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Fattening children or fattening farmers? School milk in Britain, 1921–1941[1]

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Of the stories that we tell ourselves to exorcise the pathologies of modernity, one has a particularly nostalgic poignancy for those of us educated in Britain in the 1940s and 1950s. The postwar welfare consensus provided us with school-based daily feeding that included milk in the morning break and a hot lunch, substantial nourishment for our bodies and our imaginations. Personally, I can still recall the sickly odour of the lukewarm milk that I drank through straws from small bottles holding one-third of a pint, a ritual that I must have experienced on more than two thousand occasions. I was an unwitting participant in a government policy that served a number of purposes in the first two-thirds of the twentieth century, and later faded in political priority from the 1970s onwards, to partisan cries of 'Thatcher, Thatcher, milk snatcher'.[2] This feeding policy, followed by successive governments of different political colours, had constituted a colonization by state bureaucracy of the life-world of school children, from the passing of the Education (Provision of Meals) Act in 1906 through to a peak of universal acceptance and application in the 1950s and early 1960s.[3]

Neither the policy nor its abolition were innocent of sectional interests. The principal objective of this article is to lay bare some of the thinking behind the rise of school milk in Britain. After an outline of the narrative history, brief because its essentials are already relatively well documented, a commentary will be added on four levels.[4] First, there will be a discussion of the relationship between the evolution of nutritional knowledge and milk-feeding experimentation, a nexus that has powerful implications mediated through the alleviation of malnutrition and enhancement of child health circumstances. Second, it is essential to consider the policy context, especially in the 1920s and 1930s, when changes involving potential increases in government expenditure were constrained by a number of financial and

[1] I am grateful to the anonymous referees for their detailed engagement with this article and to the editors for their patience.

[2] In 1968 the Milk in Schools Scheme, providing one-third of a pint daily free to all school children aged five to 15, ceased for secondary and many independent primary schools. In 1971 it was withdrawn for primary children over seven, continuing only for those with a medical certificate.

[3] For further, general comments on school feeding, see Hurt, 'Feeding the hungry schoolchild'; Burnett, 'School meals'; Harris, *Health of the schoolchild*; Welshman, 'School meals'.

[4] Atkins, 'Early experiments'; *idem*, 'Milk in Schools Scheme'.

other political factors. Third, a supply-side logic will be identified for the introduction of school milk, arising from the severe difficulties that were being experienced by British agriculture in the 1920s and early 1930s and which made any additional marketing opportunities very attractive for milk producers.[5] Finally, we will look at the hypothesis that school children trained to a habit of milk drinking went on to become loyal adult consumers.

I

Milk had a modest role in charitable feeding in the late nineteenth and early twentieth centuries. Among the 16 per cent of children receiving school meals from voluntary societies in London in 1904, very few were given milk, which was seen as a special food to be used sparingly, mainly in cases of proven malnutrition where remedial feeding was required. The 1906 and 1914 acts, later consolidated by the Education Act (1921), in theory enabled the expansion of school-based feeding but in practice the results were patchy. In 1925 only about 20,000 children in England and Wales were receiving school milk.[6]

In the 1920s, voluntary milk clubs began to appear in schools where the teachers were willing to organize a supply and to collect money from the children. This movement took off in 1927, with the increasing involvement of the National Milk Publicity Council (NMPC) in promoting contacts between schools and their local suppliers.[7] The milk was served in bottles containing one-third of a pint at the standard retail price and therefore was more a matter of convenience for the consumer than a loss-leader provided by distributors. Demand in London dominated the early years (figure 1), but from 1929 the rural counties were enthusiasts, having the raw material produced locally that required fewer overheads for preparation and distribution.[8] County Boroughs and Urban Districts lagged furthest behind because of their greater dedication to school dinners.

By 1933 over 1 million children in England and Wales were involved, constituting a new market of about 9 million gallons per annum (figure 2). Yet even this pace of growth in the early 1930s was too slow in the view of those who wanted a rapid reduction of malnutrition through the medium of school feeding. They were probably correct because, extrapolating the growth process, it would have taken a further 20 years for all elementary school children to have been involved.

[5] For a fuller account, see Gilbert, 'History of school milk'. I am grateful to Prof. Roger Cooter for access to this thesis.

[6] The data, from the *Annual Report* of the Board of Education' s Chief Medical Officer, are reproduced in Harris, *Health of the schoolchild*, pp. 122–3. The figure of 20,000 is arrived at by dividing the total of 8,621,058 milk meals by 220 school days, assuming one meal per day.

[7] For more detail on the origins of the NMPC scheme, see Atkins, 'Early experiments'. Note that the NMPC operated only in England and Wales.

[8] Overheads were lower for local authorities but they were higher for suppliers, for whom delivery distances were greater in rural areas.

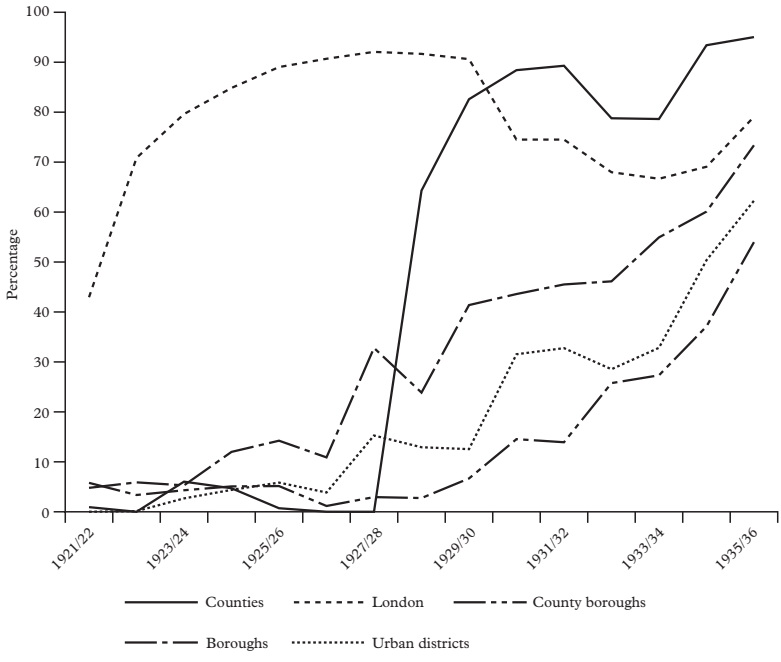

Figure 1. *Free and paid-for milk meals as a percentage of all school meals, by type of local authority*

Source: *Board of Education, Reports of the Chief Medical Officer*
Note: After 1934/5 details of milk for payment were no longer collected

In 1934 the Milk Marketing Board (MMB) took over the Milk in Schools Scheme (MISS), at the behest of the National Government.[9] The Ministry of Agriculture (MAF) invested £1 million over two years, under powers granted in the Milk Act of that year, in order to initiate a step-change in milk provision, and by the start of the Second World War over half of elementary pupils were participating. This was a considerable achievement but still by no means the full take-up that many politicians and social reformers had hoped for.

