British Scientists and 'Outsider' Politics, 1931-1945

Paul Gary Werskey

Science Studies, Vol. 1, No. 1 (Jan., 1971), 67-83.

Stable URL:
http://links.jstor.org/sici?sici=0036-8539%28197101%291%3A1%3C67%3ABSA%27P1%3E2.0.CO%3B2-E

Science Studies is currently published by Sage Publications, Ltd..

Science Studies, **1** (1971), 67–83.

British Scientists and 'Outsider' Politics, 1931-1945

PAUL GARY WERSKEY
Science Studies Unit, University of Edinburgh

Much has been written in recent years about the political activities of natural scientists in Great Britain during the 1930s.[1] For the most part, such literature has concerned itself with certain ideological affinities which encouraged an alliance between 'moderate' and 'left-wing' elements within the scientific community. In this paper, however, emphasis will be placed on important ideological divisions between the leaders of the Science and Society Movement. The fact that a scientists' 'popular front' was achieved will be explained in terms both of the low status accorded their profession by the nation's political and intellectual élites up until 1939, and of the subsequent demand for scientific expertise during the Second World War. As political 'outsiders', it was therefore natural that at least some British scientists attempted to influence public policy through the formation of pressure groups independent of both the Government and party politics.[2] After discussing the development and decline of the alliance of socially conscious researchers, the paper will conclude with a brief comparison between the scientists' movements of the Thirties and those of the present day.

Scientists as political 'outsiders'

British scientists came to politics during the 1930s as 'outsiders' in two ways.

A slightly different version of this paper was presented on 4 September 1970 in Durham to a joint meeting of Sections N and X of the British Association for the Advancement of Science. The author would like to thank Dr C. P. Blacker, Professors A. V. Hill and Lancelot Hogben, Sir Julian Huxley and Dr W. A. Wooster for their assistance in his research.

[1] The most general survey of the area is provided in Neal Wood, *Communism and British Intellectuals* (London, 1959), esp. 121–51, but note also Michael D. King, 'Science and the Professional Dilemma', in Julius Gould (ed.), *Penguin Social Sciences Survey 1968* (Harmondsworth, 1968), 34–73. Still useful are: Bernard Barber, *Science and the Social Order* (New York, 1952), *passim*; and J. G. Crowther, *The Social Relations of Science* (New York, 1941), 600–32. For brief comments which rely upon Wood, see Lewis A. Coser, *Men of Ideas: A Sociologist's View* (New York, 1966), 233–41, and Norman J. Vig, *Science and Technology in British Politics* (Oxford, 1968), esp. 25–7. See also Hilary and Steven Rose, *Science and Society* (London, 1969), 51–7.

[2] *Cf.* Peter Gay, *Weimar Culture: the Outsider as Insider* (London, 1969). It should also be noted that, under certain conditions, political 'insiders' may find it useful to engage in 'outsider' politics.

In the first place, civil servants and party politicians tended to exclude men of science from high-level Government appointments. The institutional discrimination against scientific workers within the Civil Service was a much discussed subject at the time.[3] Of greater significance, however, was the evident lack of interest shown by most professional politicians in the social ramifications of scientific research. Thus Dr (now Sir) Solly Zuckerman could argue in 1939 that the 'efforts of scientists are generally misunderstood, because they are not interpreted to the world by scientists themselves, and because few of those who are immediately responsible for the conduct of social affairs are scientists. There are, for example, no scientists in the Government.'[4]

And Zuckerman could have gone further. With the exception of Sir Oswald Mosley, no British politician in the Thirties was to be heard arguing the case for science as forcibly as had, for example, Balfour and Haldane during the preceding decade. Mosley, on the other hand, could not attract more than a handful of researchers into his British Union of Fascists, even though he described his ideology as a blend of 'Caesarism and Science'.[5] Given that his movement was closely identified with those continental régimes which abused natural science, it is not surprising that Mosley found few adherents among British scientists. In retrospect it is clear that political influence was not denied to all researchers.[6] Nonetheless, it was widely believed at the time that, apart from matters of science policy, the channels of conventional politics were closed to natural scientists.

Scientists, of course, had the option of becoming academic dissenters, a role sometimes assumed by members of Britain's intellectual élite. But here, too, many scientists, precisely because of their backgrounds, found themselves regarded by artists and social theorists as outsiders, merely to be tolerated.

[3] For example: F. A. A. Menzler, 'The Royal Commission on the Civil Service', *Nature*, **112** (12 October 1929), 565–7; J. A. Gardiner, 'Scientific Men as Administrators', *Nature*, **128** (15 August 1931), 237; and R. A. Gregory, 'The Civil Service and "Everyday" Science', *Nature*, **137** (14 March 1936), 417. See also Eric Hutchinson, 'Scientists as an Inferior Class', *Minerva*, **8** (July 1970), 396–411.

[4] S. Zuckerman, 'Science and Society', *New Statesman and Nation* (25 February 1939), 298.

