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## Public Health in the 1950s: The Watershed of Smoking and Lung Cancer

Richard Doll always maintained that discovering the link between smoking and lung cancer was a surprise:

we began our study without any expectation that tobacco was likely to be an important cause of the disease and we included questions about its use primarily because the consumption of tobacco and particularly the consumption of cigarettes had increased at a possibly appropriate interval before the increase in mortality began to be recorded. For my part, I suspected that if we could find a cause it was most likely to have something to do with motor cars and the tarring of the roads.<sup>1</sup>

Doll was questioned by the historian Roy Porter after he had made this statement. Porter asked how surprised he was by these findings: Doll said, 'Very'.<sup>2</sup> Such narratives of discovery are commonly observed in the history of science. Here was a new form of scientific discovery in the post-war period, a discovery of statistical correlation and its impact, rather than a microbe or bacteria causing disease and observed in the laboratory: but the language used to describe its unveiling was the same.

The early history of the smoking and lung cancer connection is well known and has been recounted in a number of different histories.<sup>3</sup> Concern was roused by the gradual increase in the incidence of cancer;

<sup>1</sup> Sir R. Doll, 'The First Reports on Smoking and Lung Cancer', in S. Lock, L. Reynolds, and E. M. Tansley (eds.), *Ashes to Ashes: The History of Smoking and Health* (Amsterdam: Rodopi, 1998), 130–40, 133. See also 'Conversation with Sir Richard Doll', *British Journal of Addiction*, 86 (4) (1991), 365–77.

<sup>2</sup> Doll 'First Reports on Smoking and Lung Cancer', 141.

<sup>3</sup> For example, J. Austoker, *A History of the Imperial Cancer Research Fund, 1902–1986* (Oxford: Oxford University Press, 1988), 186–99; C. Webster, 'Tobacco Smoking Addiction: A Challenge to the National Health Service', *British Journal of Addiction*, 79 (1984), 8–16.

a change in the balance of the sexes, towards men; and the increasingly important role of lung cancer. The greatest increase in lung cancer came in males over forty-five, where the incidence increased sixfold between 1930 and 1945. At first it was thought that these changes might be due to improved diagnosis and better recording and registration. Research had been carried out in the 1930s by Sir Ernest Kennaway, Professor of Experimental Pathology at the Chester Beatty Institute in London and famous for his late 1920s work on the carcinogenic potential of 3,4-benzpyrene. A detailed examination of post-mortem certificates had been published in 1947, and had helped to eliminate occupational and environmental factors. Kennaway pointed to a connection with cigarette smoking, but his work, based on statistical correlations, carried little weight in the context of the time, when such correlations were not seen as central to scientific proof. Laboratory studies also tended to support the connection. Research had also been undertaken before the War in Nazi Germany and by the American biometrician Raymond Pearl, for the insurance industry.<sup>4</sup> The issue became more urgent post-war and discussions between the Ministry of Health and the Medical Research Council (MRC) led to the council convening an informal conference on cancer of the lung in February 1947. The MRC agreed to initiate a large-scale statistical study of the past smoking habits of those with cancer of the lung and of two control groups. Who would take the work forward was a matter of discussion: both the Social Medicine Unit under Professor Jerry Morris and Patrick Lawther, who subsequently ran the Air Pollution Unit at St Bartholomew's Hospital, were under consideration.<sup>5</sup> This was the origin of the work carried out in the Statistical Research Unit at the London School of Hygiene and Tropical Medicine (LSHTM) by Professor Bradford Hill and Dr Richard Doll. The results, published in the *British Medical Journal (BMJ)* in 1950, concluded that there was a 'real association' between carcinoma of the lung and smoking and that smoking was a factor, and an important one, in the production of carcinoma of the lung. Work by Wynder and

<sup>4</sup> G. D. Smith, S. A. Strobele, and M. Egger, 'Smoking and Health Promotion in Nazi Germany', *Journal of Epidemiology and Community Health*, 48 (1994), 220–3; R. N. Proctor, *The Nazi War on Cancer* (Princeton: Princeton University Press, 1999), 173–247.

<sup>5</sup> L. Berlivet, "'Association or Causation?'" The Debate on the Scientific Status of Risk Factor Epidemiology, 1947–c.1965', in V. Berridge (ed.), *Making Health Policy. Networks in Research and Policy after 1945* (Amsterdam: Rodopi, 2005), 39–74; interview with Pat Lawther by Virginia Berridge and Suzanne Taylor, February 2003.

Graham in the United States, published just before, had come to similar conclusions. Later prospective studies carried out by Doll and Bradford Hill and by Cuyler Hammond and Horn in the United States appeared to implicate cigarette smoking even further.

In the UK context, the work of Doll and Hill was the watershed. This was a case control study based on twenty London hospitals. With its talk of ‘almoners’ administering a ‘set questionnaire’ the text now has a period air. The conclusions were cautious. Then in 1956 came the results of a prospective study which Doll and Hill had started in 1951. The study related the deaths of doctors occurring since October 1951 to non-smoking, present smoking, and ex-smoking groups as constituted at that date. It concluded that the death rate for lung cancer increased as the amount smoked increased; and, conversely, that there was a progressive and significant reduction in mortality with the increase in the length of time over which smoking was given up. Further results from this British doctors study came at intervals over the next forty years. Results from the follow-up were published in 2004, just before Doll’s death the following year.<sup>6</sup>

## PUBLIC HEALTH IN FLUX IN THE 1950S

At this stage, the analysis of events could continue with the story of smoking and lung cancer and how the smoking issue fared over the next decade. This is a story which has been recounted within the different theoretical and ideological frameworks for the relationship between science and policy which were discussed in the Introduction: we will return to those and to the smoking story. But our main initial purpose is to set that story within its 1950s public health context. Smoking was the exemplar of what came to be the main style of post-war public health. Such a style emphasized the role of individual behaviour, legitimated through population-based epidemiology, as the dominant focus. It

<sup>6</sup> R. Doll and A. B. Hill, ‘Smoking and Carcinoma of the Lung. Preliminary Report’, *British Medical Journal*, 2 (1950), 739–48; *idem*, ‘The Mortality of Doctors in Relation to Their Smoking Habits. A Preliminary Report’, *British Medical Journal*, 1 (1954), 1451–5; *idem* ‘Lung Cancer and Other Causes of Death in Relation to Smoking. A Second Report on the Mortality of British Doctors’ *British Medical Journal*, 2 (1956), 1071–81; R. Doll, R. Peto, J. Boreham, I. Sutherland, ‘Mortality in Relation to Smoking: 50 Years’ Observation on Male British Doctors’, *British Medical Journal*, 328 (2004), 1519–33.

stimulated new attitudes on the part of government in relating to the public on matters of health and a heightened significance for research-based surveillance. It was thus a key component of the establishment of Beck's 'risk society', which was also a 'scientized society'. Public health in that decade was in a state of flux—as an occupation, but also in terms of its animating ideas and theories and modes of scientific explanation. The response to smoking highlighted these tensions. The following section will examine the state of play of public health as an occupation, but also its disease focus, ideology, and the technical tools it came to utilize.

It is not surprising that most historical attention has concentrated on the occupational disarray of public health during these years. In many respects, however, the occupation of public health post-war had little to do with the rethinking of public health. As an occupation, it had failed to capitalize on the coming of the National Health Service in 1948. The Medical Officer of Health (MoH) could have been the unifying force within local government in the tripartite structure of health services. But the service was differently structured, through the nationalization of the hospitals. It was funded through central government taxation rather than local government rates, as had been expected. The pre-war public health 'empire' in the local authorities had seen public health doctors running hospitals and a wide range of services. But this empire began to disintegrate post-war. Lewis has argued that MoHs bear some responsibility for this outcome, having previously been happy to extend their activities in whatever direction offered, without a distinct vision of what 'public health' was all about.<sup>7</sup> Much clinic work began to pass from local authorities into general practice, which was also redefining its role in this period. In addition, the position of the MoH in the local authority became increasingly uncertain as ancillary health occupations defined their own professional competencies. Sanitary inspectors claimed autonomy in the 1950s and were renamed public health inspectors in 1956.<sup>8</sup> The social work profession was also emergent as a separate entity. Money spent on social welfare services in local government grew considerably during this period.<sup>9</sup> This created further tensions as

<sup>7</sup> J. Lewis, *What Price Community Medicine? The Philosophy, Practice and Politics of Public Health since 1919* (Brighton: Wheatsheaf, 1986), 17–18.

