whilst I conclude against their objections. I think I state more strongly than the objectors do, the claims of the specialities to precedence. I have found the specialities and the presentation the only means of preventing jobbing which would have been effected by means of general qualifications—I have not stated as I ought to have done, the importance of competition, as a means of checking the examiners, though I have long felt it very strongly—Mill is also very strong upon this point—

'I would ask your more especial attention to the propositions in the last part of my letter on the systematizing the accountability for time, by diaries and annual reports, and entrusting the supervision of this work to your examining Board.'[1]

This Report, unlike any other that Chadwick wrote, was based upon what was intimately his own experience, and one stretching back for twenty years. Of all his official works it is the most wise and the most balanced. Fully carried out, it would doubtless create a smooth running machinery of more than ordinary efficiency. It is not until one examines the social role he intended it to play that one realizes, with a shock of dismay, that this instrument was to respond only to impulses which it had itself exclusively generated.

[1] E. Chadwick to Trevelyan, 18th April 1854.

BOOK ELEVEN

THE THIRD CAREER OF EDWIN CHADWICK

CHAPTER I

ON THE MARGIN OF ADMINISTRATION

I

DURING the Crimean War Chadwick was on the margin of official life. He still considered his retirement as temporary, and made several offers to return to public service. His preferences now were for some new enquiry, rather than executive work. But these, from one circumstance or other, were defeated or laid aside, and by the end of the war, when he moved to a cottage in Richmond, he had begun to act as though he were a private person.

He himself realized that a return to Public Health duties was, for the moment at any rate, unthinkable. He was still under attack. *Engineers and Officials*, and Rumsey's *Essays in State Medicine*, both of which appeared as late as 1856, and Sir Benjamin Hall's retrospective attacks on the first Board of Health all kept the polemic alive. *Engineers and Officials* was a scurrilous pamphlet, published anonymously, either by, or on behalf of, some of the Metropolitan water engineers. It purported to review Chadwick's sanitary career. In fact, it is a travesty, written with every violence of expression and with an evident dishonesty of purpose. What Chadwick had undeniably done was derided. What he had not done was alleged to have been the work of his faction. He himself was accused not only of ignorance and incompetence but of corruption, and his career was expressed in terms of intrigues and jobbery undertaken exclusively for self-advancement and greed for power. Rumsey's work was more balanced but it had little to say that was good of Chadwick. It regarded his administration as disastrous. He himself was treated as intellectually dishonest and his reports and enquiries as partisan. It gave him credit only for a successful and a necessary agitation for Public Health, and even this left-handed praise was severely qualified. Rumsey, like many thinking medical men such as Budd, Farr, and even John Simon, deplored the twist which

Chadwick had given the movement. They wanted engineering to be the handmaid of medicine, and denied the very premise that sanitation was exclusively a matter of drains and decaying deposits. Rumsey's fulcrum, in the elaborate plan which he mapped out, was the local Medical Officer. In fact he and Chadwick had more in common than either realized until they came to collaborate some twelve or fourteen years later.

At the same time Sir Benjamin Hall lost no opportunity of attacking his predecessor in Parliament. He charged that its engineering work was everywhere exceeding its estimate and that the proof of its unpopularity was the declining number of towns that petitioned for the Act each year.

By the end of the war all the avenues to his return were closed. Sir Benjamin Hall remained as First Commissioner of Woods and Forests until 1858, and when he left, the Board of Health was completely extinguished. By his Metropolis Management Act of 1855, setting up the Board of Works, the triumph of the vestry movement became definitive. With the first election to this body all Chadwick's old enemies of the parish agitation appeared in office, grinning derisively at him. The City sent Alderman Cubitt, the friend of tunnel sewers, and Lowman Taylor, the foe of all sanitation whatsoever. Marylebone sent Nicholay the churchwarden, and Hackney sent George Offor. St Luke sent Moreland, the projector of the Great London Drainage Company, and Lambeth sent John Thwaites. Worst irony of all, Hanover Square returned John Leslie. He had given up tailoring for gas patents, and even now was projecting his own plan for Metropolitan Drainage. In the hands of this new body, the drainage plan was pre-judged. Bazalgette's intercepting sewer system was adopted; for two years it was tossed between one set of engineers and another, viz. between Galton, Blackwell, and Simpson on the one side, and Bazalgette, Bidder, and Hawkesley on the other: and finally was sanctioned by the Derby Government in 1858.

In these circumstances Chadwick felt that the more he withdrew from active advocacy of his own pet systems the better it would be for the cause. When, for example, F. O. Ward and Lord Ebrington attended the Congress of Hygiene at Brussels in 1856, Chadwick would only allow Ward to expound the arterial system of drainage on the specific understanding that his own name would not be mentioned. Otherwise, he said, 'it would give the opportunity of attacks on the principle by attacks on the persons propounding them as is commonly the case'.[1]

[1] *Circulation or Stagnation*, E. Chadwick, 1880.

This was really a kind of inverted self-conceit. Just as once he had characterized the Lewises as 'striking at the Poor Law in the person of Edwin Chadwick', so he continued to the end of his life to maintain 'Measures of long labourious preparation by myself have been subjected to serious public injury by disparaging statements and invidious expressions towards their author'.[1] In fact he was exaggerating his personal importance to the anti-sanitarian reaction which had set in. *Engineers and Officials* was as much a libel on Hall's Board of Health as on Chadwick: the engineers wanted no form of control whatsoever. The Commons had slandered him personally; but it only suffered Hall's Board of Health to survive in penny packets, renewing it year by year until it extinguished it in 1858.

Only in one respect did Chadwick play a significant part in a public health matter during the Crimea, and that itself illustrates how hole-in-the-corner his methods had to be. When the war broke out he offered the Under-Secretary of War the assistance of the Board of Health only to be told that the sanitary arrangements of the Army were perfect —a statement he was in no position to challenge. As soon as *The Times* began to expose the disastrous mismanagement of the camps and hospitals, in the winter of 1854–5, he hurried to Palmerston to make proposals which he later put in writing as Palmerston suggested. But nothing was effected until Shaftesbury intervened, and secured the famous Crimean Sanitary Commission whose influence on the campaign is incalculable in its importance. The story of that intervention is too well known to be repeated here: but although it is certain that Shaftesbury secured approval of the principle, and that he drew up the instructions in his own hand, it seems that he consulted Chadwick on the details. Chadwick repeatedly, and in public, claimed joint credit for the work, and the claim seems to be justified by a contemporary letter to Palmerston in which he reminded the Prime Minister that he 'had selected and proposed the Commissioners', that their instructions were '*chiefly* elaborated' by himself and that 'on their appointment he was advised with by them almost as much as though they were acting under the Board of Health'.[2] The Commission was, in fact, his own Board *redivivus*, Rawlinson, Gavin, and Sutherland. This initiative was to prove very significant in the history of Public Health, for it made Chadwick an ally of Florence Nightingale, and developed a major interest in the sanitary condition of the armed forces.[3]

[1] *On Unity*, E. Chadwick, 1885 (p. 107).
[2] E. Chadwick to Lord Palmerston, 31st March 1857.
[3] Idem., 16th January 1855.

II

Turning away from Public Health, therefore, Chadwick began to suggest new enquiries he might open up; but for various reasons these were ineligible. Almost the first topic he hit on was the completion of his Constabulary Report of 1839. In 1853 and 1854 Palmerston had been seeking to introduce a Bill making the 1839 Act mandatory, and Chadwick had been asked to comment on the draft bills. Furthermore, in 1852 transportation had come to an end, and in its place the Home Office was making trial of the very suggestion made in the unpublished Second Report of the Constabulary Commission of 1840, viz. short hard sentences coupled with police surveillance of the discharged convicts, i.e. penal servitude and ticket-of-leave. But the system was working very badly and was arousing much resentment and anxiety in the Commons. Chadwick suggested an enquiry into the system, coupled with investigations into penal judicature, and a personal examination of the existing county and borough police forces. Palmerston did not seem unfavourable, but the matter was raised at a most inopportune time, when the Aberdeen Cabinet was breaking up. Furthermore, Chadwick laid down his own conditions. He insisted on being left in sole charge. 'After suffering as I have while engaged in honestly rendering the best service that the strenuous exertions of my humble abilities enable to afford to the public, I no longer feel myself strong enough in health or in spirits for any more conflicts with uninformed and half-informed colleagues'.[1] He relaxed this principle only so far as to suggest that he would not object to working with Lord Ebrington or Lord Shaftesbury. In fact, as to the latter, he said, 'We have acted together daily for several years with entire cordiality . . . I should esteem it as an advantage if he could be got to co-operate in the work.'[2]

This matter came to nothing. Neither did two other suggestions made at the time. These admit of a simple explanation—they were thoroughly uncongenial both to Palmerston, as Prime Minister since January 1855, and George Cornewall Lewis as Chancellor of the Exchequer from February of that year. In 1854, with Gladstone as Chancellor, the Aberdeen Ministry had promised a reform of the civil service along the lines of the Trevelyan-Northcote Report. The opposition to the Report from the Whig section of the Aberdeen Cabinet, from the clubs, and soon from the heads of departments to which the

[1] E. Chadwick to Lord Palmerston, 16th January 1855. [2] Ibid.

Report stood referred, had been so intense that the matter was postponed. Chadwick was one of the few civil servants who entirely approved the principle, and shortly after his retirement began to hint that he would be glad to act as one of the members of the central supervising body which the Report recommended.[1] The whole matter was raised from the level of a departmental reform into a Radical battle-slogan by the military disasters of the Crimea. In the spring of 1855 an Administrative Reform Association was set up to agitate for the full implementation of Trevelyan's plan. Chadwick gave it information and advice, but no more;[2] he still considered his retirement as temporary, and therefore felt bound to keep clear of open political agitation. The Commons also pressed for the reform. But although public opinion was now enthusiastic, Palmerston and George Lewis were both opposed. The Order in Council of 21st May embodied their reform, not Trevelyan's. A Civil Service Commission was set up to conduct examinations, on behalf of the departments, and there the reform stopped. It was for each head of a department to decide in what subjects his candidates should be examined, and what standard was to be set; whether the examination should merely certificate nominees who reached a minimum standard, or whether it should be competitive; and if competitive, whether it should be open competition or a closed one reserved for nominees. The agitation in and outside the Commons continued unabated. Chadwick now suggested to Palmerston that he should conduct a Royal Commission into the machinery of government.[3] The idea was good. It was not the quality of the clerks that was losing the war but the excessive departmental jealousies and the illogical distribution of functions between the various offices. But such an enquiry was the last thing Palmerston wanted, and to have Chadwick conducting it was quite unthinkable to George Cornewall Lewis. Soon, with the fall of Sevastopol, the Government basked in an unwonted favour, and the Radical agitation petered out. If Chadwick wished to press the matter further, it must be on his own; and through the various societies of which he was a member, this is in fact what he did.[4]

[1] E. Chadwick to Sir C. Trevelyan, 16th October 1854.
[2] But he seems to have helped write some of their tracts, *e.g.*, *The devising heads and executive hands of the English Government:*
[3] E. Chadwick to Lord Palmerston, 5th July 1855. [4] See below, p. 489.