At the beginning of the war the evacuation of children from the threat of bombing in large cities meant some disruption to the scheme, which in 1940 was taken over by the new Ministry of Food. A form of quasi-rationing was introduced in October 1941 under the so-called Scheme of Supply, but the Board of Education, in concert with the Ministry of Food, issued a circular that encouraged Local Education Authorities (LEAs) to achieve participation as close as possible to 100 per cent by children in the MISS.[10] This

[9] A fuller account of the MISS will be found in Atkins, 'Milk in Schools Scheme'.

[10] Ministry of Education, *Health of the school child, 1939–1945*. The amount of welfare milk also increased, even more radically, from 0.6 million gallons in 1938/9 to 150 million gallons in 1944/5. As a result, 80% of nursing and expectant mothers and children under five received a daily pint of milk, which was either free or subsidized.

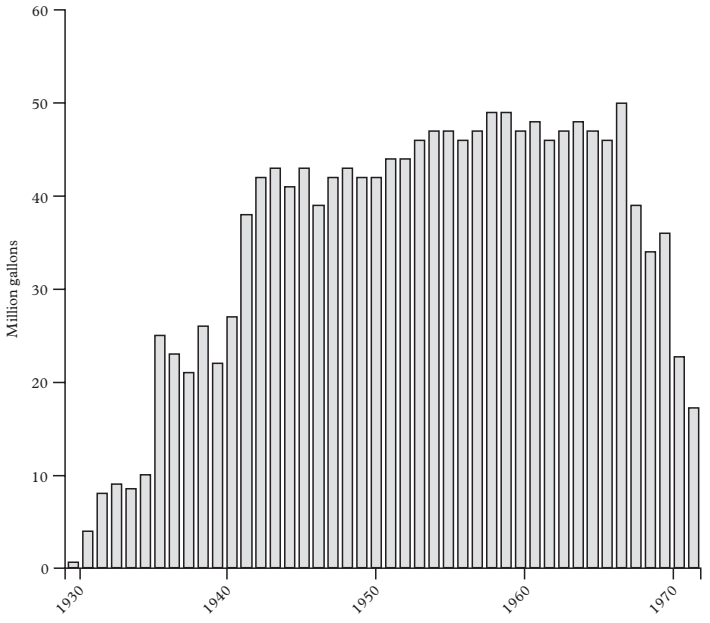

Figure 2. *School milk (free and paid-for) in England and Wales, 1930–71*
Source: Federation of UK Milk Marketing Boards, *UK dairy facts*

later became a legal requirement under Section 49 of the 1944 Education Act.

The rise of school milk in the 1930s was not the sunlit upland of welfare socialism, however. What is rarely mentioned in reviews of school meals and milk is that there were substantial variations of performance regionally and between LEAs. Scottish children had the lowest rates of access throughout the period, particularly in the rural areas outside the central lowlands. A number of factors were involved, for instance the slower adoption and more fragmented nature of the Milk Marketing Boards north of the border leading to a patchy implementation of the MISS. In England and Wales there was also a wide gap between the enthusiasm of county LEAs such as Derbyshire, with a high participation rate of public elementary school children, and Rutland, at the other end of the scale; or between urban authorities, such as Smethwick, which achieved virtually full access, and underperformers such as Sunderland.[11]

II

In the first decade of the twentieth century it was thought that school meals should emphasize protein and fat because these were considered to be the

[11] Derbyshire 91.1%, Rutland 34.8%, Smethwick 99.7%, Sunderland 47.2%, all in February 1942: Board of Education, 'Statistics'.

principal growth promoters and it was recognized that they were deficient in many children's diets at home.[12] Because of its composition and ready availability, milk was seen as an ideal food to meet this need.

In 1912 Frederick Gowland Hopkins moved the debate on a stage further by popularizing the novel idea of 'accessory food factors' (vitamins) and after the First World War the general concept of micronutrients increasingly informed the debate about child nutrition. Hindsight should not blind us, however, to the fact that consensus was hard to achieve in this field throughout the 1920s and 1930s. There were heated disagreements among scientists such as Paton, Cathcart, Mellanby, Hopkins, and Orr about the importance of vitamins and minerals to the healthy body and the prevention of disease.[13] As a result of such uncertainty, governments were reluctant to accord any great significance to nutritional research or to the suggestions of either the Greenwood Advisory Committee on Nutrition (1931–4) or the Inter-Departmental Committee on Nutrition (1935–6). Still less did they accept any suggestions that a large proportion of the population was undernourished or malnourished.[14]

One factor during the interwar years was the debate between those, on the one hand, who believed in the need for top-down nutrition policies to be implemented by the state, for instance through the fortification of popular foods or the extension of the consumption of nourishing foods through the subsidy mechanism of the welfare system, and those, on the other hand, who argued for the more bottom-up approach of nutrition education.[15] Unfortunately, the latter discourse took on overtones of explaining malnutrition in terms of the ignorance of the consumer, but such ideas did at least generate a sentiment that the exposure of children to milk at school would encourage its continued consumption in later life. The school milk movement as it actually unfolded in England and Wales displayed elements of both the welfare and the nutrition education strands of thought.

Perhaps the most influential among the interwar studies with regard to milk was the work of Harold Corry Mann. From 1921 to 1925 he conducted an experiment at a Dr Barnardo's Home in north-east London, feeding sets of boys on diets enhanced with milk, butter, sugar, margarine, casein, and watercress, with a control group fed on a basic diet.[16] There was also a later study of children in four public schools.[17] The results appeared to show the superiority of milk for child growth. In her doctoral thesis, Petty has shown that this Medical Research Council funded research was contro-

[12] Petty, 'Impact of the newer knowledge', p. 165.

[13] Ibid.; Smith, 'Nutrition science'; Smith and Nicolson, 'Nutrition, education'; Kamminga, ' "Axes to grind" '.

[14] For instance the clain by Orr in his *Food, health and income* that half of the population was unable to afford a full and balanced diet.

[15] A helpful account of this is provided by Smith and Nicolson, 'Nutrition, education'.

[16] Corry Mann's work followed that of McCollum in America in 1919–21: McCollum, 'Nutritional value'.