<sup>8</sup> V. Berridge, *Health and Society in Britain since 1939* (Cambridge: Cambridge University Press, 1999), 44.

<sup>9</sup> R. Baggott, *Public Health: Policy and Politics* (Basingstoke: Palgrave, 2000), 45–6.

increasingly social workers in local government saw medical control as inappropriate.

It would be a mistake to assume that there was no innovation or vitality in local public health practice. We know relatively little about the nature of public health work at this level. Recent research has revealed that the local dimensions of interwar public health practice were very variable, but there has so far been little in-depth research into the work of the MoH in the 1950s and 1960s.<sup>10</sup> Loughlin's work shows how some boroughs were appointing health education officers in the 1950s and that a distinctive localized style of group health education was emerging with professional concerns developing through an Institute of Health Education.<sup>11</sup> In Leicester, a reasonably progressive local authority, the role and work of the MoH in the 1950s was uncertain. Leicester appointed a health education officer to work within local government under the MoH. Work in community care for the elderly and the mentally ill expanded. However, the public health department remained remote from newer developments, such as the use of psychological techniques in the School Medical Service, and it was wedded to outdated concepts of 'the problem family' which had undertones of pre-war eugenics, rather than the newer case work approaches pioneered by the Family Service Units.<sup>12</sup> Individual MoHs moved towards new approaches. One trend, also underlined by the work of the health education officers, was towards the more effective use of communications strategies. The work of McQueen in Aberdeen before and during the 1964 Aberdeen typhoid outbreak illustrated the use of 'modern' technologies of mass communication within the context of the local remit of the MoH.<sup>13</sup> Here was one option for future public health directions. The work of another MoH pioneered a different approach—'evidence-based' health service research focused activity. The work of R. 'Paddy' Donaldson on Teesside in the 1960s developed research-based screening activities. But Donaldson handed

<sup>10</sup> A. Levene, M. Powell, and J. Stewart, 'Patterns of Municipal Health Expenditure in Interwar England and Wales', *Bulletin of the History of Medicine*, 78(3) (2004), 635–69.

<sup>11</sup> Kelly Loughlin's research on developments in health education in the 1950s is being drawn upon here.

<sup>12</sup> J. Welshman, *Municipal Medicine: Public Health in Twentieth Century Britain* (Oxford: Peter Lang, 2000).

<sup>13</sup> L. Diack and D. Smith, 'The Media and the Management of a Food Crisis. Aberdeen's Typhoid Outbreak in 1964', in V. Berridge and K. Loughlin (eds.), *Medicine, the Market and the Mass Media. Producing Health in the Twentieth Century* (Abingdon: Routledge, 2005), 79–94.

over such activities to the local general practitioners, a transfer which symbolized the continuing and growing overlap between the activities of the two professional groupings. Donaldson was the father of the current chief medical officer (CMO), Sir Liam Donaldson: his father's development of screening also symbolized public health's search for a technocratic role related to health services.<sup>14</sup>

The changed organization of health services under the NHS was in part responsible for this search for new roles. But so, too, was the changing pattern of disease. The traditional focus of public health had been the outbreak or the epidemic: public health practitioners looked back to the great days of environmentalism and the fight against cholera and typhoid in the mid-nineteenth century. But this pattern of disease and disease-related mortality began to change in the middle of the twentieth century. Between the 1840s and 1971, three-quarters of the improvement in death rates had been due to the decline in infectious disease, with non-infectious conditions accounting for the remaining quarter. But this pattern changed after the Second World War. The old 'public health' diseases like TB or diphtheria were in decline. For TB effective chemotherapy, and mass radiography, virtually eliminated the need for treatment by the mid-1950s. This accelerated a longer-term decline in TB rates which predated the advent of BCG vaccination introduced in the 1950s.<sup>15</sup> As the population lived longer, so non-infectious causes of death such as heart disease, strokes, and cancer grew in importance. The connection between smoking and lung cancer was one of the earliest instances of research-led discussion of the new patterns of disease. It also underlined a reorientation of chest medicine: after the 1950s this specialty no longer had TB as its major concern and sought a new role. Most of the increase in the 'chronic' diseases was relative, because of the decline of other causes and the survival of more people to ages at which those diseases occurred, but some also was thought to rise from an absolute increase in incidence.<sup>16</sup> These changes in the

<sup>14</sup> R. J. Donaldson, *Off the Cuff. Reminiscences of My Half Century Career in Public Health* (Richmond: Murray Print, 2000); S. McLaurin and D. F. Smith, 'Professional Strategies of Medical Officers of Health in the Post-war Period—2: "Progressive Realism": The Case of Dr R. J. Donaldson, MoH for Teesside, 1968–1974', *Journal of Public Health Medicine*, 24(2) (2002), 130–5.

<sup>15</sup> L. Bryder, *Below the Magic Mountain. A Social History of Tuberculosis in Twentieth Century Britain* (Oxford: Oxford University Press, 1988), 262.

<sup>16</sup> See A. Gray, 'The Decline of Infectious Diseases: The Case of England', in A. Gray (ed.), *World Health and Disease*, Health and Disease series, Book 3 (Milton Keynes: Open University Press, 1993), 75; K. McPherson and D. Coleman, 'Health', in A. H.

patterning of disease were important for the new role of public health, for they, along with the modes of explanation, prefigured the important changes in the nature and focus of public health activity in the next half-century. They ultimately brought with them a considerable focus on the role of the individual and what individuals could do to avoid the onset of 'self' as opposed to 'environmentally' induced disease.<sup>17</sup>

Social medicine had been the main ideology working for change in public health in the interwar and wartime years, becoming an international movement with an exchange of ideas and models, derived in part from Soviet social hygiene experiments after the Revolution.<sup>18</sup> Its influence extended to the United States, Latin America, and European countries like Belgium, where René Sand took the chair of social medicine in 1945, a post established with funding from the US Rockefeller Foundation. Rockefeller was also instrumental in the international promotion of social medicine in Latin America. In many countries the goals of social medicine were overtly linked to programmes of political reform.<sup>19</sup> In Britain, the ideas of social medicine were taken up by academics in medicine and the social sciences and the ideas developed as part of the more general discussion of health planning and reconstruction during the war. Jane Lewis notes that the term was not widely used in the UK until the early 1940s, and social medicine was sometimes confused with socialized medicine and the planning for integrated health services. After the establishment of the chair in social medicine at Oxford University in 1942, a chair taken by John Ryle, the development of the concept, so Lewis argues, was conditioned by its location within the universities and a search for academic credibility which led it further away from policy concerns.<sup>20</sup> The concept of

Halsey (ed.), *British Social Trends since 1900. A Guide to the Changing Social Structure of Britain*, 2nd edn (Basingstoke: Macmillan, 1988), 398–461.

<sup>17</sup> M. Jackson, 'Cleansing the Air and Promoting Health. The Politics of Pollution in Post-war Britain', in Berridge and Loughlin (eds.), *Medicine, the Market and the Mass Media*, 221–43, sees the clean air activities of the 1950s as precursors of later environmentalism in relation to health. However, he recognizes that the environmental revival took place from the 1960s initially largely through single-issue pressure groups.

<sup>18</sup> For further discussion of pre-war social medicine and the post-war change, see D. Porter (ed.), *Social Medicine and Medical Sociology in the Twentieth Century* (Amsterdam: Rodopi, 1997) and her chapter 'The Decline of Social Medicine in the 1960s', 97–119.

<sup>19</sup> M. Cueto, *Missionaries of Science: The Rockefeller Foundation and Latin America* (Bloomington: Indiana University Press, 1994); D. Porter, *Health, Civilization and the State. A History of Public Health from Ancient to Modern Times* (London: Routledge, 1999), 293.

<sup>20</sup> Lewis, *What Price Community Medicine?*, 37.

social medicine remained vague. Although to Ryle it symbolized the combination of social conscience with clinical medicine, other leading proponents like Richard Titmuss and J. N. Morris attached importance to the involvement of social science, the use of epidemiology, and the study of health policy.<sup>21</sup> Its major practical impact during the 1940s was in the search for a new type of medical curriculum, but even there it failed to have the impact which it had hoped. Departments of social medicine were not generally established in the medical schools as two mid-1940s reports had proposed.<sup>22</sup> The new creed was also rejected at the level of practice, by the MoHs, who saw it as too clinical and too interested in social pathology rather than health. Thus began a division between theory and practice which continued to mark the public health field over the ensuing decades and which also underpins the developments analysed in this book.