[5] Sir Oswald Mosley, *My Life* (London, 1968), esp. 316–35. The only example encountered in my research of a scientist who was a member of the British Union of Fascists was Capt. George Pitt-Rivers, one-time President of the International Organization of Eugenists. See Sir Arthur Keith, *An Autobiography* (London, 1950), 552–3.

[6] Cf. C. P. Snow, *Science and Government* (New York, 1962), for the cases of Lindemann and Tizard. See also the forthcoming study by Roy MacLeod on the 'Application of the Principles of Coordination to Civil and Military Research, 1919–1939'. This group of political 'insiders' was largely responsible for the shape and direction of the Government-supported scientific research during the inter-war period.

The anti-scientist phenomenon is particularly interesting on the political left, where 'Science' was highly esteemed.[7] John Strachey, for instance, in his *The Coming Struggle for Power*, chose to characterize scientific men as, 'for the most part, rather simple minded fellows outside of their laboratories'.[8] He then went on to dissect a leading article in *Nature*[9] which symbolized to him 'the growing loss of self-esteem and self-confidence which they [the scientists] are feeling, and which they must continue progressively to feel, in the capitalist world'.[10] After ridiculing the suggestion of the editorial's author that a reversion to 'cottage industries' might resolve Britain's economic difficulties, Strachey concluded: 'The hope which he brings to the unemployed is the hope of the destruction of science. If he has to choose between capitalism and science, he chooses capitalism every time. For he is a spokesman of the capitalist class, long before he is a scientist.'[11] An even more savage attack upon natural scientists was presented in Geoffrey Gorer's *Nobody Talks Politics*, an important novel of the mid-Thirties.[12] Gorer confronts his hero (Freddy Green) with one Roger Hairwate, a geneticist who speaks about some poison gas research being conducted at his university.

'We do a lot of it. Government grant you know. Of course the research is nominally on insecticides.'

'But it's monstrous! Do you mean to say you all put up with it?'

'My dear Green,' said Hairwate, 'we are skilled workers, not dreamers. Our business is to find out as much as we can about certain phenomena. What these phenomena are to be is decided partly by us and partly by the people who pay us. The use that is made of our research is not our business. Our business is exclusively with chemical and biological facts. I may personally deplore the uses to which some discoveries are put, but that is neither here nor there. My business is to do my job.'[13]

Examples of this attitude can be multiplied. Thus the young poet Julian

[7] Note, for example, the following: John Strachey, *The Menace of Fascism* (London, 1933), 117–8; Edward Upward's novel *In the Thirties* (Harmondsworth, 1969), *passim*; and Sidney and Beatrice Webb, *Soviet Communism: A New Civilisation* (London, 1937), 1132–4.

[8] (London, 1932), 177.

[9] W. G. Linn Cass, 'Unemployment and Hope', *Nature*, **125** (15 February 1930), 225.

[10] *Coming Struggle . . . , op. cit.*, 180.

[11] *Idem.* King, *op. cit.*, 56, has taken exception to Strachey's view: 'Any loyal reader of the *Nature* editorials for the post-war years would have known that these strictures were not altogether just.' King's general dictum does not, however, apply to the leader in question. Further, given the retreat of the journal in 1938 from its tentative acceptance of 'planning' in the early Thirties, one is compelled to admire the prescience of Strachey's polemic. See Paul Gary Werskey, '*Nature* and Politics between the Wars', *Nature*, **224** (1 November 1969), 462–72.

[12] (London, 1936).

[13] *Ibid.*, 118–19.

Bell maintained in 1928 at the Cambridge Union (on the motion 'That the Sciences are murdering the Arts') that 'The scientist, the inquirer, the interrogator, was innately incapable either of creating or appreciating art. The business man, the waste product of Science, was the immediate murderer.'[14] At Oxford Stephen Spender formed the opinion that scientific workers were, generally speaking, crude, insensitive bores.

> ... they had a passion for women, combined with an almost complete inability to understand them.... They researched into life, pretending that their behaviour was an inquiry yielding results, like experiments in laboratories.... The scientists talked about music with an air of complete familiarity with the scores, and with the lives of the composers.... The composers seemed to them much like themselves (as perhaps indeed they were), a technical, clever, virile, beer-drinking and coarse-mouthed race.[15]

In short, the respective guardians of Britain's political and cultural welfare in the Thirties had little use for scientists.

This conjunction of political and intellectual conventions opposed to scientists came at a time of acute domestic and international crises, represented by the familiar litany of depression, fascism and war. Some of these developments directly concerned the scientific community. The Hunger Marchers in Britain symbolized the menace of malnutrition which Sir John Boyd Orr later quantified in his study of the relationship between *Food, Health and Income*.[16] From Germany came the anti-semitic nightmare of university purges, compulsory sterilization laws and 'Nordic' racial theories—often directed at scientists of great renown.[17] Finally there was an increasingly insistent demand for scientific assistance in building up the nation's defences. For the minority of natural scientists who were politically conscious—and they were a very small minority indeed—such issues could not be ignored. The fact that their newly aroused social concern made very little difference to either political 'insiders' or academic outsiders helped to unite (for a time) researchers of very different political persuasions.[18] In pointing to their

[14] As quoted in Peter Stansky and William Abrahams, *Journey to the Frontier* (London, 1966), 46.