[17] Corry Mann, 'Value of dairy produce'.

versial during its data collection phase, with both the scientific value of the work and its cost under scrutiny.[18] She has also asserted that in retrospect Corry Mann's methodology was defective and that his results were unreliable.[19] Milk did indeed benefit undernourished boys but this was due to 'catch up' growth and did not yield any significant insight into the potential nutritional impact for the average child.

Defective or not, Corry Mann's research convinced influential people such as Nobel Prize-winning nutritionist F. G. Hopkins and George Newman, who was the Chief Medical Officer of both the Ministry of Health and the Board of Education, that milk should play a greater role in childhood diets. Newman published his thoughts in his annual reports from 1925 to 1934, a formative period in thinking about school milk.[20]

Other milk-feeding experiments were commissioned in the following decade and most supported Corry Mann's conclusions. For instance, from 1926 to 1928 the Scottish Health Board, with financial assistance from the Empire Marketing Board, fed 1,282 school children in Aberdeen, Belfast, Dundee, Edinburgh, Glasgow, Greenock, and Peterhead. John Boyd Orr was involved, as Chairman of the Research Committee of the Scottish Milk and Health Association.[21] This was followed in 1929/30 by Leighton and McKinlay's experiment with 10,000 children in 67 Lanarkshire schools, again with Empire Marketing Board support.

Then from 1934 to 1937 a comparison was undertaken of the nutritive value of raw and pasteurized milk on school children in Luton, Wolverhampton, Burton-on-Trent, Huddersfield, and Renfrewshire, sponsored by the Ministry of Health and the MMB.[22] Waldorf Astor, as chairman of the Milk in Schools Advisory Committee of the MMB, had originally suggested this project as a means of monitoring the nutritional impact of the MISS and the research plan was devised by Orr, one of the committee members.[23] From the outset there was a concern that the scientific planning of the survey should allow for a better sampling frame than had been available in Lanarkshire, no doubt because of the painful memory of the criticisms that had come from statisticians at that time.[24]

[18] Petty, 'Impact of the newer knowledge', pp. 178–86.

[19] Corry Mann had a difficult relationship with the Medical Research Council and his work attracted both contempt and admiration from the 'expert' community. For further detail see Atkins, 'Early experiments'.

[20] For instance, Ministry of Health, *Annual report 1926*, pp. 185–6, and *1927*, pp. 153–4; Board of Education, *Health of the school child 1925*, pp. 116–18 and *1927*, p. 105.

[21] Orr, 'Milk consumption', pp. 140–1, 202–3; Scottish Board of Health, A*nnual report 1928*; Orr and Leighton, 'Scottish milk-feeding'; Leighton and Clark, *Milk consumption*; Leighton and McKinlay, *Milk consumption.*

[22] Milk Nutrition Committee, *Milk experiments*.

[23] National Archives, MH 56/105. Mellanby was in the chair, the other members being Glover, Kay, Orr, and Mander.

[24] National Archives, MH 56/105, Newman to Robinson, 19 Nov. 1934. The original plan had been to include 5,000 children in London, a depressed area, a rural district, and a district in Scotland. The cost grew from an expected £4,000 to £15,000: National Archives, JV/7/217, Foster to Elliot, 22 Feb. 1935.

Table 1. *The MMB milk-feeding experiment: numbers of children in each category*

	Boys				*Girls*			
	Biscuit	*1/3 pint pasteurized*	*2/3 pint pasteurized*	*2/3 pint raw*	*Biscuit*	*1/3 pint pasteurized*	*2/3 pint pasteurized*	*2/3 pint raw*
Luton	133	131	129	125	81	77	83	87
Wolverhampton	141	141	152	140	119	120	121	120
Burton on Trent	198	208	213	215	202	196	192	180
Renfrewshire	209	192	196	196	185	182	178	166
Huddersfield	121	149	149	157	92	144	141	136
Age 5–7	215	240	253	237	21	254	244	213
8–10	306	309	323	322	261	283	268	280
11–14	281	272	263	274	197	182	203	196
All ages	802	821	839	833	679	719	715	689

Source: Milk Ntrition Committee, *Milk experiments*, 1939, p. 34

This MMB feeding experiment was planned to be definitive. In addition to the feeding of school children, animal experiments were undertaken at the National Institute for Research in Dairying at Reading and the Rowett Research Institute in Aberdeen.[25] There were also plans for tests on 400 artificially fed babies and toddlers living in institutions, although in the event not enough were available to make this element viable. In ethical terms this was probably just as well because cow's milk has deficiencies in iron and vitamin C and therefore is not an ideal food for infants before weaning.

The field research started in February 1935, with children in each school randomly divided into four feeding groups: biscuits only; one-third of a pint of pasteurized milk; two-thirds of a pint of pasteurized milk; and two-thirds of a pint of raw milk per day (table 1). A total of 6,097 children were present at all four medical examinations and only their data were used in the final report.[26] In addition to the feeding, the children were monitored for height, weight, chest circumference, strength of pull on a dynamometer, and a teacher's assessment of intelligence.[27] This was the first study to measure variables beyond physique and also the first to look into the effect of different amounts of milk in the diet.[28]

[25] The investigation of the babies was eventually abandoned 'owing to the impossibility of securing in the same institution a sufficient number of artificially fed babies of approximately the same age'. It is difficult to know how the researchers ethically could have justified feeding babies on milk for a year without weaning any of them: Ministry of Health, *State of public health 1935*, p. 128.

[26] National Archives, MH 56/525, 'Milk Marketing Scheme, Milk Nutrition Committee, a Final Report'.

[27] National Archives, MH 56/105, 'Scheme designed to test the effect on the health of school children of the addition of varying quantities of milk to their diet', 10 Jan. 1935.

[28] National Archives, MH 56/525, 'Milk Marketing Scheme, Milk Nutrition Committee, a Final Report'.