Social medicine also intersected directly with the smoking and lung cancer story, for it was the social medicine networks which initially took the smoking issue forward. The tenets of social medicine in the 1940s were close to the interests of the Socialist Medical Association, of which Richard Doll was a prominent member.<sup>23</sup> The Medical Research Council set up a Social Medicine Unit under Jerry Morris at the Central Middlesex Hospital in 1948 and this hospital was where Doll also came to work on gastroenterology with Francis Avery Jones.<sup>24</sup> The Social Medicine Unit was one of those originally considered for the location of the smoking and lung cancer research. Dr Horace Joules, medical superintendent of the Hospital, was a member of the Socialist Medical Association; the hospital became a powerhouse of social medicine sentiment. Networks which would be of importance for post-war public health were beginning to form.

The key to the new post-war public health would be a revised epidemiology which dealt with chronic rather than infectious disease. This focus on epidemiology was part of the post-war transmutation of social medicine. In the mode of explaining social problems,

<sup>21</sup> Lewis, *What Price Community Medicine?*, 40.

<sup>22</sup> *Ibid.* 44.

<sup>23</sup> J. Stewart, 'The Battle for Health: A Political History of the Socialist Medical Association, 1930–51' (Aldershot: Ashgate, 1999), 39.

<sup>24</sup> S. Murphy, 'The Early Days of the MRC Social Medicine Research Unit', *Social History of Medicine*, 12(3) (1999), 389–406; C. C. Booth, 'Smoking and the Gold Headed Cane', in C. C. Booth (ed.), *Balancing Act: Essays to Honour Stephen Lock* (London: Keynes Press, 1991), 49–55.

tensions arose between the social scientific and the quantitative and also between an emphasis on class and occupation and that on individual behaviour as explanatory concepts. Social medicine in its Oxford variant and also in Birmingham under the leadership of Thomas McKeown increasingly came to mean medical statistics and here it intersected with the MoHs' traditional interest in local statistics and field studies. Murphy and Davey Smith's analysis of articles published between 1947 and 1951 in the *British Journal of Social Medicine* show that most dealt with the health of populations in traditional social medicine style, but that they did this through quantitative rather than qualitative methods. The majority of the papers were concerned with the biological causes of disease and what could be called clinical epidemiology.<sup>25</sup>

The work of Doll and Hill in the smoking and lung cancer studies took these epidemiological studies further. Their work established or refined new technical developments in epidemiology—large population-based surveys, case control and prospective studies. The concept of 'relative risk' was first introduced in the smoking and lung cancer work, replacing an earlier focus on the importance of childhood in adult disease by an emphasis on risk factors for specific diseases. Such approaches fitted with changes in patterns of disease but were by no means uncontroversial or uncritically accepted either by traditional laboratory scientists or by other branches of statistics, as we will see below. They also came at a time when the nature of the 'social' in social medicine investigations was changing.

Here was a major change away from explanation in terms of social structure, economic inequality, occupation, or environment. Smoking and lung cancer epitomized this pending change and helped to accelerate it. Earlier studies had emphasized the role of class and of occupation as for example in Morris and Titmuss' wartime study of rheumatic heart disease.<sup>26</sup> Those interested in diseases of the lung would have typically concentrated their investigation on the role of environment or of occupation. This emphasis continued in the 1950s: in 1954, as President of the Socialist Medical Association, Joules

<sup>25</sup> S. Murphy and G. Davey Smith, 'The British Journal of Social Medicine: What Was in a Name?', *Journal of Epidemiology and Community Health*, 51 (1997), 2–8.

<sup>26</sup> J. N. Morris and R. M. Titmuss, 'Epidemiology of Juvenile Rheumatism', *Lancet*, ii (1942), 59–63; V. Berridge, 'Jerry Morris', *International Journal of Epidemiology*, 30 (2001), 1141–5.

established a special committee on Clean Air and Diseases of the Lung which drew together medical experts on industrial diseases and representatives of the engineering, mining, and tobacco workers' unions.<sup>27</sup> But this focus on occupation and environment was also in flux. In 1950, Doll had demonstrated the relationship between infant mortality, tuberculosis, and poor housing conditions, calling on the government to build an extra 400,000 houses a year.<sup>28</sup> Such a focus was in contrast to the emphasis on individual responsibility which emerged from the smoking work. The rise of the local social survey—another aspect of statistical development in the 1950s—saw explanation in terms of social structural inequality replaced by an emphasis on social behaviour. Personality and mental health issues like neurosis also started to enter the framework. Porter's analysis of articles in the *British Journal of Social Medicine* shows that the psychosomatic nature of disease and the role of stress in the aetiology of the diseases of modern life came increasingly to preoccupy the journal by the middle of the 1950s.<sup>29</sup>

Developments in social medicine were an important context for the new epidemiology. The distinctively British statistical tradition was also a significant influence, more important in the late 1940s and 1950s than the US–UK epidemiological connections which developed later. The 'pre-history' of British statistics has been underplayed as a precursor of the developments in epidemiology after the War. Yet it was an important dimension. Places were beginning to give way to populations as the main focus. Edward Higgs points out that the work in the late nineteenth and early twentieth centuries of Francis Galton, Karl Pearson, George Udny Yule, R. A. Fisher, and their colleagues on correlation and regression analysis, goodness of fit, sampling, and statistical error had given science new techniques of measurement and also undermined its certainties.<sup>30</sup> Eileen Magnello traces a 'family tree' of statistical influence from Pearson through Greenwood and Percy

<sup>27</sup> P. Palladino, 'Discourses of Smoking, Health, and the Just Society: Yesterday, Today, and the Return of the Same?', *Social History of Medicine*, 14 (2001), 313–35.

<sup>28</sup> Stewart, 'The Battle for Health', 202.

<sup>29</sup> D. Porter, 'From Social Structure to Social Behaviour in Britain after the Second World War', in V. Berridge and S. Blume (eds.), *Poor Health. Social Inequality before and after the Black Report* (London: Frank Cass, 2003), 58–80.

<sup>30</sup> E. Higgs, 'Medical Statistics, Patronage and the State: The Development of the MRC Statistical Unit, 1911–1948', *Medical History*, 44 (2000), 323–40.

Stocks, who were Pearson's students, to Bradford Hill.<sup>31</sup> In the interwar years, as Rosser Matthews has shown, Pearsonian statistics were little understood by medical practitioners of any persuasion and the mode of analysis had little legitimacy within medicine.<sup>32</sup> But the networks were developing. Higgs locates the institutional embedding of statistics in the personal networks formed in the interwar years between Major Greenwood, who developed close links with the MRC and the Ministry of Health (MH) as the London School of Hygiene and Tropical Medicine's (LSHTM) first professor of epidemiology and vital statistics, and Walter Morley Fletcher, secretary of the MRC. Greenwood's influence on a generation of British medical statisticians was profound; and post-war it was Charles Fletcher, Morley Fletcher's son, and Bradford Hill, statistician son of Leonard Hill, head of the MRC's interwar department of applied physiology, with whom Greenwood had worked, who took these developments further. But the transformation in epidemiology towards concepts of multiple causation and away from bacteriological models took place in the first quarter of the twentieth century, before the shift in patterns of disease. It was Greenwood, whose *Epidemics and Crowd Diseases* was published in 1935, who pioneered these developments and whose influence came to fruition in the post-war developments in public health.<sup>33</sup> The central powerhouse was the MRC Statistical Research Unit at LSHTM in the 1940s and 1950s. Its work had a profound impact on international medicine. The Unit conducted the first statistically rigorous clinical trial, that of the effects of streptomycin on tuberculosis, and was the location for the smoking and lung cancer studies. The role of the School as the institutional embedding of academic public health, and of personal networks and tactical alliances in the context of British statistics is an important part of the story.

So the research on smoking and lung cancer impacted on a period of change within public health and its way of analysing disease. Public health was 'on the cusp' between different ways of looking at health and illness in society. Legitimizing the smoking and lung cancer link was the

<sup>31</sup> E. Magnello and A. Hardy (eds.), *The Road to Medical Statistics* (Amsterdam: Rodopi, 2002), 95–123.

<sup>32</sup> J. Rosser Matthews, *Quantification and the Quest for Medical Certainty* (Princeton: Princeton University Press, 1995), 87–149.

<sup>33</sup> D. Roth, 'The Scientific Basis of Epidemiology; an Historical and Philosophical Enquiry', PhD thesis, University of California at Berkeley, 1976.

first stage in the establishment of society focused on individual health and obsessing over the concept of risk.