CHAPTER II

RETIREMENT

AFTER 1856 Chadwick seems to have given up any intention of returning to public life—or rather, to the public service. One thousand pounds per annum was no mean sum in the middle of the nineteenth century, and although he was constantly girding at official apathy and stupidity, and could never permit himself to be idle, he found retirement congenial. As a result, streams of reports, addresses, and pamphlets poured from him annually, astonishing not merely by their sheer number, but by their range of subject-matter.[1]

His medium now was the learned society, and while his name was slowly being forgotten by the mass of the nation, in these he received attention and homage. His favoured platform was the Society of Arts, very much in the public eye since the striking success of the Great Exhibition of 1851. He was elected to its council in 1868, and from 1872 until 1886 served almost continuously as one of its Vice-Presidents.

A more influential society was the National Association for the Promotion of Social Science. This remarkable body was founded by Lord Brougham and a group of some forty individuals, among whom were Lord Ebrington, John Simon, William Farr, William Hawes, Newmarch, and Viscount Adderly. The society was divided into five sections, of which one was Public Health, another Education, a third Economy and Trade, and so forth. It held its first meeting at Birmingham in 1857, and thereafter continued to meet annually. It created much more of a stir than is usual for such societies. The Press was alternately amused and contemptuous. Toulmin Smith scenting in it, quite rightly, a craze for innovation and experiment, carried on an extensive campaign against it. Peacock parodied it as the 'Panto-pragmatic' Society—'one enormous bore prating about jurisprudence, another about education and so forth'.[2] In fact, it grew to be one of the more powerful pressure groups of the age. Chadwick was not one of the original members of its Council, but in 1860 he became Vice-

[1] See Bibliography.

[2] *Gryll Grange* (Rupert Hart Davis ed., 1949, p. 812). I feel sure that Lord Curryfin is meant to be Lord Ebrington.

President of the section of Trade and Economy. In 1877 he took over the Presidency of the Public Health Section. He was honoured by other societies also. He became a member of the General Committee of the British Association in 1873, and remained on it till his death. One of the distinctions of which he was most proud came to him in 1862. In that year Archbishop Whateley died, and his place as member of the illustrious Institut Français fell vacant. Chadwick was elected against his old friend M. D. Hill by a huge majority. He was inordinately pleased with the honour, and never failed, afterwards, to describe himself as 'Membre de l'Institut'.

Even in learned societies life may hold some drama. Chadwick's address to the British Association in 1857 on Open Competitive Examination caused prodigious excitement. 'The section room', it is said, 'was crowded by a large and distinguished audience' of eminent persons of all parties and persuasions. The 'full and animated discussion was with difficulty confined within the limit of a day's proceedings.' 'It was fully manifested that Section F demanded open competitive examinations for all branches of the public service'. So great was the occasion, apparently, that the Committee for the first time departed from its custom and 'placed on record in the Minutes of the Section an entry descriptive of the proceedings and results of that day'.[1] On the other hand, his entry into the Social Science Association was marked by a rumpus. He himself was a silent onlooker, but Henry Austin and Robert Rawlinson both read papers putting his point of view, whereas Dr Rumsey, one of the joint secretaries of the Section, read a highly critical paper on 'Defects in Sanitary Administration'. This was not published in the *Transactions*, ostensibly because it was too long, really because it had caused considerable unpleasantness. As a result, Chadwick never was invited to the Presidency of the Health Section until in 1876, when (his breach with Rumsey having since turned into a vigorous alliance) a flagrant insult was offered him: of all people, the Committee had invited to the Presidency none other than Thomas Hawkesley! Furthermore, Hawkesley had shed none of his former views or former arrogance. To an audience from which Chadwick was noticeably absent he declared that 'Water supply and sewerage were not an important matter in prevention: homes and habits were more important. . . . Numerous Acts of Parliament for effecting sanitary improvements have of late years been passed but they are nearly all impaired and disfigured by the spirit of centralization. . . . Nothing can be done without the intervention

[1] *Journal of the Royal Statistical Society*, March 1857, vol. 21, pp. 18 et seq. 'Open Competitive Examination'.

and interference of a Government Department which has its own limited views and peculiar crotchets on all subjects—medical, physical, constructional, and financial—and to which everyone concerned must either conform or succumb.'[1] This was too much for Chadwick, now an old battle-horse of seventy-six, and he straightway insisted on the Presidency for the next year, whereupon he delivered a massive allocution on the benefits which had accrued from sanitation,[2] and notably from tubular drainage.

His assiduous business in these societies initiated some reforms and helped forward others which, dwarfed as they are by his official work, are not entirely insignificant. He exercised a profound influence over the Society of Arts, arranging for Committees on Drill in Schools, Telegraphs, London fire prevention, street-paving, and London water-supplies. Drill in schools was one of his new hobby horses, first ridden in 1861 at the time of the Volunteer movement. He put in two papers on the subject to the House of Commons in 1862,[3] and thereafter tried to get the Society to take the matter up. In 1868 he succeeded. The first result was the holding of a drill review of 3000 boys from Metropolitan schools at the Crystal Palace, in the presence of the Duke of Teck. This was in 1870, and in 1871 the Society presented banners for the most successful school. Despite a good deal of opposition from anti-militarists the reviews were held annually until, in the end, the Metropolitan School Board took over the responsibility. Another successful agitation, of considerably greater importance, was his demand for the State-purchase of telegraphs. This resulted in their purchase in 1868. The Society, however, continued its pressure for postal reform. It culminated in a demand, at Chadwick's insistence, for 'the 6d. telegram'. He had similar successes at the Social Science Association, alike in public health matters, and education. The development of public health after the Crimea was most marked in its application to the armed forces—a direct result of the initiative begun with the Crimea Sanitary Commission. The national figure in sanitation was no longer Chadwick, but Florence Nightingale, a far more genial figure. The two were in the closest consultation thenceforward. In 1858, at the Social Science Association, Chadwick read a powerful paper on the mortality in the Indian Army and suggested that the experiences of the Crimea should be applied to it. Thereafter he importuned Lord Stanley (the Indian Secretary) 'by official paper after paper and by interviews with the

[1] *Transactions of the Social Science Association*, 1876, p. 87.

[2] *Norma of Sanitation*, 1877 (*Transactions of the Social Science Association*, 1877, p. 74).

[3] Two papers submitted by Mr Chadwick as to half-time teaching, etc. (Parliamentary Papers, 1862, xliii).

authorities'[1] to appoint a Royal Commission. Stanley, it seems, was also being importuned by Florence Nightingale. Two such attackers—even had Stanley demurred, which he did not—would have sufficed to badger any Minister into surrender.

Another important success emerged from the joint committee of the Social Science Association and the B.M.A. It was by the representations of this body that the Royal Sanitary Commission was set up. It was particularly sweet to Chadwick because at long last he was able to convert Dr Rumsey into an ally. His former critic now referred to 'His famous Report of 1842' and regretted that 'the framework of local administration then recommended was not employed for almost all purposes of preventive medicine'. Moreover, the Instructions for Medical Officers, drawn up at the General Board and later suppressed by Sir Benjamin Hall, were dug up again, reprinted by the B.M.A., and publicized in the medical journals as monuments of sagacity.

He had some successes also, in the field of education—the field in which his best and most original work was done after 1854. He led delegation after delegation. One, consisting of the medical officers of London, marched under him to Lord Palmerston to protest that the schools were centres of pestilence. Another, consisting of heads of training colleges, district schools and others, carried a bold memorial at his instance, demanding larger school districts, more hygenic schools and an end of the Revised Code.[2] A memorial, moved by him at the Social Science Association, prayed for an enquiry into endowed schools. As a result the Endowed Schools Commission was granted and the Endowed Schools Act subsequently passed.[3]

It would be wrong, too, to pass over one rather more oblique outcome of these activities, if only because it shows the man's genius for getting into scrapes. As a member of the Society of Arts, he was frequently asked to serve as one of its jurors at International Exhibitions. During his visit to Paris in 1856 he found to his delight that since he was last there, not only had the cemeteries been 'consolidated', but the omnibuses also. His unwary praises were repeated until he found himself approached by a private company about to break into the London area on the same principle. It had already bought up the times and goodwills of 600 of

[1] Cf. (i) *The position of Sanitation in England* (Speech at First Anniversary Dinner of the Association of Public Sanitary Inspectors), E. Chadwick, 1884; (ii) *A Manual for the Social Science Congress*, by R. L. Clifford-Smith, 1882, p. 114; (iii) *Report of the Joint Committee of the B.M.A. and the Social Science Association on the Report of the Royal Sanitary Commission*, 1871, especially pp. 2, 18, 20, 23. Also *The British Medical Journal*, 30th May 1868, and *The Prevention of Epidemics*, by E. Chadwick, 1882, pp. 16–17.

[2] *National Elementary Education*, by E. Chadwick, 1868.

[3] J. L. Clifford-Smith, op. cit., pp. 93–105.

London's 800 buses. This was so practical an application of the value of large monopolies that he was embarrassed by the Company's inviting him to become a director; but being very tight with his money he compromised by accepting a post on its Conseil de Surveillance (roughly equivalent to the English auditor). The Company started its operations with vigour. It improved conditions, put on new buses and reduced fares. 'At this'—in Chadwick's tetchy terms—'they were opposed by all the parochial authorities: opposition omnibuses were started against them in every quarter on the cry that they were a monopoly—and a *French* monopoly'. Despite Chadwick's protests the Company met its rivals by 'nursing' their buses: that is to say, it would sandwich them between two buses of its own, and so prevent them keeping to their time-tables. At this a tremendous outcry arose in the Press against this 'un-English' procedure, and a prosecution was begun against Chadwick for conspiracy. He vainly protested that he was no 'gérant' and had no share in the management. He was singled out for prosecution as one of the chiefs of the conspiracy. Fortunately for him, the personal charge was dropped, though the Company was prosecuted and convicted. It re-formed as the London General Omnibus Company, however, and soon drove its rivals from the market: and this practical proof of the correctness of his principles consoled Chadwick for the inconveniences he had suffered.[1]

[1] Cf. Chadwick's own account at the close of his essay, '*On different principles of Legislation and Administration*' (*J.R.S.S.*, vol. 22, pp. 392 et seq.).