[15] Stephen Spender, *World Within World* (London, 1953), 41.

[16] (London, 1936).

[17] See Robert Brady, *The Spirit and Structure of German Fascism* (London, 1937), esp. 39–77.

[18] Another factor making for unity among the scientists was the Government's cutback in resources available for scientific research during the Depression years. Even though such 'retrenchment' began to ease in 1933, the belief persisted among politically active scientists that British science suffered from insufficient financial support. See J. S. Huxley, *Scientific Research and Social Needs* (London, 1934), and J. D. Bernal, *The Social Function of Science* (London, 1939).

unanimity on the question of raising the social status of scientists, subsequent commentators have in fact spoken of a ' "social relations of science movement" that seemed almost to dominate the British scientific world between 1932 and 1945'.[19]

Reformists and Radicals

On close inspection, this 'movement' appears to have been neither monolithic nor cohesive. In the first place it involved no more than a few members of the scientific community. Researchers employed by industry or the Government were conspicuously absent. Moreover, the alliance between socially conscious academic scientists was at best a tenuous one. Permanently divided between what might be called its Reformist and Radical factions, the movement could only have survived in a political atmosphere which enforced upon scientists a sense of national unity and emphasized their long-standing professional grievances. This atmosphere prevailed just before and during the Second World War. After the war, in a period of less pressing circumstances, ideological differences became more visible, personalities achieved greater prominence, and the movement divided and gradually faded away.

The basic dissimilarities between the Reformists and Radicals of the Thirties can be easily summarized. The former were for the most part prepared to accept the social order as it was, provided that they and their kind were given a greater voice in public affairs.[20] The fact that the Reformists saw themselves as ostracized from a political system they ultimately supported was an anomaly which they attempted to resolve during the mid-Thirties. After an earlier flirtation with a variety of planning doctrines, the Reformists came to embrace more orthodox views of politics and economics. The Radicals, on the other hand, believed that only a society transformed along socialist lines would be prepared to make the fullest and most humane use of scientists and their discoveries.[21] They presented their plea for an improvement in the

[19] Wood, *op. cit.*, 121.

[20] Werskey, *op. cit.*, 468–72. The Reformists consisted of senior scientists, some of whom were experienced political 'insiders'. Sir Daniel Hall, for example, had occupied a key position in the Ministry of Agriculture during the first Labour Government. He later served as chairman of the Development Commission. See MacLeod, *op. cit.* The unspoken leader of the Reformists was Sir Richard Gregory, the editor of *Nature*. See W. H. G. Armytage, *Sir Richard Gregory, his Life and Work* (London, 1957). Other important Reformists were Sir Frederick Gowland Hopkins, Julian Huxley, Sir John Boyd Orr and Lord Stamp.

[21] Statements about the Radicals contained in this paper are for the most part based on the author's as yet uncompleted doctoral dissertation: 'The Visible College: A Study of Radical Scientists in Britain, 1918–1939'. The principal Radicals were J. D. Bernal, P. M. S. Blackett, J. B. S. Haldane, Lancelot Hogben, Hyman Levy, Joseph Needham, C. H. Waddington and W. A. Wooster.

cultural and political status of the scientist as an essential but subsidiary clause in their demand for a broad social revolution.

Given such a divergence of world-views, it is not surprising that before 1938 these two groups tended to work through different kinds of organization. The Reformists concentrated most of their attention on the British Association for the Advancement of Science. Their ginger group, prior to its assimilation into the B.A. in 1936, was the British Science Guild. Both organizations were assured of a sympathetic and influential platform in *Nature,* whose editor, Sir Richard Gregory, was the chief spokesman for the Reformists' cause. The Radicals, on the other hand, were involved with the activities of not only the Association of Scientific Workers and the Cambridge Scientists' Anti-War Group,[22] but the Labour and Communist Parties too. Their writings appeared in both the A.Sc.W's *Scientific Worker* and the Marxist *Modern Quarterly.*

If the theories and practices of the two groups were so dissimilar, why have they so often been bracketed together? One factor which blurred the distinction between Reformists and Radicals was the similarity of their rhetoric on certain key issues. One of these was the theme of 'social responsibility in science'. The Reformists also came to accept the Radicals' stand on both eugenics and the 'social relations of science'. Between 1924 and 1936, editorials in *Nature* had echoed the anxieties of the Eugenics Society about so-called 'racial decay'. The journal had advocated, among other things, compulsory sterilization for the unemployed on the assumption that indigence was a sign of sub-normal intelligence.[23] Of course, the Radicals had long argued against such a position by pointing to the way in which environmental circumstances helped to determine an individual's place in society, irrespective of his abilities.[24] Until 1934, the Reformists had also stressed the impact of science *on* society,[25] while Radicals spoke in terms of an interaction *between* science and society. But between 1934 and 1936, the Reformists altered their

[22] Nothing has as yet been published on the Radical takeover of the A.Sc.W.; see E. K. Andrews's forthcoming study of the association. Information derived from the author's conversations with the then Hon. General Secretary, Dr W. A. Wooster, will be included in 'The Visible College', *op. cit.* On the Cambridge group, see E. H. S. Burhop, 'Scientists and Public Affairs', in M. Goldsmith and A. MacKay (eds.), *The Science of Science* (Harmondsworth, 1966), 32–42.