### DENIAL AND DELAY? THE RESPONSE IN THE 1950S TO THE SMOKING–LUNG CANCER CONNECTION

Austin Bradford Hill came from the British statistical tradition outlined earlier, whereas Richard Doll's radicalism and move into statistics from medicine epitomized some of the interests of social medicine. Let us return now to the early 1950s and the publication of the Doll–Hill work to analyse its reception. The social medicine–public health context was important in that response: but so, too, was the view from government of what the implications of the research might be. Smoking and lung cancer impacted on public health in a state of flux, but it also highlighted a set of choices for a government just emerging from the wartime years. The policy response in the 1950s has often been categorized as one of 'denial and delay', of government failing to respond immediately because of the economic importance of tobacco duty and the political influence of the tobacco industry. Those issues were important: but there were also wider concerns about the proper role for government in advising its citizens about health risk. The government response was itself part of the gradual reorientation of society towards a focus on the idea of individualized health 'risk' and the marketing of such an ethos to the population.

Charles Webster has shown in detail how the particular issue of smoking and lung cancer fared over the seven years after the first results were published.<sup>34</sup> A written parliamentary answer from Ian Macleod as Minister of Health in the Conservative government in February 1954 accepted that there was a connection but that it was not a simple one.<sup>35</sup> When the MRC issued its own report on smoking and lung cancer in June 1957 the Ministry of Health adopted the argument more fully. The Parliamentary Secretary to the MH on 27 June 1957 expressed for the first time unambiguous support for the conclusions reached by Doll and Hill in 1950. Webster locates this sequence of events in the

<sup>34</sup> Webster, 'Tobacco Smoking Addiction'.

<sup>35</sup> Hansard, Parliamentary Debates, 12 Feb. 1954, 523, cols. 173–4. Written answer from Iain Macleod, Minister of Health.

machinations of the powerful and complex advisory machinery which stood between the MRC and the MH. The main advisory body was the Cancer and Radiotherapy Standing Advisory Committee, reporting to the Central Health Services Council, which in turn advised the MH. Horace Joules of the Central Middlesex Hospital, a member of both bodies, was the only person within the advisory committee machinery consistently to press the issue. Palladino has recently related his stance to a continuing Christian Socialist tradition.<sup>36</sup> The initial government response also in June 1957 was a MH circular encouraging local authorities to develop health education campaigns on smoking. The 1950s saw a fluid policy situation in which the government response was conditioned by a number of factors, not all of them directly smoking related. The economic and financial importance of smoking to the exchequer was important and the tobacco industry was a valued partner of government. But also in play were the contested nature of the evidence; changes in the nature and role of public health; the role of air pollution as a contentious political issue; the central government politics of health education; and the general culture of smoking with its electoral implications. Let us look at each of these issues.

The rise of a new style of epidemiology in the post-war years and the way in which social medicine was increasingly developing a statistical and epidemiological bent has already been discussed. But this had yet to establish legitimacy as an acceptable mode of scientific proof in wider public and political circles. The nature of the evidence which the epidemiological studies presented in the 1950s has been much discussed by American historians in recent years. Allan Brandt and John Burnham have seen the smoking–lung cancer ‘discovery’ and subsequent events as a major watershed in the acceptability of chronic disease epidemiology to provide legitimate forms of scientific explanation; this was a major paradigm shift towards epidemiology and statistical modes of explanation and causation at the expense of laboratory science.<sup>37</sup> Mark Parascandola has pointed out that the conflict was more within statistics, a controversy between biostatisticians and epidemiologists and has also related these discussions to the politics

<sup>36</sup> Palladino, ‘Discourses of Smoking, Health, and the Just Society’.

<sup>37</sup> A. Brandt, ‘The Cigarette, Risk and American Culture’, *Daedalus*, 119 (1990), 155–76; J. Burnham, ‘American Physicians and Tobacco Use: Two Surgeons General, 1929 and 1964’, *Bulletin of the History of Medicine*, 63 (1989), 1–31.

of the National Institutes of Health (NIH) in the 1950s.<sup>38</sup> Talley et al. have argued that there was a legitimate scientific controversy over smoking and lung cancer in the 1950s and early 1960s which reached its denouement and codification in the Surgeon General's report of 1964.<sup>39</sup> However, these historical positions have been complicated by the involvement of historians in the litigation through which US smoking policy primarily proceeds.<sup>40</sup>

The British situation was not the same as that in the United States and there were distinct national differences in the process of scientific discovery. Social medicine and British medical statistics were of course lacking as a context in the United States. The research also filtered through different health systems and different governmental routes. In the UK politicians and bureaucrats in the central state were directly involved in pronouncing on science, and needed convincing; this was not the case in the United States. The links between researchers in the two countries also were slight at this stage. In the 1940s, Doll and Hill were not aware of the parallel research being carried out by Wynder and Graham, but in the 1950s contacts between British and American epidemiologists developed rapidly. It was significant that Hill gave the first presentation of his postulates, which gave the ground rules for establishing causation, at a lecture at Harvard in the 1950s. As in the United States, the conflict in Britain was within statistics, where a key opponent to the smoking and lung cancer hypothesis

<sup>38</sup> M. Parascandola, 'Cigarettes and the US Public Health Service in the 1950s', *American Journal of Public Health*, 91 (2001), 196–205, and *idem*, 'What Is an Epidemiologist? Biostatistics and Epidemiology at the National Cancer Institute', unpublished manuscript; *idem*, 'Skepticism, Statistical Methods and the Cigarette', *Perspectives in Medicine and Biology*, 47 (2004), 246–61.

<sup>39</sup> C. Talley, H. I. Kushner, and C. E. Sterk, 'Lung Cancer, Chronic Disease Epidemiology, and Medicine, 1948–1964', *Journal of the History of Medicine and Allied Sciences*, 59 (2004), 329–74.

<sup>40</sup> Brandt has recently changed his view in testimony given in a legal case in the United States against the Phillip Morris tobacco company. In this testimony, he argues that in the United States scientific consensus about the smoking and lung cancer relationship was reached without a doubt in the mid-1950s and that controversy was only kept alive by the tobacco companies through public relations activity. US District Court for the District of Columbia, United States of America versus Philip Morris USA Inc. United States written direct examination of Allan M. Brandt, PhD, <<http://www.usdoj.gov/civil/cases/tobacco2/20040920%20Allan%20M%20Brandt%20Ph.D520Written%20Direct.pdf>>, accessed 23 November 2004.

Talley and Kushner have worked for the tobacco industry defence law firms but have withdrawn their support for US industry legal positions and have declared that their article is not intended to provide any support for the industry's legal case.

was the statistician Ronald Fisher, who had played a central role in the development of the randomized controlled trial.<sup>41</sup> Ronald Fisher has been criticized because of his role as adviser to the Tobacco Manufacturers Standing Committee, set up in 1956 to assist research. More important was his eugenic worldview, which at the time that the Doll–Hill research was first published was still a dominant tendency within British statistical explanation, although subsequently it fell out of fashion. Recent evidence has thrown more light on the nature of this controversy. Fisher’s opposition arose in part from statistical issues; correlation should not be taken as proof of causation. But it also emanated from his libertarian views, which meant that he was strongly against anti-smoking publicity. He thought people should be given the data and draw their own conclusions: he criticized Doll and Hill only after an article in the *BMJ* had stated that people should be discouraged from smoking. This view of what was termed ‘propaganda’ was common at the time and informed the early health education responses.<sup>42</sup>

The issue of inhalation also divided the researchers, since, paradoxically, fewer smokers who inhaled developed lung cancer.<sup>43</sup> There were threats of libel. Bradford Hill had offered data from the 1952 study he and Doll had carried out, not from the 1950 study. Fisher accused the researchers of suppressing evidence. His view was that he had requested these papers through the medium of Doll, but that Doll did not pass the request on to Bradford Hill and hence the dispute escalated. Doll’s recollection was that he had not spoken to Fisher on the matter.<sup>44</sup> This controversy was played out in a number of publications and was also taken up by other authors. The closure in favour of the causal

<sup>41</sup> R. A. Fisher, ‘Dangers of Cigarette Smoking’, *British Medical Journal*, 2 (1957), 43 (in the same volume, see also ‘Alleged Dangers of Cigarette Smoking’, 297–8); *idem*, ‘Lung Cancer and Cigarettes’, *Nature*, 182 (1958), 108; *idem*, ‘Cancer and Smoking’, *Nature*, 182 (1958), 596; *idem*, *Smoking, the Cancer Controversy: Some Attempts to Assess the Evidence* (Edinburgh, 1959); J. B. Fisher, *R. A. Fisher: The Life of a Scientist* (New York, 1978).

