

*Democratizing Luxury and the Contentious 'Invention of the Technological Chicken' in Britain*¹

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ABSTRACT

In 1950 poultry was a rare luxury in Britain, only one per cent of the total meat consumed. But over the next thirty years chicken consumption grew at the remarkable (compound) rate of 10 per cent per annum, while the overall consumption of meat remained stagnant from the 1950s to the 1980s. By then poultry had become the single most important source of meat, with a quarter of the total share of the market, replacing former favourites like beef, mutton and bacon in the British diet. This transformation was made possible by the emergence of intensive rearing in poultry farming. This was a dramatic change in production, dependent on technological innovations across several otherwise unrelated sectors: in pharmaceuticals and feedstuffs production, in refrigeration, slaughtering and packaging. The widespread distribution of cheap chicken led to its mass adoption throughout the country. But such a transformation in meat eating habits was not without its controversies. Contemporary concerns emerged from the late 1950s over the possible long term dangers to human health from the technological transformation inherent in intensive rearing regimes. The article emphasises that it was the leading retailers, in particular J. Sainsbury, who acted as key intermediaries in this contested market, reconciling consumer uncertainty by attaching their own reputation to product quality, and then furthermore by intervening in the quality standards employed in its supply chain.

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¹ The phrase is from Ross Talbot, *The Chicken War: An International Trade Conflict between the United States and the EEC, 1961-1964* (Iowa State University Press, 1978), p. 3.

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The emergence of the global poultry industry in the second half of the twentieth century remains one of the most remarkable transformations in modern agriculture, a revolution in the application of scientific knowledge to improve yields and transform diets around the world. Chicken, for long a byword for luxury, became a staple food, first in the U.S., then in Britain and Europe, and increasingly around the rest of the world. But the modern poultry industry has only been able to create a mass market for this former luxury by shackling the variation and fragility of a biological mechanism – a bird – to the routines and order of a highly capitalised modern flow of production. It was an undoubted boon for humans hungry for meat, but something of an uneven trade-off for the chicken.

The industry developed first in the U.S. during the late 1940s and 1950s, before quickly following in Britain. The article focuses on the emergence of intensive rearing in Britain because in addition to adopting innovative U.S. technologies, the British industry developed a very effective structure to intermeditate with its consumers. The early 1960s saw a dramatic crisis of confidence erupt in Britain as the public questioned the probity of the new 'technological chicken' and there was a real prospect of a collapse in the market. But the leading supermarkets, and J. Sainsbury Ltd in particular, became the key intermediaries between an increasingly questioning public and the poultry industry's entrepreneurial producers, unsure of how (some even unwilling) to respond to the unintended consequences of such a pell-mell chase down the road of intensification. This event might then be viewed as a precursor to more recent food controversies, where the leading British food retailers - whether it is in the rejection of GM foods or the widespread adoption of organic foods – appear to have been pursuing a different pattern of behaviour when compared with their U.S. counterparts, one far more sensitive to the broader environmental impact of modern food provisioning.²

I. Entrepreneurial Origins

In October 1954 a survey commissioned by the leading animal feedstuffs company British Oil and Cake Mills (hereafter BOCM) showed that well over one third of British households never bought chicken, and another quarter only one each Christmas. The only staple demand came from London's Jewish community. But this could never have had the same catalytic effect that the New York Jewish population did on the U.S. industry as it was only a tenth the size.³ Demand therefore principally came from a minority of the British public, who saw chicken as a very occasional, expensive Sunday treat. Chicken was a luxury, with a price to match.

² There is a vast literature on modern food provisioning and its wider eco-system. For the UK see Derek Oddy, *From Plain Fare to Fusion Food: British Diet from the 1890s to the 1990s* (Boydell Press, 2003); and Michael Pollan, *The Omnivore's Dilemma: A Natural History of Four Meals* (Penguin, London, 2006); and Eric Schlosser, *Fast Food Nation: What the All-American Meal is Doing to the World* (Penguin, London, 2002) for the U.S.

³ BOCM survey reported in *Poultry Farmer* 30.10.54, p.7. BOCM was the principal Unilever animal feeds subsidiary. See Charles Wilson, *The History of Unilever* (London: Cassell, 1954) and idem, *Unilever 1945-1965* (London: Cassell, 1968). See Andrew C. Godley *Jewish Immigrant Entrepreneurship in New York and London, 1880-1914* (Palgrave Macmillan, Basingstoke, 2001), chapter 4 on the London and New York Jewish populations.

Industry authority, Harold Temperton, had emphasized the importance of cutting prices the previous year in a widely reported speech. ‘The future prosperity of the table poultry industry in this country depends on the ability to produce a 5lb dressed chicken at 10s retail... Unless... chicken can be offered at a comparable and preferably lower price than butcher’s meat [beef and mutton] it will remain an occasional luxury for the majority.’⁴ The ‘Ten Shilling Family Chicken’ became something of an industry mantra in the following years; a target for the pioneering entrepreneurs to aim for.

The only poultry farmer who had any real idea about how to get to the 10s chicken was Geoffrey Sykes. He was ‘the pioneer of scientific poultry farming’ in Britain and an evangelist for American methods.⁵ He had studied agriculture at Harper Adams and visited the United States in 1946 as part of a study group sent to investigate the rapidly growing poultry industry. A Nuffield Scholarship in 1952 enabled him to study at Harvard Business School, and he opened the first British broiler chicken farm near Salisbury on his return in 1953. This experimental venture attracted a good deal of publicity. His flocks, first 3,000 then 6,000 birds strong, were raised in 100 by 30 feet Nissen huts, but able to scratch outside on fields within long fenced runs, and reared on a special compound feed to grow to 4½ to 5lb weight at 12 weeks.⁶

The American broiler chicken industry had pre-war origins, but the creation of a mass market for chicken meat was a by-product of the Second World War. U.S. poultry farmers in the Delmarva Peninsula pioneered the rearing of poultry in large flocks inside ever larger sheds, enabling farmers to exploit economies of scale. There were a host of related innovations, but productivity gains would have all been squandered without the ability to better control the growth of large numbers of chickens.⁷

Despite the near contemporaneous emergence of the new poultry industry, it must be emphasised that the two agricultural contexts were very different in the aftermath of World War Two. While U.S. agriculture faced problems as it restructured, there was

⁴ *Poultry Farmer* 26.9.53. Temperton was Director of the renowned National Institute of Poultry Husbandry at Harper Adams Agricultural College.

⁵ The description is from *Farmer’s Weekly* 19.5.1961, a copy of which is in the Denby Wilkinson archive held at the Museum for English Rural Life, University of Reading (MERL DW). Elsewhere Sykes was described as the ‘High Priest’ of the industry, see *JS Journal* March 1958, p. 6, for example (Sainsbury Archive).

⁶ Geoffrey Sykes, *Poultry – A Modern Agribusiness* (London: Sykes, Crosby, Lockwood and Sons, 1963), his biographical information is on the jacket blurb. Also see Sykes ‘Letter to the Editor’, *Agricultural History Review* 18 (1970) 1, p. 51 (My thank to Paul Brassley for this reference.). See the *Farmer’s Weekly* photographic archive, held at the MERL, for several photographs (used by the journal) of Sykes’ experiments. Also see *Poultry Farmer*, 3.5.1953 and 13.6.53 for a description of Sykes’ farm. Shortly after he became one of *Poultry Farmer’s* regular correspondents.