CHAPTER III

THE KILMARNOCK ELECTION

IN SO FAR as he yearned to return to public life, it was as an M.P. not as an official. It may be recalled that he had been ready to stand in 1837 and 1841, and that he had been approached in 1847 to contest Edinburgh against Macaulay: the idea was by no means new to him. His first attempt on Parliament occurred in 1859, at Evesham, and then (missing the election of 1865) he tried for the representation of London University in 1867, and for Kilmarnock Burghs in 1868.

At Evesham his chances were hopeless from the start. There were already Conservative and Liberal candidates, and after a week he withdrew, being supported by adherents of neither party. His place was taken by a Mr Locock who professed 'Liberal-Conservative principles'. But Locock suddenly left the borough without meeting his electors and at this Chadwick again reappeared and was duly nominated. The show of hands favoured Chadwick and Sir Henry Willoughby, the Conservative candidate. A poll was demanded, and after this brief campaign the Conservative and Liberal were both declared elected, by 188 and 149 votes respectively. Chadwick was at the bottom of the poll with 49. In returning thanks Sir Henry generously said that instead of the borough being disfranchised, 'he really regretted that it had not a third seat in which the knowledge and ability of the candidate the lowest in the poll might have found a place in the service of the country'. Chadwick's comments reveal the very worst in him: he was churlish, a bad loser, and quite incapable of understanding the nature of public opinion. 'Mr Chadwick said, he must upon the facts question the results of the poll as being in this particular case expressions of the real sense of the electors. He had only appeared at the eleventh hour upon repeated solicitations, and a requisition (made after a full and authentic exposition of his views) and most numerously signed as he was informed'.[1]

His re-entry upon the scene in 1867 was due to the fact that 'the question of the Metropolitan Local Government and works is to come on'.[2] London was still his hobby-horse, and the futility of its new tunnel-sewerage still his battle-cry. Those works had just been completed

[1] *The Times*, 26th April and 2nd May 1859.
[2] E. Chadwick to R. Owen, 30th September 1867.

but there was now an important select committee sitting on London Government and taxation. Chadwick was willing to accept a nomination for the session only and so long only as he could get to grips with the vestrylizers once more.[1] He stood against Robert Lowe for the University of London without, it would appear, much hope of being returned, and although John Mill recommended his candidature and he himself put out a long self-recommendation to his electors, he withdrew before the poll. During the entire period he was feverishly seeking a seat elsewhere. It appeared that one of the Members of Malden might retire, and he persuaded Professor Owen to sound out the local magnates (whose particular friend Owen was). 'Put it to them', he urged, 'whether it would not be to their credit that they should return such a candidate, perhaps the last that they may return under the old (i.e. the pre-1867 Reform Act) system.' Owen's reply was negative. So also was Chadwick's attempt to steal in for the borough of Falmouth. His views are an amusing commentary on his weaknesses as an electioneer, and not to speak of his peculiar notion that a seat in Parliament was somehow something owing to him:

'Thanks dear Owen for what you have done.

'The sort of answer I got in a similar case (in which it turned out that my correspondents had a private connexion of their own in reserve) was that the constituency was not sufficiently advanced for me. My rejoinder in the case of Falmouth would be—is it not fair, and a duty to give the constituency themselves a trial? This might be done by sending to every one of them such an Address as have been sent to the Graduates of London University, and the like matter *mutatis mutandis*, and appealing to their sense of duty.

'I would moreover make then acquainted with me by giving the town two or three lectures on its sanitary condition and the means of retrieving it.

'The towns leaders are largely in default for the state of representation by neglects to bring up opinion to its proper standards.

'*P.S.*—Since I wrote the above I have got a note from a friend who knows Falmouth and who tells me that the lower classes of voters are regularly bribed both directly and indirectly. Cannot the higher classes or the nonbribable or both parties agree to support a *neutral member* and so shut out bribery.'[2]

The General Election under the Reform Act which Chadwick did not expect until 1869 at the latest, came about in 1868. The electorate were now the very people to whom a social reformer might more safely appeal. The election issues were clear-cut for the first time in twenty

[1] E. Chadwick to Richard Owen, 30th September 1867.

[2] Ibid., 7th October 1867. My italics. The 'neutral member' of course would be Edwin Chadwick.

years—the Disestablishment of the Irish Church, and on this matter Chadwick was wholeheartedly for Gladstone. The career of Gladstone seemed to indicate that his return would bring with it a large instalment of overdue reforms. Chadwick put it about that he was ready to stand as a staunch follower of Mr Gladstone and as an 'advanced Liberal'. His suggestion was taken up by a group of electors in the mining constituency of the Kilmarnock Boroughs who were dissatisfied with their sitting Member. After some negotiation, Chadwick threw his hat in the ring. This time he took the matter seriously, moved down to Glasgow and spent over two months in the campaign.

I

The Kilmarnock Election of 1868 was a *cause célèbre* of the Victorian era. But it became notorious not because Chadwick fought it, but because two other men fought over him; not because Chadwick was famous but precisely because his name was all but forgotten. There were other ironies too. Chadwick, the independent thinker, made as his chief appeal the promise that he would be a more regular Party man than his opponent. Chadwick, the author of the New Poor Law, now claimed to be the friend of the working classes. Chadwick, the bureaucrat, now referred to the newly enfranchised electorate as 'his new masters'.

Kilmarnock was a Liberal stronghold. Whoever received the party nomination was bound to be elected. Now for the last twenty-five years it had returned the same Member, Edward Pleydell-Bouverie, the second son of the third Earl of Radnor. This was that same man who had espoused Chadwick's cause in the Andover affair. Bouverie was a very Whiggish kind of Liberal. He had held a number of minor appointments—as Under-Secretary to the Home Office, Vice-President of the Board of Trade, President of the Poor Law Board. His crime, in the eyes of some of the newly enfranchised electors of Kilmarnock, was that he was holding aloof from Gladstone, had supported the Adullamites, and appeared less and less likely to follow his leader in the new Parliament. This group of electors, deciding that Bouverie was, in their eyes, no Liberal, invited Chadwick to run against him in the 'advanced Liberal interest'. Before accepting, he waited until Bouverie had made his explanations to electors. They were not satisfactory. Only one-third of the meeting held up their hands for him. The rest demanded another candidate, and so Chadwick came in.

He fought his campaign by giving warm support to the proposed

disestablishment of the Irish Church, by abusing his opponent, and by vindicating his own career. His view of the Irish Church question was typical. He said he had ridden through Ireland recently and noticed a huge park which on enquiry turned out to belong to the son of an Irish archbishop who had accumulated a fortune of £400,000. Now, he said, turning to his audience—to what better uses could that vast sum be put! on the half-time system of education it would educate 20,000 children a year. It would provide a 'superior elementary education' to 70,000 children in the lifetime of the Archbishop's successor. The mere excess of the sum over that of a colonial bishop would provide 'teaching power for the normal schools of six cities of 1000 children each'.[1]

As to his opponent, 'I examined the political grounds of dissatisfaction with Mr Bouverie and there were few of the class called advanced Liberals who would not deem them large and just. He had opposed the Reform Bill, and made an attack on Mr Gladstone 'in which he called the Liberal party a rabble of leaders without followers and followers without leaders and reproached Mr Disraeli: that is to say he stood for himself and for the Adullamites'! (laughter and applause). 'He voted against disqualifying members for bribery. He voted for flogging in the Army. He opposed charging electoral expenses on the local rates. He opposed the State purchase of telegraphs. He had shown an utter want of information as to sanitary matters, education, and the poor laws.[2]'

'At several crowded meetings', Chadwick told his audiences, 'the opposition to him has been confirmed by increasing majorities . . . In all burghs numerous and zealous committees have been formed in support of my candidature'. He pulled out a wadge of testimonials in his favour given by Earl Shaftesbury, Bishop Blomfield, Lord Brougham, Lord Palmerston, and others. He described the treatment to which a public official who exposed extravagance was subjected: if he allowed it to continue uncontrolled he was a 'good fellow', but if he tried to check it he was abused with every sort of calumny. This had been his own lot for many years. 'At one time, in consequence of the course I took I was so attacked both in the House and out of it that it was said, "I was the best abused man in England".' His experience of administration would enable to help Mr Gladstone in reducing the public expenditure (this particular speech ended in a motion favouring Mr Chadwick which was responded to 'by cheers and hisses').[3]

[1] *The Times*, 21st September 1868.
[2] Ibid., 21st September 1868.
[3] Ibid., 13th November 1868.

The hecklers were extremely active. Mr Duncan, a shipbuilder, and a supporter of Mr Bouverie, objected that 'Mr Chadwick was not the man he was thirty years ago'. Chadwick agreed that he had matured since then. 'I might express a confident opinion that I may yet render a more solid service to the working classes in one year than all that the right hon. gentleman in whose support the objection is made has done in twenty-five or has shown promise of doing for as many more to come' (great applause). Another objector rose to argue that he was not a Scotsman. No, answered Chadwick, but my father-in-law is! 'By reason of my Scots kinsmanship Lord Elcho told me I ought to belong to his Scots regiment in London. But I did not deem myself quite becoming the kilt (laughter) and the bonnet with the black cock feather or befitting to march through London in that attire with all those handsome fellows'.

In a very different tone was his reply to a heckler who adverted sarcastically to his pension.

'Yes', he said defiantly. 'It is true that having laid down the principle of local administrative reorganization in public health, in police, as well as for the amendment of the poor laws which have been partially applied from one end of England to the other and which Lord Russell expressed his belief in Parliament had saved the country from social revolution, and which saved two millions annually upon the previous rates of expenditure, I was not left utterly penniless as the supporters of the Rt. Hon. gentleman appear to consider I ought to have been. But by a particular Act of Parliament I had awarded to me not as a pension but as a compensation for the loss of my office under the circumstance £1000 a year—that is to say, about a shilling per cent. on the economies to which my measures had led in one branch of administration alone. If my measures had led to the extension of expenditure, if they had not threatened yet further reductions in various directions, I should have received other and better treatment.'[1] If the matter had continued at this level it would have been one more obscure election controversy not worth reporting. It was raised to the level of national controversy by the intervention of John Mill.