[23] Werskey, '*Nature* and Politics . . .', *op. cit.*, 467–8.

[24] *Cf.* J. B. S. Haldane, *The Inequality of Man and Other Essays* (London, 1932), *passim.*

[25] The Reformists' stand in this area has been dealt with in Paul Gary Werskey, 'Planning and Professionalism: *Nature* on the Organization of Science between the Wars' (typescript, Science Studies Unit, Edinburgh University). This essay will shortly appear in *Nature.*

approach to the social relations of science; they had, meanwhile, also changed their attitude to eugenics.

In both instances the agent and symbol of ideological change was Julian (now Sir Julian) Huxley. The eugenics issue was a case in point. Before 1935 Huxley had been an enthusiastic eugenist, asserting that the inherited potentialities of slum dwellers were below average. This was 'almost certainly not due to the effect of living generation after generation in the slums, but to the fact that a considerable proportion of types that have inherited poor qualities have gradually drifted into slum conditions of living.'[26] In 1931, Huxley had warned of the tendency 'for the stupid to inherit the earth, and the shiftless, and the imprudent, and the dull. And this is a prospect neither scriptural nor attractive.'[27] As a measure to hold down the birth rate of the working classes Huxley advocated (during the worst part of the economic slump) that the continuance of unemployment relief be made conditional upon a man's having no more children. 'Infringement of this order could probably be met by a short period of segregation in a labour camp. After three or six months' separation from his wife he would be likely to be more careful the next time.'[28] Huxley's views were comparable to the Reformists' approach to eugenics, as expressed in the leaders of *Nature* before 1936.

In the early Thirties, however, Huxley's friend, Lancelot Hogben, had begun to mount a fierce attack upon the social Darwinism latent in the thinking of most eugenists.[29] Hogben's campaign, which labelled the orthodox eugenist as a neo-Nazi, made a profound impact upon Huxley.[30] The resulting shift in Huxley's views on eugenic practice could be seen in his 1936 Galton Lecture, 'Eugenics and Society'.[31] After quoting Hogben on the need for equalizing educational opportunity before measuring levels of intelligence, he went on to argue that 'we shall only progress in our attempt to disentangle the effects of nature from those of nurture in so far as we follow the footsteps of the geneticist and equalize environment. . . . We must therefore concentrate on producing a single equalized environment. . . .'[32] Shortly thereafter, *Nature*

[26] J. S. Huxley, *The Stream of Life* (London, 1926), 41.
[27] Huxley, *What Dare I Think?* (London, 1931), 109.
[28] *Ibid.*, 88.
[29] Note the following works by Hogben: *The Nature of Living Matter* (London, 1930), 193–215; *Genetic Principles in Medicine and Social Science* (London, 1931); and *Nature and Nurture* (New York, 1933).
[30] This is borne out by Dr C. P. Blacker, then General Secretary of the Eugenics Society, in an interview with the author, 7 August 1969. This was also Hogben's view, as confirmed in an interview with the author, 26 July 1968.
[31] Reprinted in J. S. Huxley, *The Uniqueness of Man* (London, 1941), 34–84.
[32] *Ibid.*, 69.

featured Huxley's lecture in the editorial which signalled the Reformists' retreat from the eugenic approach to social problems.[33]

On the social relations of science, Huxley's thinking was shaped significantly by the Marxist mathematician Hyman Levy. In 1933 Huxley gave a series of talks on the B.B.C. entitled 'Scientific Research and Social Needs', which were published a year later.[34] Discussions between Huxley and Levy opened and closed the series. At the start Levy asked his biologist companion how he would define science. The reply was :

> Well, I generally like to think of science as a body of knowledge. . . . This knowledge can generally be applied to controlling nature, but most scientists, I think, would say that there definitely is something that can be called *pure science*, which has a momentum of its own and goes on growing irrespective of its applications.[35]

To which Levy replied: 'Well, Huxley, I think that to state things in this way is to lay a false emphasis on pure science.'[36] 'It does not seem to me', Levy continued,

> that science becomes 'pure' because there are individual scientific workers whose personal motive in carrying through investigations is that they desire simply to extend the boundaries of knowledge. The existence of such a motive does not necessarily enable them to lift themselves outside their historic social epoch, but it may mean that they will concentrate their attention on problems more remote from direct application. Science, however, does not cease at discovery. It is also concerned with application, and the applications are to the systems of society in being. . . . Moreover, since scientists, like other workers, have to earn their living, . . . to a large extent the demands of those who provide the money will, very broadly, determine the spread of scientific interest in the field of applied science. . . . I know of no scientist who is so free that he can study absolutely anything he likes, or who is not restricted in some way by limitations such as the cost of equipment.[37]

After this interchange Huxley conducted a tour of different research establishments. By the final broadcast he was persuaded that 'the form and direction which it [science] takes are largely determined by the social and economic

[33] F. A. E. Crew, 'Eugenics and Society', *Nature*, **137** (11 April 1936), 593.