The programme was said to have shown that definite improvements in physique, in general appearance and, to a somewhat lesser extent, in muscular strength and scholastic ability, were to be expected from the consumption by school children of two-thirds of a pint of pasteurized or raw milk; and in weight, and to a minor degree in height and in chest circumference, for those on one-third of a pint.[29] The study could find no significant difference between raw and pasteurized milk, for children or for animals.[30]

The connecting theme in much of this milk-feeding experimentation was the influence of John Boyd Orr. In the 1920s and 1930s he became convinced that malnutrition was a much bigger problem than usually admitted and he used his scientific and political connections to press this point. In 1936 he published *Food, health and income*, in an attempt to galvanize the politicians. In this he claimed that about half of the population of Britain was malnourished. Orr believed that an increased consumption of milk was important, especially for children, and this drove his series of school-based experiments. In retrospect, the research agenda seems to have been set by Orr's wish to use the results as a political lever. The underlying science was at times questionable but the publicity was positive and Orr's political and networking skills are not in doubt. *Contra* Orr, Edward Mellanby, Secretary of the Medical Research Council, spoke somewhat dismissively of the 1920s and 1930s milk-feeding tests as serving the purpose of demonstration rather than research, but his voice was not so influential.[31]

These milk-feeding experiments were a long way from providing proof of the success of the school milk policy as a whole. In 1920/1 a total of 11.9 million paid-for meals had been administered by LEAs, of which milk meals represented 29 per cent. This changed by 1930/1 to milk meals forming 60 per cent of the 40.3 million in total (free and paid-for) and by 1938/9 to 81 per cent of 141.8 million school meals overall. Milk had become popular with many LEAs as a substitute for solid meals and in absolute numbers these actually fell from 1933/4 onwards. In nutritional terms this meant a substantial shift in the proportion of energy (calories) available to children from the two sources in favour of milk (figure 3). The average meal, as a result, fell from approximately 544 calories in the years 1920/1–1924/5, to 129 calories in 1930/1–1934/5, and 127 calories in 1935/6–1938/9.[32] This evidence in

[29] Ibid.

[30] A further feeding study was undertaken in 1937–9 under the auspices of the Carnegie Foundation. A total of 1,352 families participated at six English and nine Scottish centres: Gunnell, 'Epidemiological follow-up'; Smith 'Carnegie Survey'.

[31] National Archives, MH 56/105.

[32] The method used to calculate these figures has been taken from Petty, 'Impact of the newer knowledge', p. 172. She uses the minimum food value of a school dinner in London in 1935, 750 calories and 25 gm protein, reduced by 15%, as an estimate of an average non-milk meal. There is no claim of precision made for this average, of 635 calories and 21 gm protein, not least because there is evidence that the quality of solid meals varied substantially between LEAs. The true figure is most likely to be lower, which would support the argument of this article. Figure 3 uses Petty's average to calculate the nutritional content of solid dinners, free and paid for, coupled with the energy value of school milk. 'Other meals' are included in the latter category. Board of Education data for milk is used to 1929/30, after which the source is the Federation of United Kingdom Milk Marketing Boards.

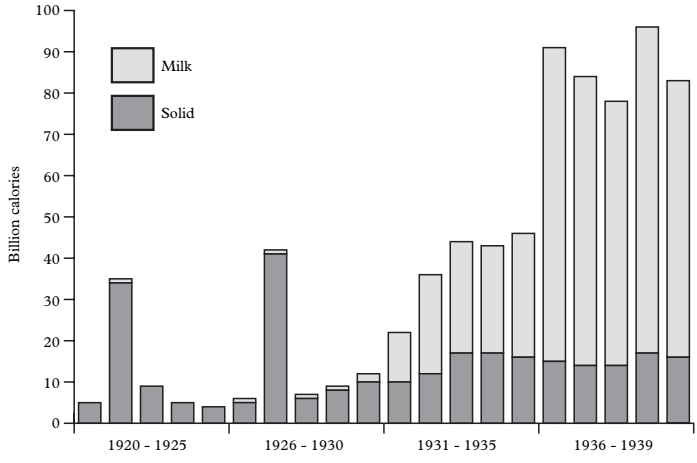

Figure 3. *The relative contributions of milk and solid meals (free and paid-for) in total energy budget of school feeding 1920–39*

Source: School meals data from Harris, *Health of the schoolchild*; school milk data from Federation of UK Milk Marketing Boards, *UK dairy facts*

Note: Each gallon of full cream milk contains about 3,040 kilocalories

sum amounts to a decline in meal quality, and probably also in energy intake per child, as a result of the relative growth of the milk meals sector.

What of the impact of milk upon different target groups within the school community? We should make a distinction here between free school milk for necessitous children, provided under the Education Acts, and the paid-for milk under the NMPC scheme and the MISS. Outside London, Local Education Authorities were often reluctant to convert free milk from a policy designed to address malnutrition, as defined by an MOH, into a broader and more expensive programme of poverty relief. In 1930 only 64 LEAs provided 35,000 children with free milk, but this number grew steadily to 300,000 in 1934 and 630,000 (16.4 per cent of pupils) by 1938.[33] Where poor pupils did participate, unfortunately there was evidence of a 'substitution effect', with a reduction in feeding at home.[34] Although they had a vested interest in exaggeration, on behalf of their allies in the milk trade, the Ministry of Agriculture calculated that only about half of welfare and school milk represented a real terms increase in consumption.[35]

III

It is essential to put the narrative history outlined so far into perspective by considering a number of contextual factors that were either enabling or

[33] *Parliamentary Debates*, 244 (1930), cols. 1863–4; National Archives, ED/50/81.

[34] Paterson, 'A candid criticism', pp. 183–4.

[35] National Archives, MH 79/361, letter from Manktelow (Ministry of Agriculture) to de Montmorency (Treasury), 30 July 1938.

obstructive. It is helpful, for instance, to look at selected politicians, in order to tease out the conflicting pressures upon them and the ideologies they used by way of justification for their actions. With regard to school milk, two obvious candidates are Christopher Addison and Walter Elliot.

As Parliamentary Secretary to the Board of Education (1914/15), Addison showed some interest in offering free milk to children in school.[36] Although nothing came of this immediately, the idea was intellectually consistent with a notion of welfare milk that had become well established before the First World War. A number of Local Authorities had made provision for nursing mothers and infants through clinics, and in 1918 a policy to extend this nationwide was made by the Food Controller under the Maternity and Child Welfare Act and the Milk (Mothers and Children) Order. On the decision of the local Medical Officer of Health, 1.5 pints per day were made available to children under 18 months, and 1 pint to those between 18 months and five years.[37]

Addison, initially a Liberal, joined the Labour Party after losing his seat in the 1924 general election, and he came to share his continuing interest in school milk, rather surprisingly perhaps, with his Conservative opponent, Walter Elliot. In 1929 Elliot, then in opposition, introduced a Ten Minute Rule Bill that, unusually for a private member's measure, reached Third Reading with very little opposition and then became the Education (Scotland) Act (1930).[38] This enabled Scottish Education Authorities to provide subsidized or free school milk, with a view to building the children's nutritional status.[39] His main argument was one of efficiency: pupils would get more from their education and taxpayers would have a better return on their investment in education.[40]

Elliot also shared many of Addison's views on the need for a fundamental restructuring of British agriculture. As Minister of Agriculture in the second Labour government, Addison was responsible for devising the Agricultural Marketing Act of July 1931, which enabled monopoly marketing for certain commodities. Elliot, as his successor in the National Government formed in August 1931 steered through a new act of the same name (July 1933) and he also oversaw the subsequent establishment of the MMB (September 1933). The boldness of these pieces of legislation is remarkable. Both politicians sought to put the onus for the restructuring of the market-

[36] Morgan and Morgan, *Portrait of a progressive*, p. 29.