He had at his friend's request supplied Chadwick's election committee with a letter of recommendation. John Mill, since 1865, was the representative of Westminister. He pronounced himself 'an advanced Liberal'. His enormous prestige as philosopher and economist lent extraordinary weight to every sentiment he uttered. His letter in support of Chadwick was couched in such uncompromising terms as: 'I should

[1] *The Times*, 21st October 1868.

consider his absence from the next Parliament as a public misfortune . . . he is one of the great contriving and organizing minds of the age . . . He is . . . one of the few men I have known who have a passion for the public good and nearly the whole of his time is devoted to it in one form or the other'. This letter he supplied to the committee to use as it thought fit, on 22nd August. On 16th October the whole of England was made aware of it by the publication in *The Times* of a curious correspondence between E. P. Bouverie and J. S. Mill.

Bouverie wrote a respectful letter to Mill pointing out that the intrusion of Chadwick was splitting the Liberal vote. Mill replied that he would leave this point aside for the moment: the important thing was that each Party should return to Parliament the very ablest men it possessed. Chadwick was a man who in some things 'has not his equal in England nor so far as I know in Europe'. It was an honour to give way to such a man, and Mill would gladly do so himself if he thought that Chadwick would thereby have any probability of success. Bouverie's reply raised the whole matter from a personal to a constitutional level. He disputed whether each constituency should return the best man the party possessed, as this would mean that at each election the constitutents would be entitled to set aside the former faithful service of their representative. Even if he granted the point, however, it was not for Mill to suggest who this very best man was. Finally, if Bouverie were to give way as Mill had suggested, this would in effect substitute Mill's choice for that of the constituency. Thereupon he published the whole correspondence.[1]

The matter now became a national controversy, with *The Times* strongly supporting Bouverie's view of the case and pouring scorn upon Mill's habit of supporting such men as Odger, the workman candidate of Chelsea, or Bradlaugh, the freethinker, while he conducted his own Westminster election from the cottage at Avignon.

It regarded Mill's intervention as a new and rather dastardly form of election stunt; and ironically, it took exception to this, not because Chadwick was a great public figure, but because, on the contrary, he was so utterly obscure. The shouting and the tumult had indeed died. There were no cries of 'Bashaw', 'the enemy of the working classes' or the 'Sanitary Crusader'. The 'best abused man in England' was now described as 'an elderly civil servant not at all in the political line'.

'Without attempting too nicely to estimate Mr Chadwick's claim to a public reputation, obviously a delicate and invidious task, we may at least safely say

[1] *The Times*, 16th October 1868.

without danger of disparagement that before last Friday he was certainly not nearly as well known as from Mr Mill's letter it appears he ought to have been. . . . Mr Mill gives Mr Chadwick a letter of recommendation to a constituency in which the recommendation is calculated to divide the Liberal party and a few days after, all the country not only knows but is talking of him. We are all ashamed to think that we have so long remained ignorant of his rare claims to national recognition. . . . The enormous advantage which the new "character" system thus offers in the way of publicity must be set off against its demerits and makes us regret that Mr Mill should have wasted it by recommending in the form of a subscription such candidates for Parliament as Messrs Bradlaugh and Odgers. These gentlemen were already sufficiently well known, their native energy supplying the place of friendly admiration. He would have done the nation better service by unearthing two other Chadwicks or, since this was impossible, two other candidates as nearly approaching Mr Chadwick in genius and unmerited obscurity as could be found.

'To gratify in some degree the public curiosity just now naturally felt about this last illustrious nominee of Mr Mill we reprint a speech which he has just delivered at Kilmarnock. Our readers will be interested in endeavouring to trace through it marks of that unexampled capacity for a political career which has elicited such high praise from so high an authority. They will probably consider it on the whole, rather disappointing. At least we must confess that after carefully reading it by light of Mr Mill's certificate, we do not know much more of Mr Chadwick than we knew before. . . . We are rather puzzled for instance by his statement that "he has matured by observation and the consultation of experience the large organic principles of mixed physical and mental education, on the half time principle, giving to these in half the time and half the expense, the efficiency of five". And the passing allusion to his share in saving the country an annual expenditure of two millions is too brief and vague to be satisfactory, considering the importance of the subject. If Mr Chadwick could give us something more substantial to go on than "Earl Russell's belief" to this effect, he might help us to justify even such eulogy as that which has been bestowed upon him.

'We gather, on the whole, from Mr Chadwick's speech, that so far as his own positive claims to the representation of Kilmarnock are concerned, he takes his stand upon his profound knowledge of the principles of sanitary science with the ignorance of which he twits Mr Bouverie pretty smartly. This is rather a "come down" after all the very tall talk about his being of all men the one most worthy of a seat in Parliament. Mr Chadwick's acquaintance with sanitary subjects is well known to all who know anything about him, but surely neither he nor Mr Mill can seriously think that it is worth while to create a factious spirit in the Liberal party, risk the loss of a Liberal seat merely in order to get the possessor of special sanitary knowledge inside the House of Commons. He can scarcely be less useful outside. . . .'[1]

Towards polling day the excitement in Kilmarnock grew more and more marked. There were by now no less than four candidates in the

[1] *The Times*, 21st October 1868.

field, but, three days before the poll, Mr McDonald, the miners' candidate, withdrew in favour of Chadwick. This raised his hopes still higher.

At the hustings where three to four thousand people gathered, the show of hands, however, went in favour of Bouverie and the third candidate. A poll was demanded; and at the eve of the next day, Chadwick was beaten by Bouverie by 22,892 votes to 11,146.

He was bitterly disappointed. He made his usual churlish rejoinder. The electors were fickle; he had been promised support which did not materialize; the favour shown at public meetings had proved illusory. And to make his mortification the more complete *The Times* did not fail to comment:

> Another official gentleman, Mr Bouverie won a distinguished success. In spite of the outrageous and even distressing praise bestowed by Mr Mill on Mr Chadwick, that person of universal genius was literally "nowhere" in the race, Mr Bouverie beating him in the proportion of five to two.'[1]

[1] *The Times*, 19th November 1868.

CHAPTER IV

THE SPENT PROPHET[1]

I

IT is impossible to do justice to Chadwick's thought in the last thirty years of his life without realizing how bitterly disappointing was the progress made in that generation. It was so to any man who was naturally impatient of delays; but it was particularly galling to him, who had worked out so many of the solutions in his own official career and was to see them again and again affirmed in principle and again and again postponed. The Poor Law, relaxed after 1852, showed a continuous increase in the proportion of outdoor over indoor relief. The district schools, the segregated and classified buildings made no progress. In the sphere of Education, after Kay-Shuttleworth's magnificent start, Lowe's Revised Code postponed further progress for a generation. Public Health between 1845 and 1875 had the worst fate of all. In 1858 the functions of the Board of Health were partitioned among the Home Office, the Poor Law Office, and the Privy Council, all of which henceforth initated rival and contradictory measures. All but the very semblance of central inspection disappeared. Everywhere the landlords and cottage ratepayers banded themselves together to prevent the introduction of the various sanitary and Local Government Acts which were passed during this period. Except in the places which had introduced sanitation—mostly under Chadwick's Public Health Act—the death-rate fell, if at all, by the merest fraction; 22.2 per thousand in 1851–60, it was still 19.1 per thousand in 1881–90. Such progress as did occur was local and piecemeal. It is true, however, that the national death-rates of typhoid and cholera showed a marked decrease, largely owing to the devoted work of Simon and Farr and their revelations, through medical statistics, of the true mode of propagation of those diseases. All during this period the machinery of local administration became so complex, self-contradictory and confused that it defeated

[1] It would be possible to spend a far larger time on the elaboration of Chadwick's views during the last third of his life; but here I have deliberately confined myself to pointing out their chief characteristics. I know that this does not do justice to his fertility and inventiveness, proofs of which are so evident in the Bibliography of his writings (below, p. 531). The reason is that whereas his career as a public servant has never previously been investigated, his views on almost all subjects have been summarized, most adequately, in Sir B. W. Richardson: *The Health of Nations* (1887).

its own objects, baffling the comprehension of civil servant and local citizen alike.

Nowhere were the evils more sustained than in the always-expanding and yet always-overcrowded Metropolis, wearing the shabby glory of the Metropolitan Board of Works. That Board, if it did justify Chadwick's worst forebodings and die in the odour of jobbery and corruption, did at least take some of its duties seriously; it made the Victoria embankment and it completed the main drainage. But it had no control over the vestries, and these were the responsible authorities for nuisance abatement, house-drainage, the sanitary condition of houses, and the prevention of overcrowding. With one or two most laudable exceptions these were, as Chadwick had predicted, in the hands of landlords and interested tradesmen; and one must say, on reading the accounts of their selfish and callous administration, that they were guilty of such a moral obliquity and turpitude that the blood boils again. I invite the reader to turn page after page of Jephson's *Sanitary Evolution of London*, which is a collection of the reports of the vestry medical officers, with complete confidence in the justice of my aspersions. The vestries had to appoint Inspectors of Nuisances; in 1888 there were still only 103 for the whole of London, or one inspector for every 40,000. They had to appoint medical officers; and woe betide the one who condemned the house-property of his masters. By the Adulteration of Foods Act, 1860, they had power to appoint analysts; the Act was a dead letter and had to be made compulsory in 1872 and 1875. By the Sanitary Act, 1866, they were given powers to inspect houses and make bye-laws for keeping them clean and sanitary. Ten years later, it was found that only seven parishes had made and enforced such bye-laws, that six parishes had made but not enforced them, and that in twenty-five nothing had been done whatsoever. In 1874 the clauses were strengthened; and yet by 1883 the Board of Works had to report that the whole Act was a dead letter.

The Water Companies, after their escape from Chadwick, failed to live up to the promises of the 1852 Act. They did indeed take to filtering their water—but not before one company, in flagrant contravention of the Act, killed 6000 persons by supplying them with unfiltered cholera water. The constant-supply system, promised in 1852, was still wanting in 1867. In that year a Royal Commission recommended its introduction, and demanded the consolidation and public ownership of the companies. The net result was the Act of 1871 which was a long series of *mights*. Any company *might* propose constant supply; the Metropolitan Board of Works might also apply for it; the Board of Trade might even require it. In fact, not until 1891 was it enacted that a house without a proper supply of water was a nuisance and could be dealt with summarily, not until 1899 did London receive a constant supply, and not till 1902 were the companies consolidated under a public board.

II

His views on the chaos of local government must command the sympathy of any who have studied its condition in those years. Nowhere was Bentham's master principle more appropriate: 'always to do the same thing in the same way choosing the best and always to call the same thing by the same name'. He suggested the bold and comprehensive plan of reducing all the multiplex authorities to two definite units, the Poor Law Union and the County. (It was a firm conviction of his, by now, that the large towns like Liverpool and Manchester must absorb the surrounding countryside and be constituted counties in themselves.) He argued that to make this alteration would, simultaneously, simplify the structure, favour the principle of central control (the Guardians being so controlled and the municipalities not), and enlarge enormously and to great advantage the areas of administration.