[34] In his autobiographical *Memories* (London, 1970) Huxley refers to a book called *Science and Social Needs* (written with the assistance of J. G. Crowther). I have not come across a book with that title; presumably he is referring to *Scientific Research and Social Needs* (London, 1934). See Paul Gary Werskey, 'Haldane and Huxley: The First Appraisals', *J. Hist. Biol.* (April 1971, in the press).

[35] Huxley, *Scientific Research and Social Needs, op. cit.*, 15–16.

[36] *Ibid.*, 16.

[37] *Ibid.*, 20.

needs of the place and period.'[38] Huxley concluded that the chief moral of the series was that

> science is not the disembodied sort of activity that some people would make out, engaged on the abstract task of pursuing universal truth, but a social function intimately linked up with human history and human destiny. And the sooner scientists as a body realize this and organize their activities on that basis, the better both for science and for society.[39]

The Reformists took Huxley's moral to heart. Shortly after the publication of his broadcasts, Rainald Brightman, the chief leader writer for *Nature,* proclaimed that:

> The conception of science as a social function intimately linked up with human history and human destiny, moulding and being moulded by social forces, should summon forth from scientific workers something of the energy required to translate into policy and action the knowledge acquired by their work. Such energy will find its expression . . . in . . . the faith that human reason, by using wisely the scientific method, can give us the control of our destiny.[40]

From that point onwards the Reformists began to employ the vocabulary of the Radicals when speaking about the social relations of science.

It is difficult to judge whether the pronouncements of Huxley were in themselves an important factor in the determination of Reformist thinking, or whether Huxley's writings just happened to reinforce conclusions which the Reformists had reached independently.[41] In either case his rhetoric permeated some of the most crucial leading articles which appeared in *Nature* during the mid-Thirties. Thus the Radicals, through the modifications they introduced into Huxley's social thought, were able to influence somewhat the world-view of the Reformists. It is also evident that Huxley's apolitical stance helped to legitimize the position of his left-wing companions.[42] The fact that the Reformists were never again to take up their old position on eugenics must be counted as a victory for the Radicals.

Reformists versus *Radicals*

But the arguments which supported the notion that social forces affected the course of scientific development were more ambivalent politically than

[38] *Ibid.*, 252.
[39] *Ibid.*, 279.
[40] Rainald Brightman, 'The Planning of Research', *Nature*, **134** (28 July 1934), 119.
[41] The latter was probably the case as far as eugenics was concerned. See Werskey, '*Nature* and Politics . . .', *op. cit.*, 467–8.
[42] Huxley lays great stress on the difference between himself and such 'left-wing socialists' as 'Levy and Needham', in a letter to the author, 20 August 1969.

those associated with eugenics. That is why the agreement reached between Reformists and Radicals on the concept of the social relations of science quickly led to an intensification of the ideological divisions between them. To understand how much they differed in practice, one has only to compare their respective responses to the plight of scientists in Nazi Germany and the Soviet Union.

The Radicals argued that, since the scientific community could never fully insulate itself from social pressures, its only course was to align itself with those political forces which were most committed to the advancement of science for the benefit of the entire society. From that premise they maintained that German scientists had only themselves to blame for their situation under Hitler. If they, as university teachers, had not been so apolitical before 1933, they might, the Radicals asserted, have been able to forestall the Nazis' rise to power.[43] Russian scientists by contrast were in certain respects better off than their counterparts in Britain, or so the Radicals believed. Bernal, Haldane and others repeatedly emphasized the superiority of Soviet scientific organization, the scientific ethos of Russia's leaders, and the comparatively high status accorded scientists in Russian society. Above all, they stressed the way in which scientific resources were devoted to the solution of important economic and social problems.[44]

But while the Radicals were hopeful about the prospects of a fruitful interaction between science and society, the Reformists were predisposed to pessimism about the effects of systematic social controls on their profession. They were accordingly horrified by the relatively complete integration of scientists into the differing political systems of Germany and the Soviet Union. They believed that the fervent nationalism which informed scientists' attitudes in the two countries was opposed to the values of an international scientific community. From the first the Reformists were opposed to Hitler's Germany on political grounds,[45] but when scientists loyal to the Führer also attempted 'to secure the control of international scientific work', a *Nature* editorial urged that 'it is time to call a halt'.[46] Russia was subjected to similar criticism.[47] The Reformists also rejected the Fascists and the Communists

[43] *Cf.* Joseph Needham, *The Nazi Attack on International Science* (London, 1941).

[44] For example, Joseph Needham and Jane Sykes Davies (eds.), *Science in Soviet Russia* (London, 1942).

[45] E. N. Fallaize, 'Nationalism and Academic Freedom', *Nature*, **131** (17 June 1933), 853–5.

[46] F. J. M. Stratton, 'Nazi-Socialism and International Science', *Nature*, **136** (14 December 1935), 928.