⁷ Roger Horowitz, *Putting Meat on the American Table: Taste, Technology, Transformation* (Baltimore, Johns Hopkins University Press, 2006), chapter 5; and William Boyd, ‘Science, Technology, and American Poultry Production’, *Technology and Society* (2001) are the best recent summaries of U.S. developments. The Denby Wilkinson archive contains copious notes on the origins of the American industry (MERL DW/ AD8/4. Denby Wilkinson was Secretary of the official British National Broiler Tests, on breed selection, from 1959 onwards) and is reported in Andrew Godley and Bridget Williams, ‘The Chicken, the Factory Farm, and the Supermarket: The Industrialization of Poultry Farming in Britain and the United States, 1950-1980’, in Roger Horowitz and Warren Belasco eds, *Food Chains: Provisioning, from Farmyard to Shopping Cart* (University of Pennsylvania Press, 2008, forthcoming), which compares developments in Britain and the US, building on the contemporaneous accounts in Sykes, *Poultry* and Talbot, *Chicken*.

neither food rationing nor extensive regulation over the sector after 1946. Farming in Britain by contrast remained old-fashioned and labour-intensive, hedged-in by continuing government control.⁸ Poultry, however, was so insignificant a meat source that it had been omitted from the post-war meat ration in Britain, and so several entrepreneurial farmers saw an opportunity to produce a premium price product. But there were no established protocols for the best methods for its production and distribution, however, and so the early poultry farmers all became engaged in a series of experiments.

They began with what they knew. Like elsewhere in Europe, the table poultry industry had prewar origins in Britain, but only as a by-product of the much larger egg-laying industry. Egg production was widely diffused. They were collected in small batches from almost every farm in the land by someone from the local packing station. There were over 600 packing stations, in every locality throughout the land, regulated by the official Egg Marketing Board. The drivers would also bring back the occasional redundant chicken as a service to farmers. These birds would be slaughtered, bled and plucked at the packing station before being sent on to market, the spent layers as boiling fowl and the surplus young cockerels for the small roasters trade. Outside Christmas, the numbers bred for meat remained very small. Lloyd Maunder, Devon's largest egg packer in the 1930s, processed only 20 to 30 chickens a day at its Tiverton packing station – a trivial trade compared with the volume of its egg business. With wartime restrictions on animal feeds, the table poultry industry simply died out.⁹ After 1945, restrictions on feed remained in place until August 1953, privileging supply lines to producers of beef, pork and lamb. While the poultry industry pioneers therefore at least had the possibility of trying to create a market, they remained heavily handicapped until after the complete decontrol of feedstuffs and the end of the red meat subsidy under rationing.¹⁰

The experiments focused on resolving the two biggest initial problems: discovering the right strain of chicken, and then working out the best methods of managing ever larger flocks. The Somerset farmer Col. C. D. Roe was in the vanguard of trying to expand the combined trade, rearing both the egg-laying pullets and cockerels for the table poultry trade from the same stock. But the best breeds for laying were different from the best for meat. And, moreover, trials at the University of Reading showed that rearing layers on a high protein diet for fast growth actually reduced hatchability. It quickly became apparent that 'dual purpose birds are finished'.¹¹ A feverish hunt went on to identify the best strain for the table poultry trade. Several farmers in Sussex and Kent experimented with different accommodation for large flocks. Further north

⁸ Meg Jacobs, *Pocketbook Politics: Economic Citizenship in Twentieth Century America* (Princeton University Press, Princeton, 2007).

⁹ Sykes, 'Letter'; Paul Brassley, 'British Farming Between the Wars', in Paul Brassley, Jeremy Burchardt and Lynne Thompson eds, *The English Countryside between the wars* (Boydell Press, 2006). National Farmer's Union, 'Report on Marketing', 6.2.1957, (NFU Archive, Ref. 6340 P.63: 381, at the Museum of English Rural Life), p. 6. Henry Clarke and Hilary Binding, *The History of Lloyd Maunder, 1898-1998, a West Country Family Business* (Halsgrove, Tiverton, 1998), pp. 39-40, 43-4, 46, 49, 52, 64, 78-80, 85-7; Bridget Williams, *The Best Butter in the World: A History of Sainsbury's* (Ebury Press, London, 1994); and John Maunder interview with Andrew Godley and Bridget Williams, August 30th, 2006.

¹⁰ *Poultry Farmer*, 14.3. 1953, p. 1.

¹¹ Citation *Poultry Farmer* 26.11.55, 28.3.53 on laying hens for meat, and 16.5.53 on Reading trials. Roe was the Chairman of Suprema, a Somerset poultry producing co-operative.

Major G.M. Bowlby, founder of Peak Poultry in Derbyshire, even tried to rear flocks in underground cellars.¹² But after Sykes, the outstanding entrepreneur was Antony Fisher, a Cambridge-educated gentleman farmer and former Air Force Squadron-Leader, who had been converted to poultry farming by Sykes' enthusiasm after foot and mouth had devastated his dairy herd in August 1952.

Aware of American practice, Sykes had built up his capacity to 30,000 broilers within weeks of the decontrol of feedstuffs in 1953.¹³ Fisher, however, went further, quickly expanding chicken production at his Sussex farm, to two 10,000 bird houses, and then a new 20,000 bird unit was added, taking capacity to 42,000 broilers in the summer of 1955, by which time he had consolidated his interests into the firm Buxted Chickens.¹⁴ The young John Maunder became interested in poultry and prompted the family firm, Lloyd Maunder, to re-enter the poultry trade in 1954.¹⁵

Outside Fisher, Maunder, Sykes and a handful of other early experimenters, poultry rearing in Britain remained very small scale. But after the burden of controls eased, these early experimenters were able to isolate what the industry's key problems were. In the December 1953 issue of *Poultry Farmer*, Sykes was very optimistic, anticipating a dramatic expansion in industry output in 1954.¹⁶ But two years later the commercial broiler population had barely changed, and the journal's assessment in December 1955 was far more sober, warning that 'our poultry industry was at a crossroads.' The editorial went on, 'The next few years may well determine whether this country was to have an increased consumption... and... a corresponding large-scale table poultry industry, or whether the... industry is to remain relatively small.'¹⁷ In the event the combination of falling prices and increasing sales generated considerable momentum. It was still a period of great experimentation, but between 1956 and 1963 the key innovations in hatcheries, rearing, and processing combined to provide a stable technological platform.

II. Science, Management and Intensive Rearing

Hatcheries During the early 1950s the pioneer entrepreneurs struggled to find the right strain of bird, one that would mature quickly and produce a high meat-to-bone ratio. British chickens were far scrawnier compared with the leading American breeds, but import restrictions thwarted attempts to augment the genetic stock of the British poultry population. Antony Fisher even resorted to smuggling in twenty-four

¹² *Poultry Farmer* 10.9.55, pp. 1 & 5; and 16.10.54, with vitamin D supplements.

¹³ *Poultry Farmer* 3.5.1953 and 13.6.53.

¹⁴ *Poultry Farmer* 10.9.55, p.1; Gerald Frost, *Sir Antony Fisher: Champion of Liberty* (London: Profile Books, 2002). Norman McCord, 'Fisher, Sir Antony George Anson (1915–1988)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004 [<http://www.oxforddnb.com/view/article/59542>, accessed 24 April 2006].

¹⁵ Sykes, *Poultry*, pp.1-2. George W. Padley in Lincoln and Marshall's in Scotland also began to experiment, along with Lloyd Maunder and Buxted. Between them, they dominated British poultry production for decades.

¹⁶ *Poultry Farmer* 19.12. 1953.