The plan was the outcome of two lines of thought: that sanitary jurisdictions must for geological reasons be far larger than the municipal boundaries, and secondly, that for certain Poor Law matters there must be a 'Union of Unions'. He correspondingly attacked the recommendations of the Royal Sanitary Commission of 1869 which suggested that the urban town councils should be the primary authority for public health matters. To his mind, the Union, with its larger area, its coincidence with the registration district, its medical staff, and above all, its interest in preventing destitution by disease, was by far the more suitable area.[1]

The Union would be the primary authority for sanitation, registration of births and deaths, and for all Poor Law and related purposes. Thus, at one stroke, the central authority would have its task reduced from looking after 15,000 special cases to a mere 650. The County, for its part, would be the sole authority for highway and police purposes. It would supervise both the contracting and the sanitary works of its constituent Unions. Furthermore, it would be large and rich enough to undertake those very Poor Law matters which he had vainly urged since 1832—the building of separate classified workhouses for all the

[1] *On County Government*, p. 45.

different types of paupers, and the framing of schemes for the imbecile poor and for the pauper children.[1]

III

His New Poor Law was now an unprogressive and domesticated English institution. Looking back on it he saw nothing to regret in what he had done, much in what others had done, everything in what was still left undone. He clothed the original Act with intentions which, as we know, only became articulate and self-conscious long after he had set it to work. From the beginning, he said, he had contemplated a systematized police, and extensive measures of prevention to go along with it. 'At best this repression is a dreary business', he said, 'I have always as my opportunities permitted looked forwards to the promotion of the means of prevention'.[2] With all its faults it was still his darling. But how much better it might have been. 'Nothing was taken from it that subsequent experience has not shown the necessity of having restored; and nothing was added that has not in practice proved obstructive. First there was the failure to repeal the law of settlement. Then there was the failure to free it from sinister interests . . . which make partial and outdoor relief the rule instead of the exception'. Then there was the artificial severance of large towns by separate Union areas, which if combined together could undertake useful public works policies and would in any case spread the charges of the poorer unions over the whole conurbation. In this way, he continued, the area could afford full-time medical officers, and set up the classified establishments recommended by the original Report, for the lunatics, the blind, the deaf and dumb, and the children who were still 'scattered about solitarily amidst other classes to their own mutual annoyance and misery'.[3] 'Our progress', he lamented, 'has been beset by powerful reactionary influences and it may be stated as a progress at a rate of three steps forward and two steps backward.'[4]

IV

London remained the sorest spot in his memory. He never forgave Benjamin Hall for the Metropolis Management Act nor the Board of Works for overthrowing his plans for London drainage. The first had

[1] Ibid. Cf. also *A Minister of Health*, 1878.
[2] *Comparative results of the chief principles of Poor Law Administration*, 1863.
[3] Ibid. [4] Ibid.

destroyed all the requisite unity in sanitary management: it had excluded the essential part of the system, the house drainage, it had severed trunk drainage from the branch drainage, and it had entrusted the works 'to railways engineers who had nowhere done sanitary work or reduced a death-rate by a percentage'.[1] The Board of Works had sanctioned a vast expenditure for 'gross blunders, accumulating desposit and acting as extended cesspools giving off noxious products of decomposition'. To the end of his days he denied that the fall in the Metropolitan death-rate had any connexion with the main drainage. Indeed he maintained, contrary to the evidence, that it was due, if not to extensive nuisance removal, then to 'climatic conditions'. Had his own system of drainage been carried out, he would boast, the death-rate of London would have stood at 12 per thousand from the year 1856.[2] The rancour of his charges shows the importance which he still assigned to London; and he left his audiences in no doubt that it was the Metropolis which had worked the downfall of the Board of Health.[3]

Almost every year brought from him some new expression of his views on sanitation, but nowhere is the closed mind more apparent. The most notable example of his conservatism is that, despite the researches of Pasteur, Virchow and Koch, despite the hypotheses of Budd and Snow, he still clung to the atmospheric theory of epidemics. Characteristically he put his finger on the one weak spot in these theories, a hiatus that was not filled in until proof was found of the existence of 'immune Carriers'. In India, he pointed out, the epidemic moved up, into the desert. 'There are no people, no intercourse, no alvine secretions and no sewers. . . . But onwards moves the epidemic'.[4]

Since 1854 he had only one new thing to add—and this was the lesson which he drew from Florence Nightingale's work, viz., the importance of head-to-foot washing. Henceforth he pressed this view fanatically.

Otherwise, he recommended the system of 1854 in all its particulars. The towns sewered under the 1848 Act had proved themselves. This was brought out in a Report of 1866, sponsored by John Simon. It showed that in twenty-four towns, nearly all of which had been brought under the First Board of Health, there had been a reduction in the death-rate markedly below the general average. Typhoid had declined by 12 per cent., phthisis by 41 per cent., diarrhœa by 18 per cent., and the general death-rate by 9 per cent.[5] He recommended a distinct sanitary department under a Minister of Health as president of a permanent

[1] *On Unity*, pp. 51–2. [2] Ibid. [3] Ibid.; and cf. *A Minister of Health*, 1878.
[4] *On the Prevention of Epidemics*, 1882. [5] Parliamentary Papers, 1867, xxxvii.

board of experts. It was to apply the law by the Provisional Order procedure of 1848 and not only approve local plans, as his Board had done, but even to control the completed works. Locally the Medical Officer must be the central figure. The duties, drawn up for him in 1848, must be re-enacted and even extended. The system of registration and the collection of medical statistics must be improved.[1] In no other branch of the work he had undertaken was he so much the *laudator temporis acti*.

V

His freshest and most ingenious contributions were those made to the very subject in which he had played a least active part—Education. Indeed his ideas here were so original and so sound that the neglect into which they have fallen is rather surprising.

Education was in continuous and acrimonious dispute in the decade after the Crimean War. Kay-Shuttleworth's departure from the Education Department opened the way for an increasing tension between Lingen, the new head, and his inspectors—a dispute that recalls the state of the Poor Law Office immediately prior to the Andover affair. At the same time, in Parliament, there was a fierce questioning of the results obtained at the expense of the rapidly expanding Parliamentary Grant. The real matter in dispute was not whether the results of teaching were very poor—it was generally agreed that they were—but whether they were improving, and also, whether they would improve faster on lines different from those laid down by Kay-Shuttleworth. The dispute led in 1858 to the setting up of the Newcastle Commission, and culminated in Lowe's Revised Code of 1861.

Chadwick, who gave evidence before the Newcastle Commission, suddenly produced a set of proposals which cut right athwart the current discussion. On examining the record of the part-time factory schools which he had founded he was surprised to discover that where they were properly organized, the children learned just as much as the full-time scholars. A very detailed investigation revealed that this was due to the fact that a child could not stand much more than three hours' teaching a day, certainly not without some exercise or manual work to break the monotony. Characteristically Chadwick proved, empirically, that a child was incapable of comprehending more than four diverse lessons of half an hour each in the mornings, and that in the afternoon

[1] Cf. for example, *A Minister of Health*, 1878; *On Unity*, 1885; and cf. Bibliography. *passim*.

their capacity decreased by one-half. He also alleged that good ventilation, warming and lighting improved their capacities by one-fifth.

If these facts were correct, it followed that if schools were made large enough to permit the use of skilled and specialized teachers, children could learn just as much on the half-time principle as on the full-time principle; i.e. they could be taught for half the expense. Conversely, if the full-time principle were retained, the children must be allowed time for physical exercises and manual work.

He first pressed this evidence on the Newcastle Commission and then made it into a full-length address, as a paper for the British Association.[1] Next he prepared it as a pamphlet. John Mill was enchanted: 'It is long since I have read anything on the subject of education which impressed me so much', he wrote.[2] The results were 'so unexpected as to amount to a discovery'. Chadwick now became a fanatical exponent of 'Drill in Schools'. He put in two papers to Parliament in 1862 on the half-time system and on the importance of drill. He printed the 'Heads of a Paper' on its importance and circulated it at his own expense to all the influential.

Lowe's Revised Code cut across any such proposals. By making the teacher's pay depend on the success of his pupils in examinations in the three R's, it put all extra-curricular study at a discount. Chadwick was quick to point this out. He drew a distinction between teachers who led, and 'coarse teachers who drive and disgust'. The Revised Code put a premium on the latter. They drove the quick, and neglected the slow, leaving them in condition of 'primitive and unmitigated savagery'. Furthermore, it put a premium on mechanical results, whereas, in fact, children should be taught finger work, and juveniles drawing, music, and drill, in addition to the three R's. And, he said, all this could easily be done with the existing money—providing only that schools had large aggregated classes, skilled teachers, and proper division of labour.

Henceforth he fought a running battle with authority. A school manager who applied for a grant for teaching drill was told by the Education Department that the request was wholly unprecedented. William Ewart, who asked Lowe to authorize military drill in schools, was told that 'the business of the council is Education'. Undeterred, Chadwick got up a Committee of the Society of Arts, of which he was the Chairman, and for twenty years carried on a campaign from there. He deplored the caning of children and did all he could to get it stopped.

[1] *On the . . . limits of mental labour*, 1860.
[2] J. S. Mill. *Letters* (ed., Elliott), 1st November 1861.

He agitated for the provision of warm water in schools to make it easier for children to wash. To prove the beneficial effects of washing, indeed he chose an illustration so unusual and incongruous that it must be quoted.[1] 'The economical fact should be inculcated', he said, 'that a pig that is regularly washed put on a fifth more flesh and that flesh is of a better quality than a pig that is unwashed; and that the same rule holds good with washed as against unwashed children. Five washed children may be sustained on the food requisite for four that are unwashed to bring them up to the same condition'.[1] He further demanded that every school have its gymnasium and its swimming bath, urged the provision of school meals for the poorer children, and insisted on the importance of annual medical examination.[2]

All this, although he himself was over seventy years old, was far in advance of his time. Deputation after deputation to Forster and his successors led to pathetically small results. Not until the Cross Commission of 1888 were his positions affirmed even in principle, and not until the year of his death were the grants for the R's abolished, and drawing, manual instruction, and physical exercise allowed to count for school attendance. But in 1895 the teaching of drill was made a precondition for receiving grants, in 1902 a Medical Officer was appointed, and by then the last remnant of payment by results had disappeared. It was a good campaign to have fought; and one of Chadwick's most attractive.