[47] F. S. Marvin, 'Science and Society', *Nature*, **129** (5 March 1932), 330.

for consciously curtailing the intellectual freedom of individual scientists. In this respect, the Reformists were more concerned about Germany than Russia;[48] but they also used Lysenko's early harassment of well-known orthodox geneticists to illustrate 'the atmosphere in which scientific investigators in totalitarian countries have to live and work'.[49] In equating the threats posed by Hitler and Stalin to the internationalism and freedom of science, the Reformists were prompted to support the exclusion of both Germany and Russia from the councils of world science 'on the ground that in these countries at present scientific workers are bound much more closely to their respective Governments than is the case elsewhere.'[50]

The disparity between the Reformist and Radical scientists was therefore never greater than it was in the summer of 1938. As the Reformists' awareness 'of the extent to which political organizations can affect the direction of scientific research, and even frustrate its efforts' increased,[51] their interest in the extension of state responsibility for science diminished. At the same time J. D. Bernal was completing his *The Social Function of Science*—the Radicals' most comprehensive blueprint for the reorganization of scientific life.[52]

The scientists' popular front

Paradoxically, in the midst of such intense political disagreements, the Reformist and Radical factions came together in 1938 to found the Division for the Social and International Relations of Science in the British Association.[53] The origins and development of this new organization are therefore of considerable interest.

The idea for such a division originated in the Committee on Science and its Social Relations set up (in 1937) by the International Council of Scientific Unions.[54] The President and Vice-President of the committee were, respectively, F. J. M. Stratton and Sidney Chapman, both of whom happened to be regular contributors to *Nature*. When the Council of the Royal Society

[48] Walter Adams, 'Freedom of Science and Learning', *Nature*, **140** (31 July 1937), 170.
[49] B. P. Uvarov, 'Genetics and Plant Breeding in the USSR', *Nature*, **140** (21 August 1937), 297.
[50] R. Brightman, 'Social Responsibilities of Science', *Nature*, **139** (24 April 1937), 689.
[51] R. Brightman, 'The Protection of Scientific Freedom', *Nature*, **137** (13 June 1936), 963–4.
[52] *Op. cit.*, note 18, esp. 241–416.
[53] See the supplement 'Social Relations of Science', *Nature*, **141** (23 April 1938), 723–42.
[54] F. J. M. Stratton, 'International Co-operation in Science', *Nature*, **140** (28 August 1937), 337–8 and 358. Also 'Committee on Social Contacts of Science', *Nature*, **140** (4 December 1937), 983.

refused to establish a working group in this area,[55] Chapman and Stratton went to the Council of the British Association, which by this time was controlled by the Reformists. There it was decided that the kind of problems related to the social relations of science would best be handled by a division set apart from the parent body. The advantages of this format would include more frequent meetings and independent publication. Most important, no corporate decisions would be taken by the new organization on matters of social policy. Instead the 'purpose of the Division', as explained at the time by the Assistant Editor of *Nature,* 'would be to further the objective study of the social relations of science. The problems with which it would deal would be concerned with the effects of the advances in science on the well-being of the community, and, reciprocally, the effects of social conditions upon advances in science.'[56] The role of the new Division was *discussion*; it was carefully designed *not* to become the kind of forum proposed by Reformists in previous years and later realized by the Radicals in the Association of Scientific Workers—a forum from which a 'united front' of scientists could speak out on controversial questions.[57]

The reason for the Council's reluctance to provoke controversy was not far to seek. As one of *Nature*'s correspondents had commented in 1932, science 'has never gotten within sight of a political programme of its own. . . .'[58] By 1938 the validity of that statement was only too clear, even within the 'leader' columns of *Nature*. Thus in June 1937, a year before the establishment of the B.A.'s new Division, E. H. Tripp had confidently predicted that

> The future historian of science will not fail to chronicle that the early part of the twentieth century was notable for the gradual emergence of a social conscience among scientific men, which, he will aver, was greatly stimulated by the mis-use of certain scientific discoveries for inhuman ends (for example, poison gas against civilians), and by the recognition that extending [the] application of science to industry did not appreciably improve the status or the prospects of the working classes.[59]

[55] Personal communication, Professor A. V. Hill (then a member of the Royal Society's Council) to author, 9 May 1969.

[56] A. J. V. Gale, 'Social and International Relations of Science', *Nature,* **142** (27 August 1938), 380.

[57] For the Reformists' earlier ideas in this area see Norman R. Campbell, 'A Representative Body for Science', *Nature,* **112** (13 October 1923), 529–31, and R. Brightman, 'Outlook of Professional Organizations', *Nature,* **138** (14 November 1936), 817.

[58] Louis Anderson Fenn, 'The Politics of Science', *Nature,* **129** (19 March 1932), 415.

[59] E. H. Tripp, 'Science and Social Responsibility', *Nature,* **139** (12 June 1937), 981.

Subsequent historians have appeared to take Tripp seriously, and his description is, in general terms, apt when applied to the Radicals.