<sup>42</sup> V. Berridge and K. Loughlin, ‘Smoking and the New Health Education in Britain, 1950s to 1970s’, *American Journal of Public Health*, 95(6), (2005), 956–64.

<sup>43</sup> This was the view at the time, although subsequently it was shown that all cigarette smokers inhaled, even if unconsciously. Thanks to Walter Holland for a comment on this point.

<sup>44</sup> This sequence of events is detailed in I. Chalmers, ‘Fisher and Bradford Hill: Theory and Pragmatism?’, *International Journal of Epidemiology*, 32 (2003), 922–48, the proceedings of a conference which included recollections from Walter Bodmer, Fisher’s ex-student, and Sir Richard Doll. This evidence emerged in response to a question from the author of this paper and was subsequently elaborated by research in the Fisher papers carried out by Peter Armitage and Ian Chalmers.

hypothesis came through Bradford Hill's postulates, published in 1965 when Hill was President of the Section of Occupational Health of the Royal Society of Medicine. Hill had first begun to develop the criteria for cause and effect and association in the late 1930s and had expanded them in a lecture at Harvard in the 1950s. Their publication in the 1960s formalized guidelines for causal inference and marked the closure of the main period of controversy. In a recent paper, Luc Berlivet has taken the British story and looked at the controversy around smoking and lung cancer and its key role in the formation of the modern science of epidemiology. He argues that

there was more to criticism of supporters of the 'causal hypothesis' than just a reaction of rear guard scientists and vested interests plotting to undermine a promising, if young, scientific practice ... The controversy stirred up by the publications on the relationship between tobacco and lung cancer was eventually transformed into a highly positive retrospective story. This is a process which reminds us of other famous episodes of 'discovery' in the history of science.<sup>45</sup>

This was an important debate within statistics and epidemiology, but it was also a debate which civil servants and others had to deal with. This scientific debate impacted on the policy response of civil servants and others in government. After the publication of the second Doll and Hill report in December 1952, the Imperial Tobacco Company, the main British tobacco company, entered the fray and papers from both sides were circulated to the Standing Advisory Committee in February 1953. As a result, the conflicting evidence, from Doll and Hill and from Geoffrey Todd, assistant manager in the statistical department of the Imperial Tobacco Company, was submitted to a committee chaired by the Government Actuary, Sir George Maddox, later that year. The civil servants in the MH were uncertain. Sir John Charles, the CMO, told Percy Stocks, Chief Medical Statistician to the Registrar General's Office, 'As regards the evidence, I am in general agreement with what you say, but what I was looking for was evidence apart from the analogous or purely statistical. So far as I am aware, there is no *purely* pathological evidence of this long incubation period in lung cancer'.<sup>46</sup> Neville Goodman, a MH civil servant, cited in an internal minute the tobacco industry's opposing research report; the failure of attempts to show a carcinogen in tobacco; and other causes of the rise in lung cancer

<sup>45</sup> Berlivet, "Association or Causation?", 39–74.

<sup>46</sup> London, National Archives, Ministry of Health papers, MH55/1011. Sir John Charles to Percy Stocks, 18 February 1953.

such as smoke pollution.<sup>47</sup> Doubts about the scientific objectivity of Wynder, who visited the Ministry in 1953, also compounded the issue:

He is a young man 'far gone in enthusiasm' for the causal relationship between tobacco smoking and lung cancer. (I had been told when I was in New York this spring that he was the son of a revivalist preacher and had inherited his father's antipathy to tobacco and alcohol. The American Cancer Society was very suspicious of his early work for this reason.)<sup>48</sup>

The statistical panel reported in November 1953 that a 'real association' had been established, with a 'strong presumption' that the real association was causal. It might also be dependent on co-factors such as the urban-rural difference and occupational matters; the report therefore treated with great reserve the death rates which had been calculated by Doll and Hill through a section on estimated risks in the 1952 paper. The Cancer SAC accepted this conclusion, recommending that young people should be warned about the risks of smoking. The government assessment of the state of scientific opinion was beginning to become clearer; and it was this development in opinion which led to the first MH statement in the House of Commons in February 1954, followed by a press conference. Macleod as Minister of Health promised no further action; there was a need for further research.<sup>49</sup> The parliamentary discussions of the time show similar fluidity in the political appreciation of the health risk. In an adjournment debate held in March 1953, MPs from across the political spectrum expressed uncertainty or opposition. Harmar Nicholls, Conservative MP for Peterborough, expressed the then common view of the dangers of arousing 'cancer phobia', the fear of cancer could be worse than cancer itself; the report 'is more a report of statisticians than a medical report'. Bessy Braddock, Labour MP for Liverpool Exchange, favoured an environmental explanation, and therefore found the urban-rural divide a barrier to acceptance of the smoking-lung cancer connection. 'In view of the fact that cigarette and pipe smoking goes on all over the country, it is folly to say that it is the main cause of lung cancer.'<sup>50</sup>

<sup>47</sup> *Ibid.*, Minute from Neville Goodman to Mr Gregson, 12 March 1953.

<sup>48</sup> *Ibid.*, Note by Goodman to Gregson, 28 October 1953.

<sup>49</sup> *Ibid.*, Smoking and Lung Cancer, Report of the statistical panel appointed by the Chief Medical Officer, Ministry of Health, 6 November 1953; Minutes of Standing Advisory Committee, 22 December 1953; Draft memorandum to Cabinet Home Affairs Committee, 26 January 1954.

<sup>50</sup> Hansard. Parliamentary Debates, 19 March 1953. Lung cancer (smoking) adjournment debate, cols. 333-50.

Expert opinion was also related to another issue: the role of the tobacco industry. Here there had been a long history of cooperation in Britain and a government–industry relationship different to that in the United States. Tobacco was a key import during the Second World War and its duty a major source of government revenue. During the War the industry had been under strict government control and the Board of Trade appointed Sir Alexander Maxwell, who before the War had been a leading leaf merchant, as Tobacco Controller. The industry, in its relationships with government, was different from the US tobacco industry, which had no such continuing corporate tradition.<sup>51</sup> Both Maxwell and Sir John Partridge of the Imperial Tobacco Company had close and continuing access to government. Imperial dominated the industry–government relationship in the UK until the late 1970s. The Imperial Board had been astonished by the Doll–Hill studies and saw its role as working with government, as it had done during the War, to produce a cleaner product. The US industry, by comparison, was distant from government, and concentrated from the start on public relations exercises to counteract the perceived dangers of smoking.<sup>52</sup> In the late 1970s, with changes in the ownership of the industry, Imperial’s dominance faltered and the role of the US companies in the UK became more significant.<sup>53</sup> But in the 1950s the close relationship was marked by efforts to deal with the health issue.

The industry provided an alternative source of scientific expertise, in particular through its own statistician, Geoffrey Todd, whose report had been submitted to the Cancer SAC. The industry also planned to fund research, and had approached both the MRC and the MH in 1953. Sir Alexander Maxwell, chairman of the Tobacco Advisory Committee, in a secret memo to Harold Himsworth, Secretary of the MRC, stated his lack of belief in any true association between smoking and lung cancer. In order to investigate the true causes of lung cancer the committee wished to covenant £250,000 over a period of seven

<sup>51</sup> B. W. E. Alford, *W. D. and H. O. Wills and the Development of the U.K. Tobacco Industry 1786–1965* (London: Methuen 1973), 399–428.

<sup>52</sup> Brandt’s legal testimony gives much detail on this public relations stance. USA vs Philip Morris USA Inc., United States written direct examination of Brandt.