[37] Local Government Board Circular, 9 Feb. 1918.

[38] George Dallas, a Labour MP, wanted to introduce a similar measure for England and Wales but was dissuaded because most of the relevant powers already existed in the Education Acts: National Archives, ED/50/79.

[39] This measure confused the civil servants in the Board of Education. One memo sees it as a typical Conservative attempt to simplify legislation in Scotland and bring it into line with England. Another accuses the memo circulated by the Scottish Office to explain the act of being a 'highly socialistic document': National Archives, ED/50/79.

[40] *Parliamentary Debates,* 239 (1929–30), cols. 703–27.

ing of individual commodities upon boards of producers who, if they were elected by a sufficient majority, would have powers of compulsion in the creation of a monopoly.

Elliot was a key representative of a new style of Conservative thinking on agriculture and food policy. Drawing on his association with the so-called 'YMCA Group' in the 1920s, he argued for planning as an essential element in economic recovery. Cooper has suggested that Elliot's analysis of agrarian capitalism was that there had been a fundamental failure that could be countered only by restructuring along corporatist lines, with guidance and support from the state.[41] Along with activists from a different part of the political spectrum from his own, he saw the state as the necessary mitigator of the crises of late capitalism. His reformed society would have been composed of strong and autonomous producer groups, with the state as initiator and facilitator of corporate structures and subsequent arbiter of conflicting interests.

As a nationalist, Elliot opposed Dominion-preference in imports into the British markets, and pressed for greater domestic self-sufficiency in the dairy industry and other livestock sectors, but this policy was derailed soon after he took over at the MAF. The 1932 Imperial Economic Conference, held in Ottawa to discuss trade, reached a compromise that kept British markets open to imports of dairy products from Australia, New Zealand, and Canada, at least until August 1935.[42] The consequence was a depression of the market for surplus milk in Britain, which, without such competition, would have found a profitable outlet in manufacturing.

Elliot's Milk Act (1934) was framed with this crisis in the dairy industry in mind. His earlier announcement to the House of Commons in February of the same year had stressed the danger of an oversupply in the summer and he was conscious of a need to compensate farmers and manufacturers for the sacrifice of their interests at Ottawa.[43]

It is no surprise that Elliot fought for the introduction of the MISS in 1934 as part of the Milk Act. He was a close friend and former scientific colleague of John Boyd Orr, the famous and influential nutritionist, and would have been well briefed on the latest research with regard to milk. It was Orr's milk-feeding experiments in Scotland in the 1920s that had inspired Elliot's 1930 act, and it was Elliot who nominated Orr to serve on a number of committees concerned with milk policy in the 1930s, including the MMB's committee on milk propaganda, which Orr later

[41] Cooper, *British agricultural policy*, ch. 9.

[42] E. J. Maude, 'Milk consumption: report dated 30 January, 1936, of an informal Inter-Departmental Committee comprising representatives of the Ministry of Agriculture and Fisheries, Board of Education, Market Supply Committee, Ministry of Health, Department of Health for Scotland, Scottish Office and Treasury', E. M. H. Lloyd Papers, London School of Economics, 4/56.

[43] National Archives, T/161/830, S39098/03/1, 'Memorandum on the question of the contribution from public funds in respect of milk supplied to schools under an approved publicity programme', A. W. Street, 22 March 1934.

claimed was responsible for persuading the government to extend the life of the MISS.[44]

On close inspection of Whitehall papers written in 1933 and 1934, it is clear that the MISS was only one feature of a much broader push on the dairy economy and indeed on agriculture as a whole.[45] To introduce it Elliot had needed to win over the Cabinet's Produce Markets Supply Committee and he did this with an agricultural and economic rather than a nutritional or public health rhetoric.[46] Thus, in the 1934 Milk Act, the subsidy agreed for cheese and butter manufacture was three times the size of the budget for school milk. At this same time, the Gowland Hopkins Committee on Animal Diseases, under the auspices of the Economic Advisory Council, another Cabinet Committee, was also the subject of much debate among policy-makers because of its bold statements about the severe economic implications of endemic tuberculosis in the dairy herd.[47] Again, the cost of school milk was modest by comparison with the potentially devastating cost of slaughtering the 40 per cent of milking cows that were infected.

As shown elsewhere, milk policy was an exceptionally complex and controversial area in the 1920s and 1930s.[48] Persuading the Treasury to fund his MISS was no mean feat on the part of Elliot. Treasury staff had been wary that subsidized school milk might create a precedent for welfare food and clothing, and they had also disputed with the MMB about the number of children who could be supplied for the money available.[49] But there were strains also from other directions. First among these was the unhelpful attitude of the retail milk trade, a sector that in practice stood to gain much economically from the school milk programme. Traders negotiated very hard on several occasions, most notably from 1936 to 1938, in an attempt to acquire the same margin for their school and welfare milk deliveries as for their normal household trade, and Walter Nell, on behalf of the trade, even threatened the discontinuation of the MISS if his demands were not met.[50] This was the same interest group that was responsible for the government's humiliating withdrawal of its Milk Industry Bill of 1938, the struggle over which coloured several aspects of prewar milk politics.

As a second political pressure, the departments of Agriculture, Health, and Education all received delegations on school milk from social reformers in the period under review, particularly during the 1930s when public opinion was shifting in favour of involvement by the state. Poor families

[44] Boyd-Orr, *As I recall*, pp. 112–13. The Milk Act (1936) extended the MISS by a further 18 months.

[45] In particular the Milk Marketing Board papers in the National Archives, such as JV 7/190, 'School and welfare milk schemes: Milk in Schools scheme. 1933–1934'. Other useful classes of records include ED (Board of Education), FD (Medical Research Council), MAF (Ministry of Agriculture and Fisheries), MH (Ministry of Health), and T (Treasury).

[46] National Archives, MH 79/327.

[47] Atkins, 'Milk consumption'.

[48] *Idem*, 'Pasteurization of England'; *idem*, 'White heat in Whitehall'; *idem*, 'Early experiments'; *idem*, 'Milk in Schools Scheme'.