Yet his reasoning had already become inapplicable to the Reformists by the time of the British Association's Cambridge meeting of 1938. The content of their social concern, as reflected in the dramatic shifts in *Nature*'s leader policy, was now defined not only or even principally in terms of social welfare but in terms of the freedom of science as well. Soon after the B.A. had launched its new organization, a *Nature* editorial maintained that

> The widespread interest in the social relations to [*sic*] science . . . has largely been stimulated by the growing anarchy in the international sphere, whether economic or political. The threat to freedom of thought inherent in the Totalitarian States, the existence of which is indeed only possible through the application of scientific knowledge, provides one of the main stimulants. The profound concern engendered everywhere by the increasing scale . . . [of] preparations for warfare, even to the detriment of standards of living, however, provides another source of such interest. . . .[60]

Obviously the sources of social awareness varied among the activist scientists according to their ideological commitments. Within a few years, in fact, a fierce internecine battle broke out within the scientific community between those who stressed the social function of science and those who emphasized the need for freedom in science. Nevertheless, Reformists and Radicals were able to work with one another up until 1945, not only in the B.A.'s new division,[61] but also in Solly Zuckerman's celebrated Tots and Quots Club.[62]

This alliance was welded by two related factors. First, both Reformist and Radical factions were anxious about what might happen to Britain if it continued to treat its scientists as political outsiders. Their despair only deepened when Britain entered the Second World War.[63] Undoubtedly the activist scientists were able to keep together, because a British victory appeared to depend greatly on the effective utilization of scientific expertise. The fact

[60] R. Brightman, 'Social and International Relations of Science', *Nature*, **142** (20 August 1938), 310.

[61] See J. G. Crowther, O. J. R. Howarth and D. P. Riley, *Science and World Order* (Harmondsworth, 1942), for an account of the Division's Science and World Order Conference of September 1941. Gregory, who was President of the B.A. throughout the war years, organized a number of meetings of this kind.

[62] The Tots and Quots meetings deserve an article to themselves. In the meantime see Sir Solly Zuckerman, *Scientists and War* (New York, 1967), 147–8, and J. G. Crowther, *Fifty Years with Science* (London, 1970), 210–22.

[63] Note the 'Penguin Special' prepared by the Tots and Quots Club: *Science in War* (Harmondsworth, 1940).

that *Nature*'s first detailed proposal for the mobilization of scientists in wartime was (anonymously) written by J. D. Bernal indicates how this sense of national crisis worked to bring the rival wings together.[64]

The demise of the popular front

But the 'popular front' created by the two factions could not outlive the pressures of war. As early as 1941 a Society for Freedom in Science had been formed by Dr John R. Baker and Professor Michael Polanyi, among others, to provide a 'liberal' alternative to the Radical position.[65] Baker and Polanyi occasionally attacked the Reformists as well, but the latter were for the most part already persuaded of the necessity for preserving at all costs the operational autonomy of the scientific community. For that matter, so were the Radicals, at least in theory; the plan advocated by Bernal in the second half of *The Social Function of Science,* for instance, would in certain crucial respects have increased the independence of the scientific community from its social patrons.[66]

The Radicals were pilloried both during and after the war as the enemies of freedom in science for two reasons. First, the Radicals believed that their proposals for the reorganization of scientific life were already being carried out in the Soviet Union. Although this was not true, Baker, Polanyi and others quite willingly took the Radicals at their word and cited the damaging example of Stalin's interference with the Russian scientific community as a warning against the ideas of Bernal and his associates.[67] Thus the Radicals paid dearly for their often uncritical admiration of Soviet Communism.[68] Second, as Marxists, the Radicals had long derided the social and philosophical connotations of the concept of 'pure science'. They were therefore viewed by the Society for Freedom in Science as individuals who sought the destruction of not merely the concept but the practice of pure science, leaving only armies

[64] J. D. Bernal, 'Science and National Service', *Nature,* **142** (15 October 1938), 685–87.

[65] *Cf.* Wood, *op. cit.,* 134–6. See also: the 'Occasional Papers' of the Society published between 1940 and 1960; John R. Baker's *The Scientific Life* (London, 1942), and his *Science and the Planned State* (London, 1945); and Michael Polanyi, *The Logic of Liberty* (Chicago, 1951).

[66] *Op. cit.,* 310–22.

[67] The qualified apologies of Bernal and Haldane for Lysenkoism did not, to say the least, strengthen their position in this area. See J. B. S. Haldane, 'Lysenko and Darwin', *Daily Worker* (1 November 1948), 2; and J. D. Bernal, *Science in History* (London, 1954), 665–73.

[68] As had been predicted by Waldemar Kaempffert in 1939. See his review of Bernal's *The Social Function of Science* in the *New York Times Book Review* (18 June 1939), 4ff.

of technologists to carry on the scientific tradition.[69] In the disturbed political atmosphere of the early post-war years, the fact that the Radicals recognized the continuing need for 'fundamental research' was overlooked.[70]

What finally split the Radicals and the Reformists, however, was not the activities of the Society for Freedom in Science, but a series of domestic political developments over which neither group had control. The most important of these was a gradual improvement in the Government's treatment of science and scientists—expenditures for research greatly increased and scientific men were seen more frequently in the corridors of power.[71] Thus the principal planks of the Reformists' old platform had been adopted.[72] Having been granted a certain amount of political and financial recognition, many activist scientists concluded that their crusading days were over. The British Association simply allowed its Division for the Social and International Relations of Science to wither away during the Fifties. What spirit of activism remained was channelled into the World Federation of Scientific Workers, 'Science for Peace', and the Campaign for Nuclear Disarmament.