<sup>53</sup> V. Berridge and P. Starns, ‘The “Invisible Industrialist” and Public Health: The Rise and Fall of “Safer Smoking” in the 1970s’, in Berridge and Loughlin (eds.), *Medicine, the Market and the Mass Media*, 172–91.

years. Discussions between the Treasury and the Ministry of Health resulted in a compromise whereby the tobacco company's gift was to the government, which would then allocate it to the MRC. This avoided charges of the impropriety of the Council accepting money from an interested body. The gift was for research into smoking and lung cancer, but also into the means of removing the harmful elements from the tobacco, when they were identified. This was the origin of a long programme of 'product modification' research which was of particular significance in the 1970s and also fuelled the work on nicotine carried out in the 1980s and 1990s. The gift was to be made, so John Boyd Carpenter at the Treasury wrote to the Lord President, the Marquess of Salisbury, for research into smoking and lung cancer, and 'presumably of the means of removing the elements in the tobacco which may have this effect'.<sup>54</sup>

A visit paid to Europe by Dr C. C. Little in 1956 to survey the state of play on tobacco research and funded by the Tobacco Industry Research Committee, an American industry organization, provided an outsider's view of the relationship between the British industry and government. Those connections were very different from those developed in the United States, where the industry took a public relations stance from the outset with a view to possible future legal action.<sup>55</sup> The British industry, he reported, had no knowledge at all of what had been funded through its MRC benefaction; industry was not seeking to influence the course of research. In the course of his visit, Dr Little moved easily between the scientific cancer research community, the Ministry of Health, where he met the CMO, Sir John Charles, and the Imperial Tobacco company offices and laboratories in Bristol. He advised the British industry that it should follow the US model and set up a coordinating committee to fund research. His idea was that it could be a MH advisory committee. In the event the manufacturers set up in 1956–7 the Tobacco Manufacturers Standing Committee, subsequently renamed the Tobacco Research Council, which opened its own laboratories in Harrogate in 1962 after the MRC benefaction had come to an end. None of these relationships were secret. The industry did not make a secret of its connections and referred to

<sup>54</sup> London, National Archives, Ministry of Health papers, MH55/1011, Letter from John Boyd Carpenter to Marquess of Salisbury, 8 February 1954.

<sup>55</sup> Little to Hartnett, 25 April 1956, Council for Tobacco Research Collection, <<http://legacy.library.ucsf.edu/cgi/getdoc?tid=dqf1aa00&fmt=pdf&ref=results>>.

the US industry research committee in its first published report.<sup>56</sup> However, there clearly also were differences in approach between the two industries, and there was criticism of the US industry from the British side which seemed uneasy with the American public relations approach.<sup>57</sup>

The role of the industry was also of concern at a broader level within government because of its revenue implications. In February 1954 Macleod as Minister of Health made a statement to the Commons which relayed the advice given by the Cancer SAC. This statement was made, as Herbert Brittain of the Treasury put it, 'in language which was in no way dangerous or embarrassing to us from the revenue point of view'. Macleod himself had commented with cheery cynicism in a letter to Boyd Carpenter at the Treasury in January 1954, 'we all know that the Welfare State and much else is based on tobacco smoking.'<sup>58</sup> Tobacco tax was an important part of government revenue (16% of central revenue in 1950) and signs of further movement on the causal hypothesis later in the 1950s evoked Treasury anxiety. A supplementary answer given by Robin Turton from the Ministry of Health on 5 March 1956, where he said there was a causal connection, brought forth enquiries from the Treasury; had there been more developments since 1954? Sir John Hawton, the MH Permanent Secretary, replied soothingly

needless to say, we are very conscious of the close Treasury interest in this subject and that is one of the things which governs the guarded sort of statements which we have so far made ... If there is any question of our being driven to say more than we already have on this subject, we shall of course only do it in consultation with you or your people ... I have a strong feeling that we are going to be put under more and more pressure to give more positive warnings to the public—and particularly from our own Central Health Services Council and its Medical Committee ... Until then I don't think there is anything we need do and I think that the best policy is to keep the subject as quiet as we are allowed to.<sup>59</sup>

<sup>56</sup> Tobacco Manufacturers Standing Committee, *First Annual Report for the Year Ended 31 May 1957*, refers to the close links with the US Tobacco Industry Research committee, 3–4.

<sup>57</sup> Duncan to Hartnett, 15 May 1956, Council for Tobacco Research Collection, <<http://legacy.library.ucsf.edu/cgi/getdoc?tid=xpf1aa00&fmt=pdf&ref=results>>.

<sup>58</sup> London, National Archives, Ministry of Health papers, MH55/1011, Letter from Ian Macleod to John Boyd Carpenter, 29 January 1954.

<sup>59</sup> London, National Archives, Ministry of Health papers, MH55/2232, Sir John Hawton to Hubert Brittain, Treasury, 15 March 1956.

But the matter was not allowed to remain quiet. Referred to the full Cabinet, it was decided that Turton should make a restrained statement in the Commons. Macmillan as Chancellor of the Exchequer wanted this held back until after the Budget. His diary entry for 19 April 1956 read, 'Cabinet 11.45, Singapore, British Guiana; medical views on the dangers of smoking. If we lose Singapore, it's a terrible blow to all our Far Eastern interests. If people really think they will get cancer of the lung from smoking it's the end of the Budget!'<sup>60</sup> Politicians at this period were generally cynical about the whole smoking issue, apart from its economic implications. Macleod told a House of Commons questioner who wanted an American report on smoking and lung cancer published as a White Paper that dozens of reports, all claiming to be authoritative, were being published. 'If my hon. Friend is a heavy smoker and is concerned about the connection between cancer of the lung and smoking, I would recommend him to give up reading.'<sup>61</sup> Macmillan commented about the statement to be made in 1956 by the minister of Health, 'Cabinet approved a statement to be made by the minister of Health about Tobacco and cancer of the lung. It was a much better draft than the original one. I only hope it won't stop people smoking!'<sup>62</sup>

Economic issues were not the only political consideration. Smoking was politically difficult for government, but so too was air pollution, with which the smoking–lung cancer issue intersected. This intersection came in two ways—through scientific uncertainty about the responsibility for the causation of lung cancer and through the political implications of air pollution. Scientific uncertainty was represented by Bessie Braddock's comment in the Commons debate. If lung cancer mortality was highest in urban areas how could smoking be the only factor implicated, when this did not have an urban–rural divide? The text of a TV broadcast on the subject in 1953 after publication of the Doll–Hill research on smoking and lung cancer in 1950 gives a sense of the focus on both individual and environment. Introduced by Charles Fletcher, later famous for his pioneering *Your Life in Their Hands*, the programme was

<sup>60</sup> H. Macmillan, *The Macmillan Diaries. The Cabinet Years, 1950–1957*, ed. P. Catterall (London: Macmillan, 2003), entry for 19 April, 1956, 551.

<sup>61</sup> Hansard, Parliamentary Debates 15 July 1954. Macleod himself gave up his sixty-a-day habit, not because of the scientific evidence, in which he firmly believed, but because he 'got bored with a messy habit'. He smoked three or four small cigars daily, in line with the health advice of the time, until his death. R. Shepherd, *Iain Macleod* (London: Hutchinson, 1994), 91–3.

<sup>62</sup> Macmillan, *Diaries*, entry for 23 May 1956, 556.

called *Matters of Medicine*. Dr Guy Scadding, taking part, expressed the views clearly:<sup>63</sup>

smoking cannot be called the cause of lung cancer, since non-smokers also get the disease, and moreover the increase in cigarette smoking is not likely to be the only cause of the increase in the lung cancer death rate. The effect of smoking cannot explain the difference in mortality between town and country dwellers. Perhaps the effect of air pollution is another factor. If the effects of smoking and general pollution of the air are ... if they reinforce each other, I think that most of the known facts about the incidence of lung cancer can be explained.<sup>64</sup>

This scientific uncertainty also caused difficulties at the political level, in the negotiations which took place in 1957 between the Cabinet committee on cancer of the lung, which was appointed in that year, and the Medical Research Council, which planned to issue a statement on the causes of lung cancer. This committee was operating just after the passage of the Clean Air Act in 1956, which had come about in part in response to the 'great smog' of 1952. The government's legislation had been delayed until after the general election of 1955 because of fears of how the public might react to restrictions on long-standing habits of open fire domestic heating; and the resultant legislation had also been criticized for dealing only with those habits and not with air pollution from industry.<sup>65</sup>

The MRC, so it was reported to the Cabinet committee, had for the first time come to the conclusion that the smoking of tobacco had a direct causal relationship to lung cancer and therefore there was no alternative but to publicize their conclusions. It was the proposed

<sup>63</sup> For the significance of this programme, see K. Loughlin, "'Your Life in Their Hands': The Context of a Medical-Media Controversy", *Media History*, 6 (2000), 177–88.

<sup>64</sup> *Matters of Medicine*, 3, 12 January 1953. In an interview, Dr Scadding later recalled how Doll had put him up to make this broadcast because he did not want to do it. Scadding was the 'respectable front', a comment which indicates the status of issues round this scientific claim. Guy Scadding, interview with Sir Gordon Worstenholme, London, Royal College of Physicians, RCP/Oxford Brookes video interview collection.

