory (NCL) have been intense recently. Earlier this year, about 40 of the Laboratory's 220 scientists were transferred to another laboratory. In an NCL report on aid to geology overseas it had been recommended that metal processing work be concentrated at the Warren Spring laboratory. Scientists at National Chemical who had been working on metals chemistry said their work had changed direction since the report was issued, and many of them asked to be transferred rather than go to Warren Spring. The National Chemical's director, J. W. Mitchell, from New Zealand, resigned after less than a year and returned to the physics department of the University of Virginia. There had been much uncertainty about the future of the National Physical Laboratory (NPL), whose director Gordon Sutherland left this year to return to university work. After the Labor government took office, professionals at NPL protested that they were not being consulted, and they argued against a division of work into categories of science and technology in government laboratories.

The division of responsibility between Cousins and Stewart means the end of the Department of Scientific and Industrial Research (DSIR), created in the emergency of World War I and recently housed in Hogg's empire. Most of the department's laboratories, the joint government-industry research associations it supervised, and its young program of development grants move over to the ministry for technology. A road-research laboratory goes to the ministry of transport, and a tropical-products laboratory moves to the new ministry for overseas development, run by Barbara Castle.

The DSIR programs of grants and fellowships will remain in Stewart's ministry, along with the Radio Research Station. The Medical Research Council and the Agricultural Research Council will be under the formal supervision of the ministry of education and science (this will give them a stronger voice in money battles with the Treasury). Also, the ministry of education and science will create two new research councils: the Science Research Council and the Natural Environment Research Council. This is a step recommended by the Trend report a year ago, and endorsed by the Conservatives.

The Science Research Council will take over responsibility for the 7-billion-electron-volt proton synchrotron Nimrod, such observatories as the Royal Greenwich at Herstmonceux, and scientific space research. The Natural Environment Research Council (NERC) takes over the geological survey and becomes heir of such organizations as the Development Commission (marine biology and fisheries research) and the Nature Conservancy. From the now-defunct Admiralty, NERC takes over the National Institute of Oceanography.

With these steps the Labor government has stated its general goal of using science to stimulate the economy, picked its men, reshuffled the scientific agencies, and unsheathed its axe on some big technical projects. Even though the changes have been brewing for several years, they leave too many scientific careers in doubt to produce much rejoicing. Only time will tell whether the new arrangements will quiet the complaints of British scientists.

—VICTOR K. MCELHENY