¹⁷ *Poultry Farmer* 10.12.1955, p. 1. Sykes earlier stated that there were 'well over 1m broilers' in 1955, *Poultry Farmer* 29.10.55, p. 20.

fertilized White Rock eggs disguised as Easter Eggs in 1953.¹⁸ But by 1956 restrictions were relaxed and a wave of breeding experiments began, aided by significant improvements to techniques for artificial insemination. Sykes became more involved in commercial breeding, specialising in hybrid British-American strains, along with and the British subsidiary of the leading U.S. breeder Cobb.¹⁹

Intensive Rearing Specialisation in stock stimulated specialisation in rearing, with the leading farmers pushing the boundaries in flock size and management. Antony Fisher's experiments also drew on American ideas, first indirectly through Sykes, then through his own visits. At home '[e]veryone just laughed' at his ideas, recalled his elder son. His local chicken slaughterer dismissed him, asking 'Who is going to eat 200 chickens?' But at Cornell University's scientific broiler farm, Fisher had already seen for himself 15,000 birds in a single building.²⁰

Intensive rearing was predicated on being able to control the chickens' environment more exactly, to produce more uniform size, greater palatability and, through ever larger flock sizes and mechanisation, to exploit economies of scale and so see unit price fall. Flock sizes grew enormously. The typical flock in the 1950s was less than 500 birds, raised as a low cost adjunct to the main farm business. But in October 1956 Dr Rupert Coles, Chief Poultry Officer at the British Government's National Agricultural Advisory Service, was clear that 'poultry keeping has reached the point of being a serious business'. Raising flocks on farmyard scraps using mostly family labour was no longer feasible. 'Feed has to be bought in and the cost has, in many instances, brought the sharp realisation that moderate production levels are not good enough to cover higher food outlay', so that there was 'an obvious tendency for farm units of 500 to 1,000 birds either to enlarge or decline'.²¹

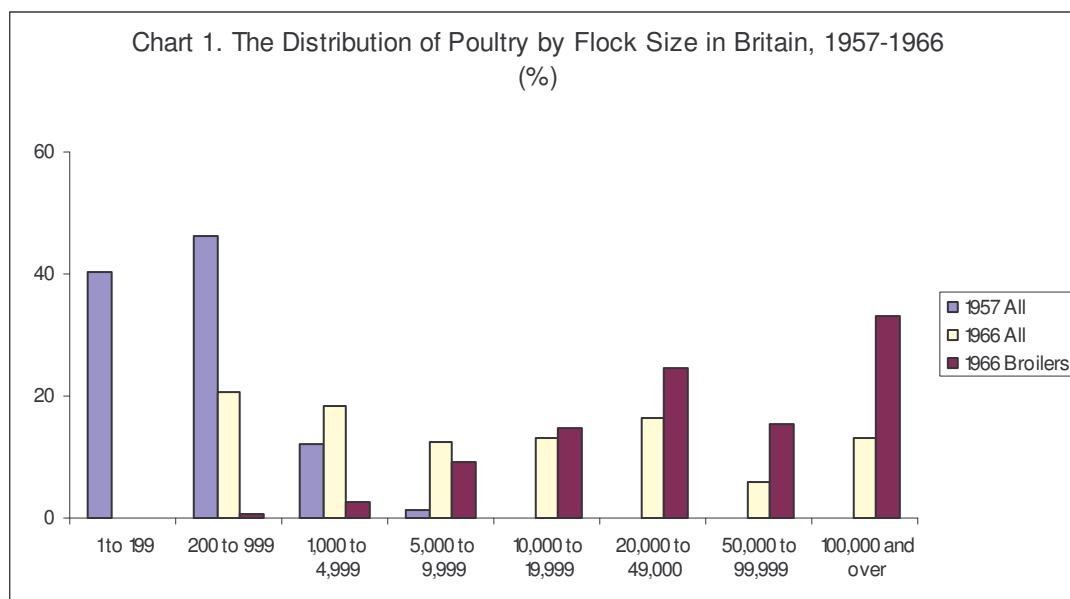
In 1957 almost 90 percent of all poultry were still in flocks below 1,000 (fully 40 percent in flocks of less than 200 birds). But by 1960 only 75 percent were in these smaller flocks and over twenty percent were in flocks between 1,000 and 5,000. For the protected egg-laying market such small flocks continued to remain feasible, but broiler flocks quickly moved to a different order of magnitude. By 1966, as Chart 1 shows, the most common flock size among all chickens (meat birds and layers) was still below 1,000, but broilers were more likely to be in much larger flocks, 48 percent were in flocks fifty thousand or larger, a third in flocks greater than 100,000.

¹⁸ Frost, *Fisher*, citation p. 21, pp. 6-21 on his early years. He was a devout Christian Scientist, life-long teetotal and, despite this deliberate floating of customs rules, a man of high principles. He established the Institute of Economic Affairs, after Hayek convinced him of the superior gains from investing his profits in intellectual rather than political capital to promote the free market agenda.

¹⁹ Frost, *Fisher* pp. 48-9. *Poultry Farmer* 6.8.55, p. 13 on artificial insemination. Sykes in *Poultry Farmer* 27.10.56, p. 16 on crossing White Rocks, Rhode Island Reds and New Hampshires (all US strains) with Light Sussex's, and Sykes, *Poultry*, p. 142 on breed requirements. Sykes left production and moved into commercial breeding.

²⁰ Citation from Frost, *Fisher*, p. 46, and pp. 46-48 on US visits.

²¹ *Poultry Farmer* 27.10.1956, p. 10.



Sources: 1957: Sykes *Poultry*, Table 9, p. 24. 1966 K.E. Hunt and K.R. Clark, *Poultry and Eggs in Britain, 1966-67* (Agricultural Economics Research Institute: Oxford, 1967), pp. 36-7. N.b. 1966 data did not disaggregate for flock sizes less than 1,000. We have assumed that all 1966 flocks were greater than 200.

Such a transformation in the typical size of broiler flocks necessarily meant that their accommodation altered, moving from the early experiments with ex-military Nissen huts, cellars and barns to dedicated poultry huts able to accommodate flocks of ten thousand or more. The space allowed per bird also changed. The early experiments in indoor flock management were generous, chickens had plenty of room to roam and scratch. The early poultry huts allowed between three to four square feet per bird, but already in 1957 the standard of one square foot per bird was becoming widely adopted, and by 1963 Sykes was recommending 0.85 square feet per bird.²² Dedicated sheds brought further economies from the mechanisation of feeding.²³ But the reduced space per bird introduced problems in flock management and disease control. Chickens responded to the stress of crowding with more aggressive behaviour. Despite routine de-beaking at the hatcheries, bullying by the stronger birds influenced the growth rates of the weaker and so detracted from the uniformity of sizing at culling.

The American industry was more advanced in pursuing the limits of intensive rearing. Their experience showed that chickens were far more prone to disease as well as bullying when overcrowded.²⁴ And while British farmers tended to be more conservative, American producers' retort to the ever increasing prevalence of disease among intensively reared flocks was to increase the pharmaceutical content of the chicks' diets, supplementing their feed with medication. By the early 1950s American pharmaceutical companies had long collaborated with the industry in supplementing feedstuffs with synthetic vitamins, minerals and chemical antioxidants. But several U.S. pharmaceutical companies had also met with considerable success in developing animal therapies.

²² Sykes, *Poultry*, p. 104.

²³ Sykes in *Poultry Farmer* 27.10.56, p. 15 on John Ogier design of shed and mechanical feeding.

²⁴ Sykes, *Poultry*, pp. 103-4.