[49] National Archives, ED 24/1367 and MH 56/106.

[50] National Archives, MH 79/349.

could not afford to purchase such an expensive food item as milk and much of the lobbying was on the theme of poverty alleviation and the provision of a basic diet for growing children.[51] One example was the debate in 1934 about the need to make more school milk free of charge. Since 1906 such milk had been available only upon certification by the local Medical Officer, which had effectively been the state's means of limiting its liability. In particular, Eleanor Rathbone, MP for the Combined Universities, started a Children's Minimum Campaign in an attempt to influence the government's White Paper on milk policy published in February 1934 and the subsequent Milk Act.[52] She hoped to persuade the government to increase the availability of free milk.[53] If access to the innermost circles of government may be counted as success, then Miss Rathbone achieved something because she and her delegation were received by the Prime Minister, Ramsay MacDonald, in March 1934.[54] But the results of this lobbying were not immediate. From 1934 to 1939 the Board of Education continued to claim that child malnutrition had been exaggerated and that, anyway, its duty was limited to the narrow remit of education and did not extend to income support for poor families.[55] In its notorious Circular 1437, issued in September 1934, the board restated that the local Medical Officer of Health would continue to decide which children should receive free milk.[56]

Third, there were disputes between the various interested ministries about the structure and progress of the MISS. These are, of course, not unexpected in a political system where policy priorities and outcomes are often decided by such Whitehall struggles.[57] From the outset it seems, the Board of Education and the Ministry of Agriculture differed in their objectives. To summarize the view of one civil servant, the former wanted quality, and the latter wanted quantity.[58] There was also much correspondence between the ministries of Health and Agriculture about one quality issue, whether school milk should be sourced only with suppliers of the pasteurized or Grade A (Tuberculin Tested) product.[59] The Board of Education had suggested this in 1934, on the advice of the Ministry of Health, but their circular caused a storm of protest from local authorities wary of the

[51] A survey of 1,000 families in County Durham in 1933 had shown that one-third purchased no milk at all, and that the average daily consumption per head of bought milk in poor households was 0.05–0.25 pints: Burns, 'Study of milk consumption'.

[52] Rathbone was an active campaigner, for instance on the issue of family allowances, which informed her thinking on welfare milk and school milk.

[53] Welshman, 'School medical service', pp. 168–71; National Archives, T/161/830, file S39098/03/1.

[54] National Archives, MH 56/106.

[55] In 1938 the Board of Education was very reluctant to have the MISS added to its regulatory burden: National Archives, MH 79/360. At this point it may be worth reminding readers that government expenditure on all aspects of education recovered from a low point of £38.3 million in 1932/3, reaching a peak of £45.7 million in 1937/8. While this indicates a commitment to investment by the state, there remained some qualms about spending running out of control.

[56] Welshman, 'School medical service', p. 159.

[57] Atkins, 'White heat in Whitehall'.

[58] Ibid., p. 160.

[59] National Archives, MH 56/104.

expense and also from the widespread lobby against heat-treatment. A survey by the People's League of Health in 1936 showed that one-fifth of school milk in England and Wales was neither heat-treated nor Grade A (Tuberculin Tested), implying a risk to the children of catching diseases such as tuberculosis. Interestingly, in Scotland the figure was only 1 per cent.[60] North of the border attempts to clean up the milk supply were more advanced.

The change of policy in 1940 introduced by the new Churchill administration, with its substantial increase in both school and welfare milk, would not have been possible without the special wartime conditions.[61] The web of vested interests was such that progressive dairy legislation from a social-liberal agenda was exceptionally difficult to achieve in the interwar years. Elliot's 1934 intervention, for instance, had been possible only because it appealed to the self-interest of the farming and milk trade lobbies, whereas the other two major issues, the suppression of bovine tuberculosis and the provision of cheap welfare milk, were perceived as threatening the prosperity of dairy farmers and milk traders respectively.

This is not to say that school milk was unpopular. On the contrary, it was widespread and, from 1946, free, provision became a taken-for-granted element of the welfare state. School milk had been extended as part of the war effort, particularly as a means of boosting morale and of enhancing the health of the population, but the policy was so popular that for two decades after the end of the war it was politically impossible for governments to make savings.

IV

In the early history of school milk, the state of agriculture in the 1920s and 1930s was significant. Successive governments were dogged by problems of recession and the agro-economic discourse was therefore tightly interwoven with that of politics at every level.

In terms of value-added, milk and dairy products were second only to fatstock in the gross agricultural product of England and Wales. In 1930/1, for instance, the milk sector represented 27 per cent of the total, and the prosperity of dairy farmers could therefore not lightly be dismissed in any debate about agriculture as a whole.[62] Approximately three-quarters of the members of the National Farmers' Union at this time were milk producers to a greater or lesser extent and their opinions, especially those of the many with small herds, were clearly articulated in Westminster by a number of rural MPs.

[60] Atkins, 'Milk in Schools Scheme'.

[61] National Archives, MH 79/366. For more on the relationship between milk provision and the rationing system, see Harris, *Health of the schoolchild*, p. 156.

[62] Taylor, 'English dairy industry'.

The crisis of dairying in the interwar years was profound. One might be forgiven for thinking that producers of liquid milk in the domestic market would have remained comfortable because its perishability gave them protection from the imports that were devastating the butter- and cheese-making industries. However, because of the generally distressed nature of agriculture in the 1920s and 1930s, farmers shifted the emphasis of their enterprises more and more towards milk in the hope of some respite. Milk production for liquid consumption in Britain soared from approximately 788 million gallons in 1924/5 to 1,186 million gallons in 1945.[63] At the end of the period about half of the holdings of over 2 hectares were producing milk for sale, if only as a sideline.[64]

The effect was a glut and a fall in the average wholesale price of milk delivered to buyers' railway stations.[65] Attempts were made by the National Farmers' Union and the National Federation of Dairymen's Associations (the distributors) from 1922 onwards to fix a price at a mutually acceptable level but no more than a quarter of the liquid milk market (mainly that in London) was ever affected by this.[66] Negotiations became increasingly acrimonious in the late 1920s and early 1930s, to the extent that one well-known commentator, Waldorf Astor, observed that 'the milk situation is chaotic, muddled, unsatisfactory both for agriculture and the welfare of the nation, particularly its children'.[67]

Set against this was a stagnant demand from ordinary consumers—not surprising perhaps, given the unsavoury reputation that milk had acquired as an adulterated, dirty, and germ-laden product.[68] Another consideration was the relative expense of milk vis-à-vis other basic foodstuffs at a time when many consumers were tightening their belts during the global economic depression.[69] In 1936 the Maude Committee concluded that average milk consumption per head remained at about the same level as it had been in 1909–13.[70]