This hasty survey gives no idea of the range, the proliferation, and the depth of Chadwick's output in his years of retirement. His industry, his persistence, were altogether unimpaired. In some measure this may be gleaned from the Bibliography; but even so it gives no idea of the amazing ingenuity of the man. He projected a 'Pure Air Company', to suck down pure air from specially constructed towers into the dwelling-rooms of city populations. He proposed that to save time in fire stations the horses should be trained to leave their stalls and run to their engine every time the fire alarm rang. He proposed to abolish spelling lessons in school on the grounds that it was quite unnecessary and cost two-fifths of the total spent on elementary education.

But this prodigious output made next to no impression on the general public. Even in the learned societies where all this work was done, a generation had grown up that did not know him. Sir J. Macdonell's experience was not uncommon.

[1] See Bibliography, *passim*, and especially: 'On the physiological limits of mental labour', 1860; National Elementary Education, 1868; 'On the proper construction of schools', 1871. *Health of Nations* (Sir B. W. Richardson), vol. i, p. 316.
[2] Ibid.

'There had joined the (Political Economy) Club', he wrote, 'one or two members with disruptive tendencies' men who saw things differently from the purists of *laissez-faire*; and who understood that absence of legislative interference does not necessarily mean individual liberty. I name in particular the late Sir Edwin Chadwick. It was his fate to be at first an innovator, to outlive that role, and to end by being treated as a spent prophet. It is one of the few unquestioned privileges of old age to be a bore, and this great man had, I fear, discounted too freely, too early, and too heavily this privilege. Certainly his remarks when I joined the Club (i.e. in 1881) were not always listened to with the attention which they deserved. One reason was that he babbled too much, not of green fields, but of sewage. I remember Lord Farrer when presiding calling Mr Chadwick to order and in tones of thunder saying "The subject is taxation, not drainage".'[1]

One can sympathize then with a man trapped alone in a railway carriage with this formidable person.

'*Nov.* 24, 1880. Chadwick whom John Stuart Mill described as unique got into the train at Mortlake and travelled with me up to London, addressing to me during the whole course of the journey an allocution, which might have been read as a paper at a social science congress, upon half time schools. He used however one happy phrase in speaking of the falling-off of the sale of agricultural machines among the farmers as an "economy which economises the means of economy".'[2]

[1] Centenary Volume of the Political Economy Club (1921).
[2] Grant Duff, *Notes from a Diary*, vol. ii, pp. 280–1.

CHAPTER V

SIR EDWIN CHADWICK

I

IN the last ten years of his life, although pamphlets continued to flow from his pen at the same rate as before, time began to make noticeable ravages. His hand had grown shaky, his style more and more diffuse. He was often confined to his home for long stretches at a time and trips in the carriage to visit old friends like Richard Owen became rare pleasures, eagerly looked forward to.

He was running a race with the century: and in the last decade he won it. Disraeli's 'sanitas sanitatum', however hollowly meant, was a portent. The great Public Health Act of 1875, whatever its defects, established the principle that no locality had a prescriptive right to be dirty. Local Boards of Health, local medical officers, local Inspectors of Nuisances now became mandatory in every nook and cranny of the country. Local councils were beginning to tolerate expenditure on sanitation, and in many cases they were zealously promoting it. New professional institutions were arising to meet the need for specialized personnel. Public Hygiene was beginning to be a recognized part of the medical curriculum.

The old man was borne along by this favouring tide, and indeed to some extent he had anticipated it. With his old cronies of 'the Cause', he formed in 1876 the Sanitary Institute. It was partly a propaganda body, but more importantly a certificating one. It proposed to examine and accredit candidates for the posts of Surveyors and Inspector of Nuisances, and its success was immediate and enduring. Seven years afterwards it was met by another new body, the Association of Sanitary Inspectors, and this marked its appreciation of Chadwick by electing him as its President. 'We have endeavoured to complete what is, practically, a new system of sewerage', he had tried to tell the public in 1854, and hardly had the words appeared than the 'profession' had clapped a hand over his mouth and hustled him protesting from public life. Now, the pot-pipe and the arterial system were triumphing; and instead of being in opposition to the profession, he was at the head of it. For the *Institute* examined its candidates in such matters as The Elements of Sanitary Science, Sanitary Construction, and The Law of Public Health; and it did this under the auspices of the veterans of the First Board of Health. As Vice-Presidents of the Institute, there

were not only the new allies like Douglas Galton, Sir B. W. Richardson, and Sir John Lubbock, but the 'Band'—Shaftesbury and Rawlinson, William Farr and Earl Fortescue, and of course, Edwin Chadwick himself.

He was now the Grand Old Man, the 'father of the sanitary idea'. Each Congress of the Institute was a personal triumph. 'Edwin Chadwick though not a civil engineer has done more to found and promote the true principles of town sewerage than any other individual in this generation', said Rawlinson. 'It is to him', said another member, 'that we owe, more than to any one else, that sanitary awakening which has now become so general and so widespread'. Fortescue [1] demanded that he be knighted. Similar tributes were paid him, now before the British Medical Association, now at the banquet of the Association of Sanitary Inspectors. His name began to appear more and more frequently in the public magazines. In 1887, for the first time, a collected résumé of his work was put before the public in the 'Health of Nations', edited by his adulator Sir B. W. Richardson. Not a good piece of work, and understandably uncritical of its hero, it nevertheless drew the attention of the whole nation to the fact that 'no public man of this century has received so few public rewards'.

An Ode was composed in his honour:

Hail! Sire of Science, Hail!
Thy teaching shall prevail,
Receive our thanks.
Heaven hath designed to bless
Thy labours with success,
May riper days with peace
Bear thee a crown.

Hail him afar ye Isles,
Blest with his lifelong toils
Which hearts inspire
United here to-day
With grateful hearts we pray
Honour to age, and pray,
God bless our sire.

Truth dawning in the past
Bursts into light at last
With health for all
Men now enlightened live
Health's laws, revere and prove,
And God great blessings give
In just reward.

[1] Formerly Lord Ebrington.

Our members far and near
Desire to soothe and cheer
Thy glorious life,
May it our triumph be
Thy great desire to see
All healthy, happy, free
From youth to age.[1]

Apparently this was meant to be sung to the tune of '*God save the Queen*'.

At last the reward came. In 1889 he was knighted. Surrounded by the friends and allies of this long active life, the infirm old man was guest of honour at the public banquet given to congratulate him.

'On Saturday, 2nd March, the veteran poor law reformer, civil service and sanitary reformer whose labours of statistical inquiry, official administration, literary compilation and social economic science would have sufficed for three ordinary men, was entertained at a dinner given by the Association of Sanitary Inspectors of Great Britain of which he is President. It was to congratulate him not only on his birthday but on his having received—why not a peerage?—the honour of promotion to the order of K.C.B. from the Queen. Sir Benjamin Ward Richardson . . . occupied the Chair. He was supported by the Earl of Aberdeen, Earl Fortescue, Sir Lyon Playfair, Sir Spencer Wells, Sir Richard Owen, the Hon. D. F. Fortescue, Sir Henry Doulton, Sir Douglas Galton . . . and others. Letters cordially congratulating Sir Edwin Chadwick were read from the Duke of Westminster, the Duke of Bedford, the Earl of Meath, Lord Chelmsford, Sir James Paget, Sir R. Rawlinson, Mr J. B. Firth, Sir Lionel Simmons, and Dr Adler. . . .'[2]

It was a great, if tardy recognition: and it came just in time. A year later, on 6th July 1890, Sir Edwin Chadwick was dead.

II

Even in death his ideas were to go on fighting for him! He left the not inconsiderable fortune of £47,000 in trust (pending a life settlement to take care of his family), 'to be applied as my executors shall direct or as set forth by protocol, in furtherance of the chief objects to which I have devoted myself for the advancement of sanitary science and the physical training of the population'. A codicil shows the causes he had most at heart. There was to be an annual prize to that 'sanitary authority which shall have obtained the greatest reduction

[1] By R. Fason, of Leek.

[2] *Illustrated London News*, 23rd March 1889.

of the death-rate of the population by the application of the separate system of drainage, or circulation as against stagnation'. There was to be a medal to the teacher who could produce the best and earliest results on the half-time system. There was to be another medal to the manager of a poor law district school who could show the 'largest proportion of scholars got into productive industry'. There was to be a medal for the commander and the medical officer who showed the greatest reduction of a death-rate whilst in command. His Bentham collection he bequeathed to University College, London. Jeremy Bentham's ring he left to his son. And the friends to whom he left mementoes were Professor Owen, Earl Fortescue, Professor Bain, and Professor Masson.

'You ask me', wrote his daughter Marion to the Chairman of the Chadwick Trust, in 1928, 'to give a short character sketch of my father from my personal recollections.

'Whatever may have been his faults, harsh gloomy and severe he certainly was not.

'To understand him one must remember that he belonged to a generation which was working its way out of the barbarism of former ages. The Reformers of those days were so much absorbed in the tasks they had undertaken that they had hardly any thoughts for the minor details of social and domestic life and my father was an extreme example of that type.

'He had adopted wholeheartedly the principle of his great Master, Bentham: "the greatest happiness of the greatest number". Being somewhat passionate and fanatical, he looked on those who disagreed with him as to the methods by which the principle should be carried out as enemies of humanity. This made him many enemies but also many warm friends amongst those who respected the genuineness of his convictions.

'Side by side with his powerful intellect there was much that was childlike in his disposition.

'He wanted to see cheerful faces about him but never having had any real home training he did not always makes ufficient allowance for human nature.

'He was fond of young people, children, and animals, though, being thoroughly unpractical in all matters of daily life he never made any serious effort to occupy himself with them.

'He was kind and courteous to those who were in his service, who liked him and were very loyal to him.

'He was very hospitable and liked to see visitors of every description and to hear all new things they could tell him as long as they did not clash with his settled convictions. He would shake with laughter over a good story but as he had a natural repugnance to coarseness the conversation was kept on a high level. Matters relating to the vicious side of life were treated in an objective and scientific manner which excluded all suggestiveness.

'He had a great respect for the intellectual powers of women and was one of the earliest supporters of their professional and educational rights, and also Women's Suffrage.

'I think he was really happy during the last years of his life for he was so much absorbed by his interests and so convinced that he had a mission to the world, that he hardly realized the ravages of old age.

'In any future biography the personal influence of Bentham must not be forgotten.

'Bentham was his ideal, his guiding star and had called forth all the tenderness of his nature. He could not bear the most innocent joke about Bentham's peculiarities. He unconsciously copied him in his little habits of life. Even in his private letters he shaped his style upon that of Bentham.