Overcoming coccidiosis was a great breakthrough. Earlier attempts to house large flocks of chickens in the U.S. had all been undermined by the increase in mortality rates from this endemic and terminal infection arising from parasitic invasion of the poultry gut. Merck's acclaimed research director, Max Tishler, had first synthesised and patented its nitrofurazone product (branded S.Q.) while experimenting with sulfas in the late 1940s. As a result, G. F. Combs, Professor of Poultry Nutrition at the University of Maryland, confirmed in 1955 that coccidiosis 'is seldom a problem today'.²⁵

Combs also went on to describe the most recent pharmaceutical breakthrough in the U.S. poultry industry. 'Perhaps the most dramatic achievement of all has been the discovery that the use of antibiotics and arsenicals... may be used to influence the microflora of the intestinal tract so that the health and well-being of the animal is improved.' Mortality rates in the early experiments were sometimes ruinously high, well over ten percent was not uncommon, but fell to around four percent by the early 1950s with widespread use of coccidiostats and antibiotics.²⁶ Then it quickly became apparent that not only were mortality rates reduced, but that antibiotics were also acting as growth-promoters. It was widely known by the early 1950s that high doses of antibiotics in the first five to ten days of the chick's life significantly reduced mortality. And so it was a small step in laboratory conditions to observe how those fed continued rations of antibiotics reached their target weights more quickly.

British farmers followed the American developments closely. Sykes often summarised the results of U.S. trials in his *Poultry Farmer* articles. In October 1956, for example, he reported that the 'use of antibiotics at low levels in broiler rations [in the U.S.] is universal'.²⁷ Exactly what the physiological mechanism was remained unclear, but faster weight gain meant increased profitability for poultry farmers. The animal antibiotic revolution was by no means restricted to poultry. *Fortune* magazine summarized the general case under its 1952 headline: 'Antibiotics provide more meat for less feed'.²⁸ By the end of the 1950s at least a quarter of all antibiotics made were given to animals, increasing milk yields among dairy cows and promoting 5-10 percent faster growth among beef cows, pigs and poultry on 10 percent less feed.²⁹

With the widespread addition to feeds of pharmaceuticals for their therapeutic and growth-promoting usages, animal feedstuffs evolved into a component of disease control as well as straightforward nutrition. As with animal pharmaceuticals, American feed producers were far in advance of British producers like BOCM, Silcocks (another Unilever subsidiary, which later merged with BOCM) and Spillers, producing specialist poultry feeds at a fraction of the price. To some extent this was because the British feed industry was lumbered with a relatively inefficient structure. With its sunk costs in giant mills producing general feedstuffs for all animals that then

²⁵ William Campbell, 'History of the Discovery of Sulfaquinoxaline as a Coccidiostat', *Journal of Parasitology* (94) 2008. Also see Lou Galambos, *Networks of Innovation: Vaccine Development at Merck, Sharp & Dohme, and Mulford, 1895-1995* (Cambridge University Press, 1999), p. 127, n. 7. Combs' speech was reported in, 'Feed Revolution took 25 Years', *Poultry Farmer* 3.9.55, p. 10.

²⁶ *Poultry Farmer* 10.9.55; Sykes, *Poultry*, p. 85.

²⁷ *Poultry Farmer* 27.10.56.

²⁸ *Fortune* March 1952, pp. 118-40, and cited by Robert Bud, *Penicillin: Triumph and Tragedy* (Oxford University Press, 2007), p. 169. For US developments, see Boyd, 'Science'.

²⁹ Bud, *Penicillin*, pp. 163,169.

required costly additional compounding with supplements, the British industry contrasted unfavourably with the smaller, more specialist American mills.³⁰ But with animal feedstuffs prices fixed at below market levels under postwar controls, there had been little incentive for British producers to innovate in the early 1950s. By contrast, developments in research in poultry nutrition in the United States triggered changes there. Combs, for example, highlighted the ‘remarkable’ contribution of understanding the roles of specific amino acids in aiding poultry digestion of different proteins. A high protein diet led to high growth, and with amino acid supplements, proteins could be converted by broilers from ever cheaper sources: soya bean, cotton seed, feather meal and industry waste-products. The length of each cycle from hatching to slaughter was cut from twelve weeks to nine weeks, partly through reducing the target weight of each bird, but mostly through faster growth.³¹ Hormones, especially oestrogen, were increasingly also added in the U.S. from the late 1950s because of their role in increasing the fattening and tenderness of the meat.³²

The net effect of the growing pharmaceutical content of the poultry feedstuffs was, in other words, to increase the productivity of chicken rearing through reducing mortality, increasing the speed of their growth and reducing the cost of feed to reach a target weight. But because feedstuffs were the dominant cost of production, the industry’s leading indicator was the feed-conversion rate, the number of pounds of feedstuffs required to produce each pound of meat. This was the technological frontier of chicken rearing.

Before the war the American producers were obtaining a feed conversion rate of 4.2, which was also the standard attained among British producers before the decontrol of feedstuffs. But the efficiency gains from improved feeds, better breed selection, and improved flock management saw the feed conversion rate quickly fall to around 3.5 in Britain by 1954-1955. It was this achievement that prompted Sykes to claim that the industry was the most efficient branch of British agriculture.³³ But he was being premature. In fact, as Chart 2 shows, the late 1950s saw further and more rapid productivity gains, accentuated by the convergence of British feed conversion rates with American levels at 2.7 by 1958, and then to match the further gains among U.S. poultry farmers to reach the feed conversion rate of 2.4 by 1960; a 40 percent gain in efficiency in less than a decade.³⁴ Without contravening the laws of physics, further improvements were likely to be muted - ‘a plateau had been reached’, putting a brake on further productivity gains in intensive rearing and any potential price falls.³⁵ For

³⁰ Sykes, *Poultry*, p. 177 and pp. 86-7; and in *Poultry Farmer* 21.10.59, on his contention that UK feedstuffs producers were ‘inefficient’ and the ‘laggard’ in the poultry business.

³¹ Sykes in *Poultry Farmer* 10.4.54 on 3 cycles per annum in 1954. *Poultry Farmer & Packer* 17.7.63. Sykes *Poultry*, pp. 102-5 on increasing the speed of cycles to 5 per annum by 1964.