<sup>65</sup> For the response at this stage, see Jackson, 'Cleansing the Air and Promoting Health', in Berridge and Loughlin (eds.), *Medicine, the Market and the Mass Media*; R. Parker, 'The Struggle for Clean Air', in P. Hall, H. Land, R. Parker, and A. Webb (eds.), *Change, Choice and Conflict in Social Policy* (London, 1975; repr. Aldershot: Gower, 1988), 371–409. See also Roy Parker's comment and oral history in the transcript of the witness seminar on the smog of 1952 in <http://www.lshtm.ac.uk/history>. V. Berridge and S. Taylor (eds.), *The Big Smoke: Fifty Years after the 1952 London Smog* (London: Centre for History in Public Health, 2005).

inclusion in the MRC statement that up to 30% of lung cancer might be caused by air pollution which caused the greatest political alarm. This would give air pollution, the minutes record, 'unwarranted prominence'. The committee thought that Professor Bradford Hill and Dr Doll had failed to show any substantial difference in risk among non-smokers in greater London and in rural areas. So the politicians asked the MRC to re-examine their statement. Both statements, so it was commented, had obvious political implications.<sup>66</sup> On 31 May 1957, Lord Home, the Lord President of the Council (responsible for the MRC), reported back on the changes made in the statement. The MRC had re-examined their draft and proposed to modify the references to atmospheric pollution which implied that it might be responsible for up to 30% of such deaths. The section would read instead, 'on balance it seems likely that atmospheric pollution plays some part in causing the disease, but a relatively minor one in comparison with cigarette smoking.' A further section was modified to read, 'A proportion of cases, the exact content of which cannot yet be defined, may be due to atmospheric pollution.'<sup>67</sup> The pollution issue was effectively headed off.<sup>68</sup> This episode showed that, although government was wary about the smoking and lung cancer case as a policy issue, it was infinitely preferable to air pollution. That was the issue which government did not want reopened.<sup>69</sup>

Also involved were the politics of health education. Health education had traditionally been conducted by the successor of the British Social Hygiene Council, renamed the Central Council for Health Education (CCHE) in 1927. During the War publicity had been a central responsibility of the Ministry of Information but after the War responsibility was again passed back to the local authorities who were to fund out of local rates the CCHE's work. Central government had no wish to resume funding of these activities as discussions of smoking publicity

<sup>66</sup> London, National Archives, Cabinet papers, CAB 130/127/GEN 588, Minutes of first meeting of the Cabinet Committee on cancer of the lung, 7 May 1957.

<sup>67</sup> *Ibid.*, Memorandum by Secretary of State for Commonwealth Relations and Lord President of the Council, 31 May 1957.

<sup>68</sup> Parker, 'The Struggle for Clean Air', 371–409. See also Berridge and Taylor (eds.), *The Big Smoke*.

<sup>69</sup> In 2002, at a conference of European environmental epidemiologists held on the fiftieth anniversary of the 'great London smog' members of the audience informed the author that it was almost impossible to research air pollution and lung cancer because it would be seen as undermining the smoking and lung cancer case. This was not an issue of government funding, rather the 'climate of opinion' about research priorities which prevented such initiatives.

made clear.<sup>70</sup> But there were also other reasons why there was reticence about health education. An MH statement in May 1956 explained why central publicity would not be the right thing.

The considerations on publicity concerning smoking and lung cancer differ slightly from those on cancer publicity generally in that the special point—that people might give up smoking—is not a matter of reporting symptoms. It does however concern an individual decision which involves others to a very much smaller extent than the subjects of past central public health campaigns.<sup>71</sup>

Smoking, it argued, was not a ‘disease’ in the way cancer, or indeed infectious disease was. It might lead to disease, but not for many years. The notion of long-term ‘risk’, as we have seen, was not yet central to public health in the 1950s. Publicity would be asking people to curtail a habit which was at this stage deeply embedded in everyday culture. It might also raise public fear about cancer, which the Ministry had been concerned to damp down. Unfounded cancer phobia might generate a demand for services at a time when NHS costs were becoming a political issue.<sup>72</sup>

Conservative politicians were concerned about the implied role of the state. R. A. Butler, Lord Privy Seal, commented in May 1956, ‘From the point of view of social hygiene, cancer of the lung is not a disease like tuberculosis; nor should the government assume too lightly the odium of advising the general public on their personal tastes and habits where the evidence of the harm which may result is not conclusive.’<sup>73</sup> This is a theme which emerged consistently throughout the political discussions. Politicians were worried about the implications of the ‘nanny state’. As the minutes of the Cabinet committee on smoking record, ‘The Government should not seek to intrude into the sphere of an individual’s personal responsibility. It was, however, important to stress this element of personal choice since direct government action was excluded.’<sup>74</sup> The focus was also quite different from traditional public

<sup>70</sup> London, National Archives, Ministry of Health papers MH55/2203, Public health propaganda; smoking and lung cancer: publicity policy, 1957–60.

<sup>71</sup> London, National Archives. Ministry of Health papers MH55/2220, Tobacco smoking and cancer of the lung, Brief for adjournment debate, 1 March 1957.

<sup>72</sup> E. Toon, ‘Cancer Education in the 1950s’, paper given at the NIH conference on cancer, November 2004, forthcoming in the *Bulletin of the History of Medicine*.

<sup>73</sup> London, National Archives, Ministry of Health papers, MH 55/2232, Memorandum by Lord Privy Seal, 1 May 1956.

<sup>74</sup> London, National Archives, Cabinet papers, CAB 130/127/GEN 588, Minutes of second meeting of Cabinet committee on cancer of the lung, 3 June 1957.

health campaigns. One civil servant pointed out that any campaign would have to be directed to men (who were the majority of smokers) rather than women and children, who were the more usual objects of public health attention.<sup>75</sup> It was much easier on many political grounds to leave this to the local authorities.

Lying behind this discussion was the cultural normality of smoking and its embedment in a range of social customs and practices. This was far from the simple continuation of the liberal individualism of the gentlemanly culture of smoking which Hilton has ascribed to this period.<sup>76</sup> Tobacco tokens for old age pensioners were issued by government in the 1950s. The possibility of extra tobacco concessions for the disabled was discussed.<sup>77</sup> Smoking was also a cross-class activity with its own rituals embedded in social norms. The public health researcher Walter Holland in an interview recalled that for many years after the smoking–lung cancer research had been published, Bradford Hill would keep a box of cigarettes in his room at LSHTM. When Holland asked him why this was so, Hill was incredulous; it would be so impolite not to offer visitors a cigarette.<sup>78</sup> Norman Brook as Cabinet Secretary was equally amazed at a suggestion that government should be involved in trend setting. ‘Does this mean that Prime Ministers should not smoke—or at least should not be seen smoking in public?’, he wrote incredulously in 1962.<sup>79</sup> In the 1970s, when the researcher Nicholas Wald wished to trace the changes in tar levels in cigarettes since the 1940s, he was deluged with cigarette stubs and cigarette cases containing tobacco which grieving widows had kept as mementos of their dead husbands. ‘His last cigarette’ had a cultural significance which has become ‘hidden from history’ with the subsequent marginalization of smoking.<sup>80</sup> The cultural aspects of post-war smoking have been surprisingly little researched.<sup>81</sup> Anti-smoking attitudes did exist among

<sup>75</sup> London, National Archives, Ministry of Health papers, MH 55/2220, Minute to Mr Pater on new MRC statement, 1 April 1957.

<sup>76</sup> M. Hilton, *Smoking in British Popular Culture, 1800–2000* (Manchester: Manchester University Press, 2000), 234.

<sup>77</sup> London, National Archives, Ministry of Pensions and National Insurance papers, PIN 12/112, 1947, consultation with Treasury and other bodies about extension of token scheme to the totally disabled.

<sup>78</sup> Interview with Walter Holland by Virginia Berridge, 6 March 1997.

<sup>79</sup> London, National Archives, Cabinet papers, CAB 21/4878, Norman Brook to Prime Minister, 11 July 1962.

<sup>80</sup> Interview with Nicholas Wald by Virginia Berridge, 4 July 1996.

<sup>81</sup> Rosemary Eliot of the University of Glasgow has been carrying out oral history interviews with men and women smokers. Other evidence comes from research carried

the general population, but these, too, were not unproblematic in terms of the 'new epidemiology'. When Ann Cartwright and Fred Martin, along with other LSHTM researchers who had moved to Edinburgh with John Brotherston in the 1950s, carried out a survey of attitudes to smoking there after one of the first local authority-led publicity campaigns, their results were surprising. Even in the late 1950s they found no general acceptance of the connection between smoking and lung cancer. A substantial minority did believe smoking was personally harmful, however; but many thought that smoking would affect the health of other people. If they gave up smoking it was largely for financial rather than health reasons.<sup>82</sup> With the Labour governments of the 1960s the continuing normality of smoking had political implications which will be discussed below.