'On reading the monograph on Bentham by Professor Graham Wallas, I learnt to understand this and how the dry stilted language of his writings concealed the kindness tenderness and true enthusiasm for humanity which endeared the real man to his friends, amongst whom my father was the warmest, feeling towards him as a son to a father.'[1]

When he died, innumerable tributes were paid to him. There is one which is outstanding. It was written indeed, not as an obituary, but some two months before his death as an appreciation of his work. The author is Sir John Simon, first his colleague and then his successor in caring for the public health: and it is of so enduring a quality, so just, and so wise, that no more fitting estimate could be found with which to conclude this book.

'*The faults which were imputed to him,*' *wrote Simon,* '*may be generalized as faults of over-eagerness; faults no doubt which his opponents could not have found conciliatory, and which also in other respects would have tended to defeat his main object; but which, so far as they were his, fall into moral unimportance as compared with his sincere and disinterested zeal for the public service and may be counted as of one root with that zeal. . . . Granted that he erred by impatience; but impatience under sufferings of one's own and patience towards the sufferings of others, are not equal measures of magnanimity. Mr Chadwick, beyond any man of his time, knew what large fresh additions of human misery were accruing day by day under the then almost universal prevalence of sanitary neglect; and the indignation which he was entitled to feel at the spectacle of so much needless human suffering is a not ignoble excuse for such signs of over-confidence as he may have shown.*

'*Another word too is emphatically due. Whatever may have been Mr Chadwick's administrative unsuccess, and however severely the unsuccess may be ascribed to errors of judgement, nothing therein lessens by a tittle the value of what he had previously achieved. To those previous services of Mr Chadwick's*

[1] Marion Chadwick to Mrs Aubrey Richardson, N.D., 1928.

—to the ten years' arduous labour which he had given to the cause before the General Board of Health was called into being, we of this nation unquestionably owe that our statesmen in those times were first awakened to the duty of caring for the Public Health, and that the first of our modern legislative endeavours were made to bring Health under the protection of Law.'

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SECTION IX. EDWIN CHADWICK'S WRITINGS

ABBREVIATIONS :

J.R.A.S. . . Journal of the Royal Agricultural Society.
J.R.S.A. . . Journal of the Royal Society of Arts.
J.R.S.S. . . Journal of the Royal Statistical Society.
T.N.A.P.S.S. . Transaction of the National Association for the Promotion of Social Science at its Annual Conferences.
M.I.C.E. . . Minutes of the Institute of Civil Engineers.
B.A.A.S. . . Proceedings of the British Association for the Advancement of Science.

FULL-LENGTH addresses and articles by Edwin Chadwick are printed in *italics*. Most of these were reprinted as pamphlets : wherever this has been ascertained, the fact has been noted.

Official Reports and Papers of which Chadwick was author or joint author, appear in Section II, above.

1828. *On the Means of Insurance, Etc.* (*Westminster Review*, April 1828.) Reprinted 1836.
1829. *On a Preventive Police.* (*London Review*, 1829.)
1830. *Medical Charities in France.* (*London Review*, 1830.)
A Code for the City of London Scientific and Literary Institute.
1831. *The Taxes on Knowledge.* (*Westminster Review*, July 1831, pp. 238–67.)
The Real Incendiaries and Promoters of Crime. (Reprinted from *The Examiner*, Feb. 20, 1831.)
1836. *The Principles and Progress of the Poor Law Amendment Act.* (*Edinburgh Review*, 1836, pp. 487–537.) Reprinted 1837.
1837. *Evidence of the Rev. W. Stone and other witnesses as to the Operation of Voluntary Charities.*
1841. *License of Counsel.* (*Westminster Review*, 1841, pp. 1–24.)
Evidence of Employers of Labourers on the Influence, Training and Education on the Value of Workmen.
1844. *On the Best Mode of Representing by Statistics the Duration of Life, Etc.* (J.R.S.S., vol. 7, p. 1.)
1846. *Papers read before the Statistical Society of Manchester on the demoralization and injuries occasioned by . . . labourers engaged in the railways.*
1849. *On the Utilization of Sewage as Manure.*
1855. On the Sewage of London. (Discussion on paper by J. B. Lawes.) (J.R.S.A., vol. 3, p. 279.)
1856. Extracts from an Address on Improvements in Machinery and in Manufacturing Processes, as affecting the Condition of the Labourers. (Philanthropic Congress at Brussels.) (J.R.S.A., vol. 4, p. 803.)
1857. On the Application of the Sewage of Rugby to Agriculture. (Letter.) (J.R.S.A., vol. 5, p. 515.)
On the Application of Sewage-irrigation to Cereal Crops. (Letter.) (J.R.S.A. vol. 5, p. 497.)

1857. *On the Economical, Educational, and Social Importance of Open and Public Competitive Exams.* (Paper at Meeting of British Association at Dublin.) (J.R.S.S., vol. 21, p. 18 ; J.R.S.A., vol. 5, p. 603 ; Transactions, B.A.A.S., 1857.)
On Improvements in Machinery—Races of Workman—Nominally Low-priced Labour. (Letter.) (J.R.S.A., vol. 5, p. 77.)
On Application of Sewage of Towns to Agriculture. (Letter.) (J.R.S.A., vol. 6, p. 59.)
On the Dependence of Moral and Criminal on Physical Conditions of Populations. (Transactions, B.A.A.S., 1857.)
1858. Letter from S. Smith on Application of Sewage of Towns to Agriculture. (Letter.) (J.R.S.A., vol. 6, p. 108.)
On the Progress of the Principle of Open Competitive Examinations. (Paper : before the Section of Economic Science and Statistics of the B.A.A.S.) (Reprinted, J.R.S.A., vol. 6, p. 671, 1859 ; reprinted in J.R.S.S., vol. 22, p. 44, 1859.)
On the Application of Sanitary Science to the Protection of the Indian Army. (T.N.A.P.S.S., 1858, p. 487.)
1859. On a Small Parcels Post. (Discussion on paper by Peter Graham.) (J.R.S.A., vol. 7, p. 154.)
On the Prevention of Accidents in Coal Mines. (Discussion on paper by P. H. Holland.) (J.R.S.A., vol. 8, p. 43.)
On the Forces used in Agriculture. (Discussion on paper by J. C. Morton.) (J.R.S.A., vol. 8, p. 62.)
On Different Principles of Legislation and Administration in Europe : Competition within the Field as compared with Competition for the Field. (J.R.S.S., vol. 22, p. 392 ; J.R.S.A., vol. 8, p. 424.)
The Chief Methods of preparing for Legislation. (Joint Meeting of Law Amendment Society and N.A.P.S.S.) (Reprinted as pamphlet.)
1860. *On the Physiological as well as the Psychological Limit to Mental Labour.* (Transactions, B.A.A.S., 1860, p. 185.)
On Science in our Courts of Law. (Discussion on paper by Dr. R. Angus Smith.) (J.R.S.A., vol. 8, p. 142.)
On a New System of Bread Manufacture. (Discussion on paper by John Daughlish, M.D.) (J.R.S.A., vol. 8. p. 424.)
On Public Health. (Opening Address to Section IV of the National Association for the Promotion of Social Science.) (T.N.A.P.S.S., 1860, pp. 575–606.)
Educational Tests for Employment. (Discussion.) (T.N.A.P.S.S., 1860, p. 419.)
Pollution of Rivers. (Discussion.) (T.N.A.P.S.S., 1860, p. 719.)
Dwellings for the Poor. (Discussion.) (T.N.A.P.S.S., 1860, p. 722.)
1861. *Post Office Savings Banks.* (J.R.S.S., vol. 24, p. 519.)
' Some Account of American Implements and Economic Contrivances.' (Discussion on paper by C. W. Eddy.) (J.R.S.A., vol. 9, p. 366.)
On Readings at Mechanics' Institutes of Miss F. Nightingale's ' Notes on Nursing ', revised edition. (Letter.) (J.R.S.A., vol. 9, p. 712.)

1861. *Programme for the Committee on Sanitary Appliances for the International Exhibition of* 1862. (Paper.) (J.R.S.A., vol. 9, p. 788.)
On Suggestions forwarded for testing Efficiency of Fire Grates and Cookers submitted to Committee on Sanitary Appliances by Dr. Sutherland. (J.R.S.A., vol. 9, p. 800.)
On the Application of Sanitary Science to Public Works of Irrigation, and Works for the Relief of Towns. (T.N.A.P.S.S., 1861, p. 563.)
A Biographical Notice of H. Grant.
1862. *On the Subject Matters and Methods of Competitive Exams. for the Public Service.* (Paper read before Section F of the B.A.A.S., Cambridge.) (J.R.S.A., vol. 10, p. 725 ; J.R.S.S., vol. 26, p. 72.)
Letter on above *re* discussion and correction of printing errors. (Letter.) (J.R.S.A., vol. 10, p. 739.)
On the Relative Merits of the Different Systems of Working Metallic Mines and Collieries. (Discussion on paper by H. C. Salmon.) (J.R.S.A., vol. 10, p. 209.)
On Resolution on death of Prince Consort. (J.R.S.A., vol. 10, p. 300.)
Observation on Public Elementary Education. (Discussion.) (T.N.A.P.S.S., 1862, pp. 343, 346.)
On the Half-time System in Education. (Discussion.) (T.N.A.P.S.S., 1862, p. 347.)
The Education of Pauper Children. (Discussion.) (T.N.A.P.S.S., 1862, pp. 348–9.)
On Sanitary Statistics. (Discussion.) (T.N.A.P.S.S., 1862, pp. 667–9.)
1863. On Cooking Depots for Working Classes. (Chairman in discussion on paper by Alex. Burrell.) (J.R.S.A., vol. 11, p. 209.)
On the Economic Value of Foods. (Chairman in discussion on paper by Dr Edward Smith.) (J.R.S.A., vol. 12, p. 86.)
The Comparative Results of the Poor Law in England, Ireland, and Scotland. (J.R.S.S., vol. 27, p. 492 ; T.N.A.P.S.S., 1863, p. 712.)
On the Cotton Famine. (Discussion.) (T.N.A.P.S.S., 1863, pp. 757–8.)
On Intemperance. (Discussion.) (T.N.A.P.S.S., 1863, p. 557.)
1864. On Private and Public Dietaries. (Chairman in discussion on paper by Dr Edward Smith.) (J.R.S.A., vol. 12, p. 224.)
On the Effect of Manufacturing Distress. (Opening Address to Section IV of N.A.P.S.S.) (J.R.S.S., vol. 28, p. 1 ; T.N.A.P.S.S., 1864, p. 69.)
Corruption at Elections. (Pamphlet.)
1865. London Sewage from the Agricultural Point of View. (Remarks as Chairman on paper by J. C. Morton.) (J.R.S.A., vol. 13, p. 184.)
Above discussion continued. (J.R.S.A., vol. 13, pp. 202 and 207.)
On the Proposal that the Railways should be purchased by the Government. (Discussion on paper by Wm. Hawes.) (J.R.S.A., vol. 14, p. 198.)
On Railway Reform. (Opening Address to Section IV of the N.A.P.S.S.) (T.N.A.P.S.S., 1865, p. 77.) (Reprinted 1865.)
1866. On Modern Legislation in regard to the Construction and Equipment of Steam Ships. (Discussion on paper by Thomas Gray, H.M.C.S.) (J.R.S.A., vol. 14, p. 252.)