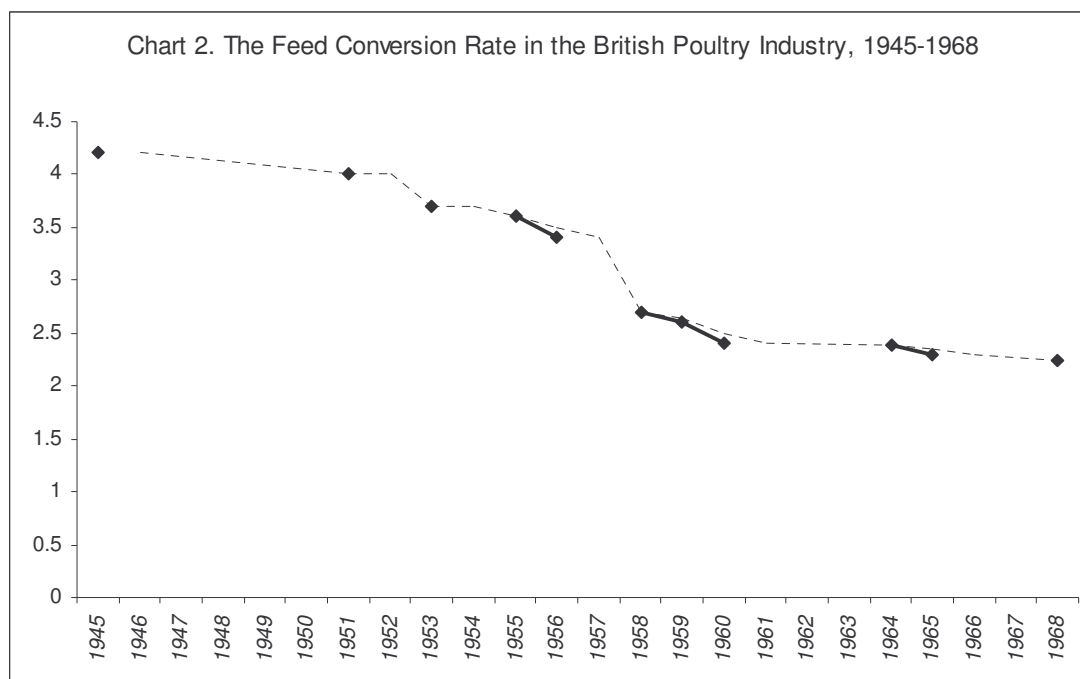
³² ‘Feed Revolution took 25 Years’, *Poultry Farmer* 3.9.55, p. 10; and Sykes in *Poultry Farmer* 27.10.56.

³³ Sykes in *Poultry Farmer* 29.10.55. Pigs typically required 4 lbs of feed per 1lb of meat gain, for example. *JS Journal*, March 1958, p. 9.

³⁴ Sykes, *Poultry*, p.149 on convergence. Coles in *Poultry Farmer* 25.10.58 claimed parity with American farmers’ conversion rates by then.

³⁵ Citation from Talbot, *Chicken War*, p. 9. When animals convert their food into heat, activity and excreta as well as muscle growth, the first law of thermodynamics (that the total amount of energy in a system remains constant) implies that the feed conversion rate can never be 1:1. By 2000 after a further forty years of nutritional advance, the feed conversion rate has fallen only to 1.9. Andrew Sheppard,

the British industry efficiency gains after 1960 no longer came from rearing, but instead from another source: the transformation of chicken processing.



Sources: 1945 is actually Talbot's estimate for US farms in 1940, *Chicken*, p. 9 (Talbot also discusses conversion rates obtained in the 1920s, p.5). 1951, Sykes, *Poultry*, p. 149. 1953, Sykes in *Poultry Farmer*, 19.12.53, p. 9. 1955, is the upper end of Bowlby's results in Derbyshire, *Poultry Farmer* 10.9.55, p.5. 1956, is actually Fisher's results for 1955 in Sussex, *ibid.*, 10/9/55, p. 1. 1958, is Coles reporting US and UK trials results in *Poultry Farmer* 25.10.58. 1959 is the average result from Britain's First National Broiler Tests (MERL DW/ AD2/6); 1960, 1964 and 1968 is Talbot, *Chicken*, pp. 5 & 9. 1965 is Sykes, *Poultry*, p. 149.

Processing Transforming live chickens into carcasses suitable for human consumption was a labour intensive activity. Because of the industry's origins in egg-production, the processing of chickens was done at around half of the packing stations around the country. Like Lloyd Maunder in Devon, many had already invested in primitive automatic plucking devices before 1950, but packing stations were mostly small and inefficient.³⁶ The difficulty was partly that the automation of plucking remained incomplete; the rubber fingers removed most feathers, but the stubs had to be removed by hand. John Maunder began his career dipping chicken carcasses into hot water, to soften their flesh and so to remove the stubs.³⁷ Irregularities in the supply line also meant that the packing stations lay idle for long periods. Once again Sykes pointed out the need to adopt American techniques, highlighting in 1955 how

'The Structure and Economics of Broiler Production in England', Centre for Rural Research, University of Exeter, 2004.

³⁶ The egg collecting industry remained extremely inefficient even as late as 1960. The number of stations able to process birds was 'about 300', *Poultry Farmer* 30.7.55, p. 1. Clarke and Binding, *Lloyd Maunder*, purchased a plucking machine in 1933, p. 64.

³⁷ Maunder interview.

processing costs might be cut from 1 shilling to 1 penny a bird with improved mechanization and organisation.³⁸

Fisher and his business partner, Tony Pendry, along with John Maunder and George Padley were the pivotal figures in transforming processing in Britain. With greater throughput investment in additional mechanisation became viable, and the first automatic conveyor systems were introduced in 1958. Initial throughput speeds of 100 birds an hour (with three operators) in these improved plucking machines soon gave way to 250 birds an hour (with just one operative) in 1959, and then to 6,000 an hour by 1963. By the early 1960s continuous flow technology was adopted for all aspects of processing.

But the imperative for such rapid growth in processor's capacity came not as a response to the improvements in machinery, but rather from the demands of self-service retailers. For the new supermarkets, with their priority on space for display rather than preparation, were requiring their chicken suppliers to perform the evisceration and packaging functions at the processing stage rather than in the stores. The drawing and trussing of chickens was mostly done on-site in the traditional counter service stores, but Sykes had perceptively noted during 1956 how 'much interest is being taken in evisceration of the bird at the poultry plant as the industry fully realises that there is unlikely to be a large broiler industry in Britain unless the birds leave the packing station ready for the oven.'³⁹

Sainsbury was in the vanguard of the drive towards self service, converting growing numbers of its traditional counter service stores to the new format. In March 1958 Max Justice, the Manager of Sainsbury's Meat and Poultry Department, noted that 'the quantities now being distributed could never have been handled at the branches but for the co-operation we have received from packing stations up and down the country, who have been producing birds for us in a ready-to-cook form and thus removing from our branches the bottleneck of preparation.'⁴⁰ This shift of one activity up the supply chain in 1958 and 1959 was to have a dramatic impact on the organisation of the industry because chicken, unlike other animals reared for meat, degrades very quickly after evisceration.

The underlying problem was that as well as being suitable for human consumption, chicken meat was a near ideal culture for bacterial reproduction. After death the chicken's own auto-immune system was unable to combat bacterial infection, and the process of evisceration inevitably led to the spread of some micro-organisms from the bird's lower bowel to the muscle fibres. Poultry meat degraded more quickly than other meat even before evisceration. But after evisceration at 20°C chicken becomes inedible within twenty four hours.⁴¹ No method of distribution existed to get newly

³⁸ Most packers had to drive 20 to 30 miles to pick up just a few dozen birds. *Poultry Farmer* 10.12.55, and 26.2.55. Frost, *Fisher*, says processing costs as high as 1s per lb of dead weight bird in 1954-5, p. 50.

³⁹ *Poultry Farmer* 27.10.56, p. 15.

⁴⁰ Max Justice, 'Chickens Cheep', *JS Journal* (March, 1958), p. 8. Tony Pendry wrote in October 1959 that it was 'only a year or two ago since the majority of retailers preferred to buy uneviscerated birds,' in *Poultry Farmer* 31.10.59, p. 30.

⁴¹ D.H. Shrimpton, *Quality Control in Marketing Fresh Poultry* (Department of Scientific and Industrial Research, Food Investigation: London, Technical Paper No. 7, 1959); also see Shrimpton in *Poultry Farmer* 25.11.59.

slaughtered birds from packing stations to consumers within such a short time. Processors had to develop techniques of delaying the rapid onset of bacteriological reproduction until the bird reached the oven. The only solution for the emerging chicken industry to the insistence of retailers pressing the new self-service format for fully prepared and packaged birds was for an enormous investment in freezing. Hygiene at the processing plant became critical. Newly introduced polythene wrapping materials were adopted to protect the carcasses from contamination, damage during handling and freezer burn. Those packing stations able to supply rapidly growing supermarket demand for pre-packed, eviscerated, frozen chicken from 1958 onwards had to completely refigure their production methods in order to minimize the rate of perishability. It was refrigeration, not processing machinery, that prompted such a rapid increase in new investment among processors.