'Denial and delay' does not seem adequate as an explanation of the responses to smoking in the 1950s. Economic interests and the role of the industry were important; but the industry was an important post-war ally of government at this stage, no different from other such interests. There were other political considerations, like air pollution and health education's funding and role. The scientific evidence was indeterminate and cultural normality was centre stage: there was no interest group or 'policy community' round the issue. Apart from key individuals like Joules, no significant lobby was pushing the anti-smoking case, nor indeed was there any consistent policy position. Nor were the researchers themselves activists, another significant difference from later developments. Although Bradford Hill had worked within government during the War, he had advised Doll that it was best to steer clear of the political dimensions of the research. It was his view that a young researcher's career could be tainted by an apparent lack of scientific objectivity.<sup>83</sup> Hill was concerned that Doll's radical past might put him at a disadvantage at a time when political attitudes were

out by social scientists, for example the pioneering and controversial research by Hilary Graham on lone mothers smoking. H. Graham, 'Women's Smoking and Family Health', *Social Science and Medicine*, 25(1987), 47–56. There is also underused material in the Ministry of Health files on responses to the 1950s government campaign on smoking.

<sup>82</sup> A. Cartwright, F. M. Martin, and J. G. Thomson, 'Health Hazards of Cigarette Smoking. Current Popular Beliefs', *British Journal of Preventive and Social Medicine*, 14 (1960), 160–6; *idem*, 'Distribution and Development of Smoking Habits', *Lancet*, 2 (1959), 725–7.

<sup>83</sup> 'Conversation with Sir Richard Doll', *British Journal of Addiction*, 86 (1991), 365–77; Interview with Sir Richard Doll by Max Blythe, December 1986, RCP/Oxford Polytechnic video archive.

hardening away from the left-wing stance of the wartime years. Hill remarked towards the end of his life that he had made Doll passionate about statistics as a replacement for left-wing politics.<sup>84</sup> Doll's socialist convictions were known and he remained a member of the Communist Party until 1957.<sup>85</sup> Morris at the Social Medicine Unit was affected by this change of view in the MRC.<sup>86</sup> Thus policy in the 1950s was being formed in a very different situation from that which operated later on. As Doll himself stated in evidence to the Commons Health Committee in 1999–2000,

In retrospect, it may be surprising that resistance to the idea that smoking caused so much disease was initially so strong. Three factors, at least, contributed to it. One was the ubiquity of the habit, which was as entrenched among male doctors and scientists as among other men and had dulled the sense that tobacco might be a major threat to health. Another was the novelty of the epidemiological techniques, which had not previously been applied to any important extent to the study of non-infectious disease. The findings were consequently undervalued as a source of scientific evidence. A third was the primacy given to Koch's postulates for determining causation. The evidence that lung cancer also occurred in non-smokers was consequently taken to show that smoking could not be the cause and the possibility that it might be a cause was inappropriately doubted. The manner in which lung cancer was linked to smoking was not, however, unique. All the other major diseases related to smoking were found to be so by epidemiological enquiry and laboratory evidence of physiological effects that provided plausible mechanisms by which smoking might cause them was obtained only later and, in some instances, is still awaited.<sup>87</sup>

The initial political assimilation of the new scientific fact was taking place at a time of change within health structures and modes of research, as we have discussed previously. Health trends showed the increased importance of chronic, rather than infectious or epidemic disease. The social medicine movement, which had been important both before

<sup>84</sup> Interview with Bradford Hill by Max Blythe, 1990, RCP/Oxford Polytechnic video archive.

<sup>85</sup> Letter from Chris Birch, the secretary of Doll's CP branch, *The Guardian*, 27 July 2005.

<sup>86</sup> See Murphy, 'Early Days of the MRC Social Medicine Unit'.

<sup>87</sup> Sir R. Doll, 'Tobacco: A Medical History', Appendix 1, Memorandum by Health Education Authority, Minutes of Evidence taken before the Health Committee, 18 November 1999, p. 26, House of Commons, session 1999–2000, Health Committee, *Second Report, The Tobacco Industry and the Health Risks of Smoking*, vol. ii, Minutes of Evidence and Appendices (London: HM Stationery Office, 2000), 27–II.

and during the War, as a possible ‘new avenue’ for medical practice, was changing its emphasis in the 1950s to a reliance on chronic disease epidemiology. This epidemiological technique was to become the foundation of a ‘new public health’ in the 1960s and 1970s when public health practitioners were relocated in health services and out of the local authorities where they had established their pre-war empires.<sup>88</sup> It marked the beginning too of a public health which would focus on single-issue campaigns and on issues of lifestyle rather than of occupation or class.

Smoking was the pioneer issue, but others followed. The connection between diet and heart disease began to be outlined in the 1950s.<sup>89</sup> Exercise and fitness also started to come on to the agenda. Jerry Morris’ paper of 1953, which showed, through epidemiological methodology, the differential susceptibility to heart disease of sedentary bus drivers and active conductors, was symbolic of the old and of the new—an occupational study which showed the importance of lifestyle factors.<sup>90</sup> Morris’ key text *Uses of Epidemiology*, published in 1957, set the tone for the emergence of the new scientific approach and the new role for public health: the text used smoking extensively as its exemplar.<sup>91</sup> Morris’ Social Medicine Unit began to focus its studies on coronary heart disease and this became an international object of study—with the Framingham study in the United States.<sup>92</sup> Air pollution work also continued and a unit was funded at Barts out of the tobacco benefaction money given to the MRC and began its work in 1955. Its Director, Patrick Lawther, commented in an interview in 2003, ‘Joan Faulkner (the MRC civil servant who became Doll’s wife) told me that who took fags and who

<sup>88</sup> For discussion of these changes, see Lewis, *What Price Community Medicine?*; Porter (ed.), *Social Medicine and Medical Sociology in the Twentieth Century*; Berridge, ‘Jerry Morris’.

<sup>89</sup> M. W. Bufton, ‘British Expert Advice on Diet and Heart Disease c.1945–2000’, in Berridge (ed.), *Making Health Policy*, 125–48. Horace Joules was one of the people who first alerted the British government to the fat and heart disease connection. See note 38 of Bufton.

<sup>90</sup> J. N. Morris, J. A. Heady, P. A. B. Raffle, C. G. Roberts, and J. W. Parks, ‘Coronary Heart Disease and Physical Activity of Work’, *Lancet*, ii (1953), 1053–7 and 1111–20.

<sup>91</sup> J. Morris, *Uses of Epidemiology* (Edinburgh: Livingstone, 1957).

<sup>92</sup> For Framingham, see Berlivet “‘Association or Causation?’”; W. G. Rothstein, *Public Health and the Risk Factor: A History of an Uneven Medical Revolution* (Rochester: University of Rochester Press, 2003), 279–85; L. A. Reynolds and E. M. Tansey (eds.), *Cholesterol, Atherosclerosis and Coronary Disease in the UK, 1950–2000*, Wellcome Witnesses to Twentieth Century Medicine, vol. xxvii (London: Wellcome Trust Centre for the History of Medicine at UCL, 2006).

took air pollution was decided on the toss of a coin.<sup>93</sup> Smoking and air pollution, bronchitis and lung cancer occupied a common conceptual space at this time. Charles Fletcher recalled in an interview how the MRC had set up a Bronchitis Research Committee after the 1952 great smog. His own research (with the occupational focus of the time—it was on post office workers) led him to the conclusion that both tobacco and smog caused the hyper-secretion of mucus that led to emphysema. He started to ask about smoking habits after the Doll–Hill work was published.<sup>94</sup> The fluidity of the smoking science was thus embedded in a more general period of reorientation both within public health and in the ideology and the technical tools of the field. Environmental concerns were changing to population ones and to the focus on risk. The scientific advocates were not anti-industry at this stage but would become so in the course of time. The culture of positive health was still to be established, as the cultural ramifications of smoking indicate. But the events of the 1950s nevertheless foretold a sea change in scientific and medical attitudes towards health and engagement with the public.

<sup>93</sup> Interview with Patrick Lawther by Virginia Berridge and Suzanne Taylor, February 2003.

<sup>94</sup> 'Conversation with Charles Fletcher', *British Journal of Addiction*, 87(4) (1992), 527–38.