1866. On Paris Exhibition of 1867—Heating and Lighting. (Letters.) (J.R.S.A., vol. 14, pp. 631 and 648.)
1867. *On the Economy of Telegraphy as Part of a Public System of Postal Communication.* (Paper.) (J.R.S.A., vol. 15, p. 222.)
The Government and the Telegraph. (Letter.) (J.R.S.A., vol. 15, p. 286.)
On Railway Reform in connection with a Cheap Telegraphic Post and a Parcel Post Delivery. (J.R.S.A., vol. 15, p. 720.)
Suggestions for a Mode of Supplying Cheap and Healthy Dwellings for the Working Classes, with Security and Profit to the Investor. (Discussion on paper by Thos. Hawkesley, Esq., M.D.) (J.R.S.A., vol. 15, p. 313.)
The Cab Question. (Letter.) (J.R.S.A., vol. 15, p. 201.)
What Action ought the Government to take with regard to Railways? (T.N.A.P.S.S., 1867, p. 543.)
Address to the Members of Convocation of the University of London. (Pamphlet, p. 28.)
1868. The Postal Telegraph. (Letters.) (J.R.S.A., vol. 16, pp. 15, 463, 601, 613, 649, 689.)
On a New Form of Ventilating Store in use for Barracks and Military Buildings. (Chairman of discussion on paper by Douglas Galton, Esq., C.B., F.R.S.) (J.R.S.A., vol. 16, p. 454.)
National Elementary Education. (An Address delivered at a meeting of heads of training colleges, district schools, and others, to confer on national elementary education.)
1869. The Training and Education of Pauper Children. (Chairman in discussion on paper by C. C. T. Bartley.) (J.R.S.A., vol. 17, p. 188.)
In Support of the Administration of Grants for National Elementary Educational Memorial from London Church Schoolmasters' Association. (J.R.S.A., vol. 17, p. 285.)
On the Efficiency and Economy of a National Army, in connection with the Industry and Education of the People. (Discussion on paper by Mr Henry Cole.) (J.R.S.A., vol. 17, p. 224.)
Further discussion on above. (J.R.S.A., vol. 17, p. 256.)
On Hill Settlements and Sanitaria. (Discussion on paper by Hyde Clarke.) (J.R.S.A., vol. 17, p. 411.)
Adjourned discussion on above. (J.R.S.A., vol. 17, p. 436.)
On Trade Marks. (Chairman ; discussion on paper by W. Wybrow Robertson.) (J.R.S.A., vol. 17, p. 420.)
In Support of Administration of Educational Funds—Pensions to Aged Schoolteachers—Memorial from Deputation of Schoolteachers. (J.R.S.A., vol. 17, p. 513.)
Waste Lands in India. (Discussion on paper by George Campbell, Esq.) (J.R.S.A., vol. 17, p. 527.)
Examinations in Science and Art. (Discussion at Annual Conference of R.S.A.) (J.R.S.A., vol. 17, p. 633.)

1869. Mechanics Institutes and Technical Education. (Discussion at Annual Conference of R.S.A.) (J.R.S.A., vol. 17, p. 637.)
On the Limitation which should be placed on Dispositions of Property to Public Uses. (Discussion on paper by Arthur Hobhouse, Q.C.) (J.R.S.A., vol. 17, p. 686.)
Sanitary Principles of Cottage Improvement. (Address on giving a Garden Tea Party to Committee of Ladies' Sanitary Association and Council of Society and others, at his house in East Sheen, for purpose of showing new forms of construction.) (J.R.S.A., vol. 17, p. 720.)
Movement for International Economy of Military Expenditure. (Address at special meeting of members of International Statistical Congress at the Hague.) (J.R.S.A., vol. 17, p. 855.)
Irrigation. (Discussion on paper by T. Login, Esq., C.F.) (J.R.S.A., vol. 18, p. 40.)
Economical Penalties of Ignorance and Rewards of Cultivation. (Address at Social Science Association.) (J.R.S.A., vol. 18, p. 54.)
1870. *Re* Captain O'Hea's Paper on 'Small Arms'. (Letter.) (J.R.S.A., vol. 18, p. 293.)
On the Causes and Consequences of High Charges for Passengers by Railway, and the Advantages to be expected from the Adoption of Low Fares. (Chairman; discussion on paper by G. W. Jones, Esq.) (J.R.S.A., vol. 18, p. 293.)
Tramways for Streets. (Discussion on paper by W. Bridges Adams, Esq.) (J.R.S.A., vol. 18, p. 404.)
On the Proposed Enquiry, by a Royal Commission, into the Relations of the State to Science. (Discussion on paper by Lieut.-Col. A. Strange, F.R.S.) (J.R.S.A., vol. 18, p. 453.)
On the Practical Method of Meeting the Spelling Difficulty in School and in Life. (Chairman of Discussion on paper by Alex. J. Ellis, F.R.S., F.S.A.) (J.R.S.A., vol. 18, p. 500.)
Military Labour. (Opened discussion on paper by Capt. Webber, R.E., at United Services Institute.) (J.R.S.A., vol. 18, p. 630.)
Annual Conference of Institutions in Union, and of Local Educational Boards with Council of the R.S.A. (Discussion at International Exhibition of Education.) (J.R.S.A., vol. 18, pp. 708–12.)
What Art and Science, in the New Arms of Precision, give to Defence against Attack in War. (Article.) (J.R.S.A., vol. 18, p. 770.)
On the Advance of Science and Art in War, and on the Economy and Efficiency of an Educated National Army. (Article.) (J.R.S.A., vol. 18, p. 831.)
Romford Sewage Farm. (Talk at luncheon following visit.) (J.R.S.A., vol. 18, p. 830.)
On German Unity as affecting Military Economy, and the Progress of Arts, Manufactures and Commerce. (Opened discussion at Association for the Promotion of Social Science.) (J.R.S.A., vol. 18, p. 865.)
On Military Establishments. (T.N.A.P.S.S., 1870, p. 500.)

1870. Disarmament and Arbitration. (Discussion.) (J.R.S.A., vol. 18, p. 166.)
Sanitary Laws. (Discussion.) (J.R.S.A., vol. 18, p. 412.)
Letter to the Lord President of the Council on the Education Bill. (Pamphlet.)
1871. Music and Drill in State-aided Schools. (Views as member of deputation to Forster.) (J.R.S.A., vol. 19, p. 187.)
On Military Organizations as affecting Arts, Manufactures and Commerce. (Article.) (J.R.S.A., vol. 19, p. 250.)
On Military Drill, and on Educated and Uneducated Military Force. (Article.) (J.R.S.A., vol. 19, p. 472.)
Postal Reform. (Discussion *re* Conference and Petition to Parliament.) (J.R.S.A., vol. 19, pp. 334 and 335.)
On the Utilization of Prison Labour. (Discussion on paper by Capt. E. F. du Cane, R.E.) (J.R.S.A., vol. 19, p. 536.)
Sanitary Improvement of Cawnpore. (Reference to Memorandum at Annual General Meeting of the R.S.A.) (J.R.S.A., vol. 19, p. 621.)
On the Sanitary and Economical Advantages of Small and Impermeable Street Surfaces. (Article.) (J.R.S.A., vol. 19, p. 789; see also T.N.A.P.S.S., 1871, p. 489.)
Sanitary Principles of School Construction. (Article.) (Discussion.) (J.R.S.A., vol. 19, p. 856; see also T.N.A.P.S.S., p. 501.)
On Ballot. (Pamphlet.)
Lettre à M. Mignet. (On the Education Act.) (Pamphlet.)
Large *v.* Small Schools. (Discussion.) (T.N.A.P.S.S., 1871, p. 364.)
Removal and Utilization of Sewerage. (Discussion.) (T.N.A.P.S.S., 1871, p. 414.)
Sanitary Improvement of Dwellings. (Discussion.) (T.N.A.P.S.S., 1871, p. 431.)
Health of Operatives. (Discussion.) (T.N.A.P.S.S., 1871, pp. 443–4.)
Local Taxation. (Discussion.) (T.N.A.P.S.S., 1871, p. 538.)
1872. Esparto: a series of practical remarks on the nature, cultivation, past history and future prospects of the plant, including a demonstration of the importance to the paper-making trade of prompt and vigorous measure for its preservation. (Chairman of discussion on paper by Robert Johnston.) (J.R.S.A., vol. 20, p. 95.)
Competition for the India Civil Service. (Letter.) (J.R.S.A., vol. 20 p. 587.)
Engineering Education in India. (Discussion at India Conference.) (J.R.S.A., vol. 20, p. 677.)
Tramways and their Structure, Vehicles, Haulage and Uses. (Chairman of discussion on paper by W. Bridges Adams.) (J.R.S.A., vol. 20, p. 49.)
Sanitary Principles of School Construction. (Letter.) (J.R.S.A., vol. 20, p. 55.)
On the Prevention of Noxious Sewage Emanations. (Article.) (J.R.S.A., vol. 20, p. 105.)

1872. Subsoil Drainage of Land as Sanitary Work. (Views as President at Meeting of Association for the Promotion of Social Science.) (J.R.S.A., vol. 20, p. 471.)
Conference on Technological Education. (Discussion.) (J.R.S.A., vol. 20, p. 735.)
On Local Medical Appointments. (Pamphlet).
1873. On the Economy of Fuel for Domestic Purposes. (Chairman ; discussion on paper by Capt. Douglas Galton, C.B., F.R.S.) (J.R.S.A., vol. 21, p. 367.)
Progress of India in last 14 years. (Letter *re* India Conference.) (J.R.S.A., vol. 21, p. 211.)
Second Paper. (Discussion.) (J.R.S.A., vol. 21, p. 263.)
On Ships for the Channel Passage. (Discussion on paper by Lieut.-Col. A. Strange.) (J.R.S.A., vol. 21, p. 269.)
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