Alternative methods for handling chilled birds were more contentious. American experiments in lacing the chicken carcasses with high levels of antibiotics as they were transported were carefully noted. The official British Fatstock Marketing Corporation 'decided to copy the American pattern, and distribute eviscerated poultry in a fresh condition, chilled merely with iceflakes'. It commissioned a Cambridge University study, which showed that adding antibiotics gave chilled chicken meat an additional ten-day storage life before it spoiled.⁴² But the mechanism remained unclear, and chemical residues in chicken meat soared as a result. Scientists (as we shall see below) were becoming more concerned.⁴³ Nevertheless, while the demand for fresh chicken was minimal in Britain in 1959 - 90 percent of all sales were for frozen, oven-ready birds – the pharmaceutical and feedstuffs architecture for the industry's next phase of development were all in place.

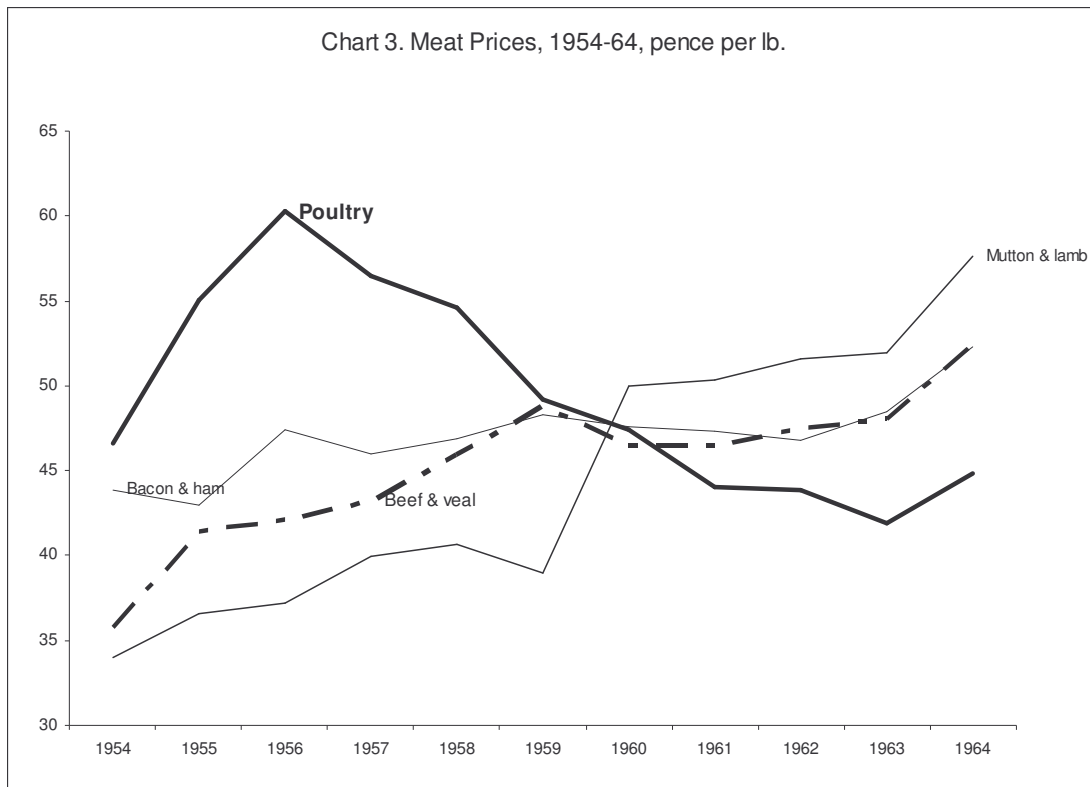
III. Intensive Rearing and Prices

The easiest way of understanding the impact of such rapid technological and organisational change in poultry production would be to look at the change on poultry prices. When Harold Temperton held out the prospect of a mass market for a 10s chicken in 1953, he was proposing a hugely ambitious cost-cutting agenda. It took at least three or four years of experimentation by farmers before the resulting price falls began to take effect, and then a further two to three years before consumers responded, as the following Charts indicate. Chart 3 shows the price trends of the main meat products during the decade after the decontrol of animal feedstuffs and the ending of food rationing.

⁴² Shrimpton, *Quality Control*, pp. 9-11 on the trial comparing the effectiveness of the major antibiotics on delaying bacterial degradation, American Cyanamid's Aureomycin and Pfizer's Terramycin.

Poultry Farmer 31.10.1959.

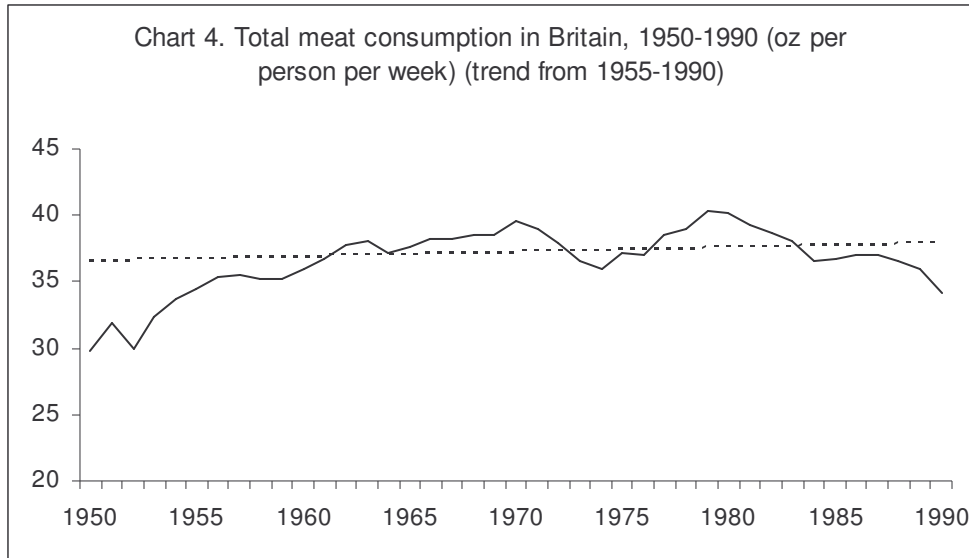
⁴³ *Poultry Farmer* 23.7.55, reporting original US experiments. Shrimpton, *Quality Control*, 'The details of the mode of action of the antibiotics in delaying greening are not yet known', p. 10 and pp. 9-11 on the impact of high dosage Aureomycin and Terramycin and other antibiotics on rates of degradation and subsequent high residue levels.



Source: *National Food Survey 1955-1965*.