The first major initiative was from the private sector. The NMPC, founded in 1920 by a coalition of farming and milk trade interests, saw school milk as a double opportunity, first to boost immediate sales and, second, to capture and mould a generation of future consumers.[71] The NMPC's report for the year to 31 December 1929 articulated the logic of this approach: 'the ultimate extension of the milk market will be achieved

[63] [Grigg], 'Report', pp. 199–200; Central Statistical Office, *Annual abstract*.
[64] Davies, 'Production, marketing and supply'.
[65] Cohen, *History of milk prices*.
[66] *Milk Trade Gazette,* 1 (1930), p. 5.
[67] Astor, 'Problem of the milk supply'.
[68] Atkins, 'Sophistication detected'; *idem*, 'White poison'.
[69] Having said that, unemployment had begun to decline by 1934.
[70] [Maude], *Milk consumption*; Smith, 'Nutrition science', p. 10. The Maude Committee recommended the targeting of cheap milk schemes at mothers and children rather than at the population as a whole.
[71] For further discussion on attempts to boost milk consumption, see McKee, 'Popularization of milk'.

through the education of the younger and more susceptible members of the community particularly where they are congregated in cities'.[72]

Other solutions were required to both the supply- and demand-side problems. Fortunately, out of the economic chaos of the 1920s and 1930s there also arose a series of supply-side compromises brokered by the state. Paramount among these was the formation of the MMB for England and Wales, which began operations in 1933.[73] Through its virtual monopoly, it was able to stabilize the market, and both wholesale and retail prices rose in the first five years of operations.[74] The new solidity of the system and greater level of harmony, in what had been an extremely fractious trade, together provided a platform for the MISS. The official commentary on the Milk Marketing System, provided in 1936 by the Cutforth Commission, suggested that a state-sponsored school milk scheme would not have been possible in the absence of an organized market of this kind.[75]

Overall, despite their publicly expressed concerns about price and logistics, dairy farmers, the MMB, and distributors were pleased with the growth of the school milk market in the 1920s and 1930s. In private there were reports that 'the consensus of opinion [is] that the Milk in Schools Scheme [has] not prejudiced the sales of milk in the home', in other words regarding school milk as a substantial net gain to sales.[76] The trade were much more critical of welfare milk, which was geographically patchy in its application, and on which there was a greater downward pressure in price because it was paid for entirely out of public funds.[77]

V

Human capital was one theme that played in the debates of the early twentieth century about both food systems and child health, with state intervention often posed as a solution. The deployment of quantity and quality arguments in the burgeoning field of nutrition was derived partly from concerns about the efficiency of Britain's industrial workforce and partly from a debate about the perceived decline of its military potency as a result of a shortage of healthy and fit recruits for the army in the Boer War and the Great War. There were several governmental responses. First, there gradually grew a notion that the state had a responsibility to regulate food systems, to eliminate the worst excesses of the frauds of adulteration, and to protect consumers against food-borne disease.[78] This began in the 1860s but for milk peaked in the early twentieth century with the promulgation of the 1901 Sale of Milk Regulations. Second, the provision of

[72] National Archives, MAF 52/7, TD/428A.
[73] Astor and Rowntree, *Agricultural dilemma*, pp. 48–51.
[74] Whetham, ed., *Agrarian history*, p. 252.
[75] [Cutforth], 'Milk', p. 90.
[76] National Archives, MAF/52/7, TD/428C, Council Minutes of the NMPC.
[77] National Archives, MH 79/350, 3 March 1937, Maclachlan to Maude.
[78] French and Phillips, *Cheated not poisoned?*

charitable assistance to the poor, hungry, and vulnerable, familiar in Victorian Britain, was partially transformed in the Edwardian period to notions of state-sponsored social welfare. The Liberal governments of 1905–15 introduced old age pensions and health insurance and they were also responsible for the Education (Provision of Meals) Acts in 1906 and 1914, parts of which encouraged a modest involvement by local authorities. This early initiation of the slow switch in the centre of gravity of school-feeding, from charitable to state sponsorship, is consistent with a general concern for basic needs, but the delay until 1933 of an official system of school milk provision illustrates the continuing political tension between the welfare imperative and the desire to control public spending.

The type of marketing hypothesis espoused by the NMPC has found theoretical support from a variety of recent writers. For Illich, schools under modernity have been utilized as a means of disciplining pupils for a life of progressive consumption.[79] The consumer-citizens of the future are socialized in norms and values drawn by drip-feed from a reservoir of bourgeois commodified ideals, the so-called hidden curriculum. Habermas calls this the 'soft compulsion of training for consumption', with both education and advertising acting as tutors to the ultimate end.[80] Spring takes the argument further by suggesting that the socialization implicit in the educational process of western societies most closely serves the interests of corporate capitalism, and that school has become the site of greater authority in many respects than traditional institutional foci such as the church or even the family.[81] For Bourdieu, society is reproduced, partly at least, through systems of behaviour inculcated at school.[82] Since this is a formative period, children absorb and internalize trivial messages and practices that may become elements of their habitus, the body and thought schema of each individual.[83] Classroom rituals are part of this, including regulated and standardized consumption episodes, which are indistinguishable to the pupil from packaged knowledge and controls on conduct. More generally, Foucault argued that disciplinary societies operated through sites of confinement: schools, factories, hospitals, prisons. Routine institutional practices, such as feeding, inculcated norms and redirected individual desires towards the creation of docile bodies complicit in their own discipline.[84]

The corrective contribution of Giroux's critical theory of education is to show how the directive nature of educational practices is not entirely without its resistances.[85] Bending this to our purpose, we might point out that British baby boomers, although socialized into the idea of school meals to such an extent that they have clamoured against changes in food and milk

[79] Illich, *Deschooling society*, p. 49.
[80] Habermas, *Theory of communicative action*.
[81] Spring, *Education and the rise*, p. 62.
[82] Bourdieu and Passeron, *Reproduction in education*.
[83] Bourdieu, *Outline of theory*.
[84] Foucault, *Discipline and punish*.
[85] Giroux, *Theory and resistance*.