Outsider politics, 1971

Given certain recent developments,[73] it may be appropriate to conclude this essay with some speculative comparisons between the scientific organizations of the interwar period and the new British Society for Social Responsibility in Science.[74]

Some scientists now feel themselves obliged to take up defensive positions and to resort again to the concerns of outsider politics. During the mid and late Sixties the successes of science and technology were themselves called into question, if only because they appeared to threaten the existence of 'post-industrial' society: for example, new advances in chemical, biological and nuclear warfare; higher levels of pollution; and the unforeseen social and

[69] John R. Baker, 'Counter-blast to Bernalism', *New Statesman and Nation* (29 July 1939), 174–5.

[70] Note Bernal's reply to Baker (*op. cit.*, note 69) in *New Statesman and Nation* (5 August 1939), 210–11.

[71] *Cf.* Vig, *op. cit.*

[72] Although scientists were largely called upon to advise on, rather than make, Government policy: J. G. Crowther, *Science in Modern Society* (London, 1967), 119–25.

[73] Namely the activities of a ginger group, supported by the British Society for Social Responsibility in Science, during the recent Durham meeting of the British Association. See Felix Pirani, 'What's Wrong with the B.A.?', *New Scientist*, 47 (3 September 1970), 461–2.

[74] Hilary and Steven Rose, 'Knowledge and Power', *New Scientist*, 42 (17 April 1969), 108–9.

economic consequences of pursuing industrial automation for its own sake.[75]

In Britain, the British Society for Social Responsibility in Science has been among the most vocal groups expressing this concern. But, at least at this stage of its development, the BSSRS has neither the relatively broad-based support once enjoyed by the Division for the Social and International Relations of Science, nor the ideological bite of the old A.Sc.W. The fact that this new society has had to perform a variety of tasks previously distributed between 'Reformist', 'Radical', and 'Popular Front' groups has undoubtedly contributed to its blurred image.[76]

Yet even if the BSSRS does succeed eventually in 'getting itself together', it is doubtful whether it (or any similar organization) will be able to persuade the scientific community at large to by-pass, or even supplement, 'insider' channels in favour of other types of action. As in the 1930s, activist scientists are ideologically divided. Unlike the interwar period, however, there now appears to be no overriding professional grievance which might unite large numbers of researchers. More to the point, scientists are now less often excluded from positions of administrative and political influence. Thus one political outsider of thirty years ago, Sir Solly Zuckerman, is presently Chief Scientific Adviser to H.M. Government. From his Whitehall office, Sir Solly, according to the *Medical News Tribune,* now views the recrudescence of political frustration among some scientists in the following terms:

> These people concerned with—what's it called? Oh yes, social responsibility in science: they're probably worried because they see science being misapplied.
>
> They probably believe that the people responsible—if they can be identified —are necessarily evil. I don't know whether it is as simple as that.
>
> What they have to ask themselves if they wish to be effective is whether they can influence the tide of events in the application of scientific knowledge, from the outside.
>
> There is a certain... naivety in the assumption that you can... stay away over there (he gestures towards Horse Guards Parade) shouting this message at some people who are presumed to be somewhere else and doing the wrong thing, and also that they're going to listen. They won't.[77]

If Sir Solly's final prediction is correct, then it is possible that at some point

[75] An excellent monograph summarizing the literature dealing with such problems has been prepared, but not as yet published, by Dr Roger Williams of the University of Manchester. A shortened version was presented at the Durham meeting of the British Association, 4 September 1970.

[76] Anthony Tucker, 'Bulls in a Scientific Talking-Shop', *The Guardian* (2 September 1970), 11.

[77] Sir Solly Zuckerman, *Medical News Tribune* (February 27, 1970), 14.

in the near future some dissident scientists will begin to emigrate from their relatively secure professional enclaves, like the BSSRS, into the wider and more problematic world of radical politics.[78] And some may go further than that by opting out of science altogether.[79] If such developments do occur, then the 1970s will certainly become a time when, to employ a famous phrase from the Thirties, British science once again finds itself 'at the crossroads'.[80]

[78] This seems to be already occurring in the United States. See Martin Perl, 'The "New Critics" in American Science', *New Scientist*, **46** (9 April 1970), 63–5.

[79] Piers Corbyn and David Wield, 'Science Education in a Social Context', *New Scientist*, **47** (17 September 1970), 577.

[80] *Science at the Crossroads* (Kniga, 1931) brought together the papers presented by the Russian delegation to the International Congress of the History of Science and Technology held in London during the summer of 1931. The book had a profound impact upon the thinking of Radical scientists. This invaluable document, long out of print, will soon be made available as part of the Cass reprint series in the history of science.