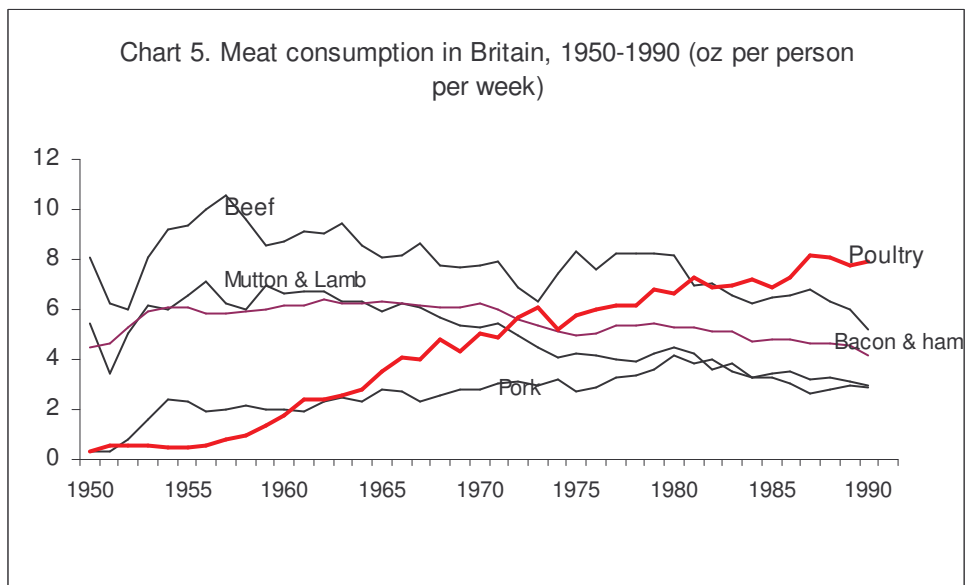
Under rationing until July 1954, beef, lamb and pork prices had been kept under an artificially low ceiling. Chicken, outside the rationing regime, therefore was initially at a relative price disadvantage. But while red meat prices adjusted upwards in 1955 and 1956, Temperton's anticipated price falls failed to materialise in the nascent poultry trade. It was only after 1956 that chicken prices fell, from 60 pence per lb to just over 40 pence per pound in 1963. Red meat prices meanwhile continued to rise, underlining the transformation in the competitiveness of chicken

Despite this, beef and mutton retained their traditional popularity for some years to come. This may well have been largely because the demand for meat was already very mature, tastes had been formed long before and so any new product, like chicken, had to overcome incumbent inertia. Chart 4 underlines how meat consumption levels in Britain since the end of rationing have remained stable.



Source: *National Food Survey, 1955-1991.*

Chart 4 captures how post-war rationing had kept consumption levels of all meat products down to around 30 ounces per person per week in the early 1950s. After 1954 consumption rose quickly to around 35 oz per person week, from when overall meat consumption remained fairly stable (as the trend line for 1955 to 1990 indicates), oscillating between 35 and 40 oz per person week. Given how large the increases in living standards were in Britain over the same period, such stability in total meat consumption since 1955 is striking. Within the different meat products there was, however, a very marked substitution, as Chart 5 shows, albeit one which nevertheless lagged the rapid price declines of 1956-1964.



Source: as for Chart 4.

In the early days of experimentation before 1956 poultry's share of total meat consumption was only one percent. Per capita poultry consumption in 1956 was no greater than in 1951. The ambitions of Temperton and Sykes were evidently far from

being realised by then. But from 1957 onwards, as Chart 5 indicates, chicken consumption rose quickly, doubling between 1956 and 1958, doubling again to 1961, and almost doubling again by 1965. Personal consumption of chicken rose from less than 1lb per person per year in 1953 to almost 10lb in 1960. Nevertheless, Max Justice repeatedly flagged the importance of understanding the consumer's perspective in successive speeches to poultry industry forums. It was, he suggested, essential never to underestimate the psychology of purchasing. Families were, Sainsbury continued to believe as late as 1958, 'not ready' to switch from traditional red meat to chicken, so any changes were risky, surprises in pricing or presentation might easily 'upset' and 'embarrass' the housewife, and so 'it might be a long time before she ventured to buy poultry again.'⁴⁴

Despite this apparent lack of confidence in its reception, Sainsbury was in fact investing enormously in persuading the public to cast off the impression of poultry as a luxury in their noted 'Chicken is Cheap' window campaign from 1958.⁴⁵ As the market began to mature, new products were launched. In 1961 'frying chicken' (portions) represented one-third of total chicken sales at Sainsbury's.⁴⁶ Roasters' relative popularity diminished as refrigerator ownership diffused, only 70 percent of chickens sold nationwide were oven-ready in 1963.⁴⁷ By 1964 chicken accounted for one-tenth of total meat consumed and was well on the way to parity with the country's traditional staple meats of beef, mutton and bacon. Just ten years after the sobering BOCM-commissioned survey, chicken had become established. But such newly acquired prominence in the national diet was nevertheless vulnerable to change.

There was undoubtedly a genuine match between consumer desires and the self-service format that encouraged the modern chicken industry to grow.⁴⁸ The collaboration between the leading self-service retailers and the pioneering farming entrepreneurs transformed the product through a combination of genetic selection, pharmaceutical and feedstuffs innovation, and then rigorously efficient techniques in managing the intensive rearing, slaughtering, processing, packaging and distribution processes. But as British consumers increasingly ingested this new 'technological chicken', there first emerged concerns about whether there might be any long term consequences to human health from the chemical residues in broiler chickens. And then, increasingly, there emerged wider concerns about whether the emerging poultry industry with its vast flocks, may even represent a public health hazard.

IV. Entrepreneurship and Consumer Welfare in the Intensive Rearing Revolution

The application of novel scientific techniques to what were biological agents (animals and crops) produced for human consumption meant that public concerns would

⁴⁴ Max Justice cited in *Poultry Farmer* 1.11.58, p.11. Also see 25.10.58 discussion on Sainsbury advertising strategy. Speech reported in *Poultry Farmer* 10.9.55, p. 5.

⁴⁵ Max Justice, 'Chickens Cheep'. This led to a 'dramatic' increase in demand, according to Sykes, *Poultry*, p. 44. Also see Giles Emerson, *Sainsbury's: The Record Years, 1950-1992* (Haggerston Press, London, 2006), pp. 49-50; and letter from Jim Woods to Anthony Tennant of Mather & Crowther advertising agency, 20th January, 1960 (Sainsbury Archive).

⁴⁶ Pendry in *Poultry Farmer & Packer*, 31.10.59, p. 23. Sainsbury's Financial Report, 1961 (Sainsbury Archive).

⁴⁷ Sykes, *Poultry*, p.197.

⁴⁸ Sykes, *Poultry*, p. 198.

inevitably be heightened. Understanding what the consequences to humans were of their consumption of chemicals in meat represented a far more complex problem than, say, developing new fibres, or novel machinery, and necessitated a far greater level of scientific investigation before public concerns could be allayed. Despite this expenditure in the poultry industry on research was very low. Sykes claimed that British universities didn't take the poultry industry seriously, contrasting how around 3 percent of total industry revenues were spent on research in the United States with the British figure of only 0.1 percent as late as 1963.⁴⁹

But before answers could become known, the arena of modern food production suddenly became highly contentious. Concerns were increasingly voiced from the mid-1950s. Informed scientists broadcast their concerns about the headlong rush to intensive rearing practices. The transition from rearing chicks on a semi-commercial basis in mixed farms to the intensively reared broiler flocks of some 100,000 strong by the mid-1960s was only feasible because of their forced ingestion of large quantities of hormones, anti-oxidants, coccidiostats and antibiotics, in addition to vitamins and mineral supplements. In contrast to the earlier adoption of mass production techniques in various engineering sectors, the combination of the perishability of chicken and its ultimate human destination meant that mass production in the modern poultry industry was both far more complex to implement, and carried implications that were far from obvious to participants.⁵⁰

Already in 1953, for instance, W. T. Price, Principal of Harper Adams Agricultural College, voiced concerns that increasing flock size might herald more epidemic diseases.⁵¹ A far more eloquent plea for a more considered expansion of the industry came from Dr R.F. Gordon, from the Houghton Poultry Research Station, in a specially commissioned article for *Poultry Farmer* in October 1955.