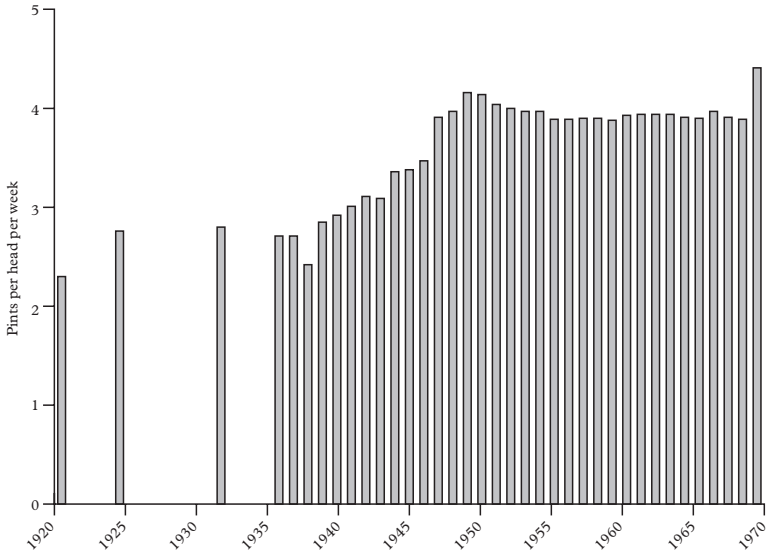

Figure 4. *The consumption in England and Wales of milk that was neither welfare milk nor school milk, 1923–1971*

Sources: D.C. on Distribution (P.P. 1923, IX); Forrester, 'Fluid milk market'; [Maude], *Milk consumption;* Federation of UK Milk Marketing Boards, *UK Dairy facts*

provision in the past 30 years, nevertheless look back on their own experiences with revulsion at the type and quality of food served to them and the oppressive regime of 'eat it up'.

What then of the evidence? Figure 4 depicts a data series for milk consumption with welfare milk and school milk stripped out. From this it is problematic to claim that the increases of intake per head were the result of the taste created through government initiatives. The only surge of per caput intake came in the 1940s, with a later stagnation in the 1950s and 1960s exactly when one might have expected the 'training of future consumers' notion to have yielded its dividend.[86]

VI

Two conclusions arise from the evidence presented in this article. The first addresses the criticism expressed at the time of the various school milk schemes that have been discussed. It seems that some Medical Officers of Health were by no means convinced by the research of Corry Mann, Orr, and other nutritionists who claimed significant benefits for children, either in their bodily growth or through the protective effect of milk against

[86] Ideally one would wish to weight these data by the changing representation of the various groups of consumers, for instance infants and young children, but the detail is lacking.

disease. One comment was that, so long as parents had to pay for their children's school milk (until 1946), it was inevitable that the impact would be limited in the very social group that would have benefited most.

There was some minority dissent locally with regard to controlled milk-feeding experiments. The MOH for Norwich fed selected schoolchildren for three months in 1931 and six months in 1932 but could find 'no conclusive evidence that the issue of milk had any appreciable effect.'[87] He did qualify this by saying that 'although no marked general improvement in health or physique was noted in the children having milk, yet many individuals appeared to be decidedly better for it'. Certainly there was room for cynicism regarding the fact that the NMPC and the Empire Marketing Board, scarcely disinterested parties, had helped to finance many of the milk-feeding exercises, and that one scientist, John Orr, had been so heavily involved in their planning.

Webster has recently added to this by claiming baldly that school meals and school milk 'made an insignificant contribution to the problem of poverty and malnutrition existing before 1939'.[88] If this is coupled with Petty's suggestion that school milk was expanded in the 1930s at the expense of solid school meals,[89] then one is faced with a conclusion that the net positive impact for children was probably minimal at that stage.[90]

Worse still, I have pointed out elsewhere that much of the milk used in schools was of a low quality, especially with regard to dirt and bacteria.[91] As late as 1936, a survey by the People's League of Health found that 23 per cent of school milk was unpasteurized and therefore susceptible to the transmission of diseases such as tuberculosis.[92] Finding new customers was one thing but poisoning or infecting them was quite another.[93]

The second conclusion arises out of the explanations advanced for the origins and evolution of school milk provision in England and Wales before 1945. Nutritional knowledge had a much lesser impact than a combination of economic and political factors. In particular, the problems of the dairy industry had a profound effect mediated by the efforts of the NMPC and later by the government through various policies, including the foundation of the MMB and the start of the MISS. The years 1929–34 were the crucial

[87] MOH, Norwich, *Annual report 1935*, pp. 178–82.

[88] Webster, 'Government policy', p. 191.

[89] Petty, 'Impact of the newer knowledge', pp. 169–71. Her data include both the NMPC and government school milk schemes. Note that Welshman, 'School medical service', p. 158, has added that among the first to replace school meals by milk were Education Authorities whose commitment to solid meals had never been strong, for instance several in south Wales.

[90] The situation from 1941 onwards was very different for both forms of feeding, with expansions in the size of the scheme and participation rates, and improvements in the nutritional content of school dinners and in the quality of school milk.

[91] Atkins, 'Pasteurization of England'.

[92] People's League of Health, *What is the quality?*

[93] It is ironic that the Scottish legislation of 1930 had insisted that school supplies should be certified milk or 'milk of the best grade available in the area'. The additional expense of this higher quality milk meant that school milk north of the border was slow in adoption.

hinge point. The NMPC scheme is especially interesting because it shows the dairy industry cleverly using the cloak of respectability that was provided by the school setting to expand its sales.

The NMPC scheme and the government-sponsored MISS made a small contribution to restructuring the dairy industry in the 1930s. Together with the free school milk offered to necessitous children by some LEAs, and mother and child welfare milk, they represented about 2 per cent of all liquid consumption in the early 1930s, rising to 5 per cent from 1934 to 1939, and then to as much as 20 per cent in the later war years. From a modest and marginal beginning, then, milk was gradually insinuated into school children's habitual consumption and its contribution of up to 40 million gallons in the 1940s was a substantial new market. The supply-side seed planted by the NMPC in the 1920s eventually bore spectacular fruit.

In 1936, in a lecture entitled 'The lop sidedness of science', Julian Huxley asserted that the producer and the state now had priority over the consumer and the individual. By way of example, he noted that the policy of cheap welfare milk had been proposed by the MMB and not by the Ministry of Health or the Board of Education.[94] We can extend the point by observing that the provision of school milk, for 20 years after the Second World War the symbol of the nation's collective commitment to children's health and welfare, also arose out of a marketing initiative, first by retailers and later by farmers. In the words of John McGovern, MP for Glasgow, Shettleston, the 'MISS was designed not so much to fatten children as to fatten the farmers'.[95]

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[94] *The Times*, 12 Feb. 1936 , p. 4, col. f.
[95] *The Times*, 18 Feb. 1936, p. 7, col. g–p. 8, col. c.

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