'Intensivism can lead to a potential increase in hazards not only from infectious diseases but from nutritional deficiencies... we are in an era of food additives, vitamins, amino acids, prophylactics and therapeutics, antibiotics, oestrogens and growth stimulants; in fact, as one writer has said, "the food in the sack sometimes serves up no more useful purpose than to act as a premix for the drugs"... Poultry farmers have never been slow in applying scientific knowledge to the economics of their industry. Occasionally there may even be a danger of "beating the gun" in attempting to put into practice, without a proper understanding of the possible side effects and long term repercussions of techniques still in the experimental stage.... Are we going too fast in our efforts to apply industrial methods to stock farming? That in itself is not a matter for condemnation and in fact, may well be the key to prosperity. It could become a danger, however, if the industry, as a result of the momentum of its own expansion, the application of half-digested theories, glib advertisements and high pressure salesmanship, allows its progress to outstrip science.'⁵²

Of course with growth as rampant as experienced by the broiler chicken industry, a full scientific understanding of the impact of intensive farming practices was always

⁴⁹ *Poultry Farmer* 27.10.56 p. 10; Sykes, *Poultry*, p. 8; and contrast with the picture in Boyd, 'Science'.

⁵⁰ Boyd, 'Science'.

⁵¹ *Poultry Farmer* 14.11.1953.

⁵² *Poultry Farmer* 27.10.56.

likely to lag behind entrepreneurial innovations. But consumers were just beginning to articulate fears that there might be a price to pay for such dramatic technological progress. It was not just poultry. The first genuine concern about chemical residues in animal products came with the realisation that milk was contaminated with penicillin in the late 1950s. By the early 1960s, milk in Britain 'was turning into a poison'. Furthermore, in early 1961 the Shropshire Federation of Women's Institutes passed a petition to Parliament expressing deep concerns about the presence of chemicals in meat.⁵³

There was a growing public debate about animals' status in intensive rearing regimes as well. 'In Britain, concern about the unnatural feeding of animals was widespread and deep rooted.'⁵⁴ And the poultry industry had already attracted the ire of the influential Royal Society for the Prevention of Cruelty to Animals, which was vigorously campaigning against battery-farming in egg-laying flocks in the late 1950s.⁵⁵ The broiler producers, wary of the potential consumer response to intensive farming, commissioned an advertising agency in 1959 to conduct a public relations campaign.⁵⁶

And then in 1962 the publication of Rachel Carson's, *Silent Spring*, became a landmark for the early consumerist movement, condemning the widespread use of DDT as a pesticide in U.S. agriculture. In Britain this inspired Ruth Harrison to write *Animal Machines* (1964), an assault on the intensive rearing of veal calves, chickens and pigs. *Animal Machines* touched a chord with British public opinion every bit as significant as *Silent Spring* had in the U.S. The *Observer*, a national Sunday newspaper, serialised the book, prompting an enormous public outcry. In the book's foreword, Rachel Carson called for a 'consumers' revolt', and the broadsheets' letters pages and MPs postbags groaned in response. The Labour Government quickly responded by establishing an official enquiry, the Brambell Committee, to set out the basic principles for rearing farm animals.⁵⁷

But in fact the far greater concern by the early 1960s was not gaining traction on the ethics of animal welfare, nor any worry about what health impact their may be of consuming hormones and antibiotics in factory-farmed milk and meat, but rather how the consumption of low-levels of antibiotics might lead to greater resistance among bacteria. This was a particular threat to the nascent poultry industry.

Already by the late 1950s scientists were raising concerns about how the indiscriminate use of antibiotics in the post-evisceration cooling process might promote biological resistance. During the 1960s this grim prospect was becoming a reality as it became increasingly clear that resistant strains of salmonella bacteria, for example, were becoming a threat. Whereas poultry consumption 'had been responsible for an insignificant proportion of human infection in Britain during the early 1950s, by the end of the 1960s it caused more than half the increasingly frequent

⁵³ Bud, *Penicillin*, p. 171, and pp. 173-4, note 25.

⁵⁴ *Ibid.*, p. 174.

⁵⁵ Sykes, *Poultry*, pp. 102-5, and *Farmers Weekly* 19.5.61 on the RSPCA's lesser concern with 'deep-litter' rearing practices (MERL DW/AD8/4).

⁵⁶ The campaign is reported in *Poultry Farmer & Packer* 12.9.59, p. 17

⁵⁷ Rachel Carson, *Silent Spring*; Ruth Harrison, *Animal Machines: The New Factory Farming Industry* (London, Vincent Stuart, 1964).

outbreaks of salmonellosis in humans'.⁵⁸ The modern food industry in general, and poultry in particular, increasingly seemed to pose a genuine hazard to public health in the early 1960s. The threat to the poultry industry suddenly became very grave.

That these threats were first perceived in Britain and not the United States might well be because of the British notoriety for privileging animals' status. Agriculture was pursuing intensification more there than anywhere else outside North America and Australasia, but farming carried much less economic significance in Britain than in these other agricultural heartlands. So any countervailing force to urbanite romanticism of animal life had far less impact in Britain. As Robert Bud has recently documented, the public furore arising from the antibiotics scandal led to several official enquiries, and, following the recommendation of the Swann Committee (1968-1970 – and taking its cue from the Brambell Committee), the British Government prohibited the use of antibiotics as growth promoters in animals in 1970. This was the first legislative control of the feedstuffs industry in the world. Much of the rest of Europe followed with similar laws in the 1980s, but agricultural lobbyists ensured that similar controls remained off the statute book in North America and Australasia for many years after.⁵⁹ Nevertheless, despite being such a pioneer in introducing legislative control of the pharmaceutical content of feedstuffs, long before 1970 the poultry industry in Britain had already modified its practices. This was not because of any anticipation of future controls but rather because of the active interventionism of one key intermediary in the British poultry market, the retailer, J. Sainsbury.

As already noted, Sainsbury was the retailer most closely involved with the poultry industry in its earliest days. Others, like MacFisheries, the Co-op and a few regional grocers, were also important, but none were able to match the Sainsbury buying power. As the industry was grappling with the problems of increasing scale and cutting costs in 1955, Sainsbury was selling one million birds a year, twice the scale of its closest rival.⁶⁰ As noted above, it was Sainsbury that were most closely involved with the leading processors' moves to invest in refrigeration and expand capacity. Sainsbury was driven by a broader agenda than just increasing poultry sales. It was their commitment to rolling out the new self-service format that drove their decision to become more involved in their supply chains. And in no other food sector did Sainsbury intervene more than in poultry, where 'they were very influential in the early stages because the level at which you could influence [suppliers] was very much more basic.'⁶¹

As early as 1956 Sainsbury's Max Justice had realised how 'there was this incredible opportunity to get into a whole new sphere of meat production, and that it could be affordable,' recalled John Maunder, 'And more-or-less at the same time I remember being told, "there is this new idea, which we think is going to catch on, called

⁵⁸ Bud, *Penicillin*, pp. 175-7, citation, p. 163. Bud reports a survey of scientific papers from 1970, showing that ten times as many papers were directed the problem of antibiotic resistance to human health compared with chemical residues from antibiotics, p. 173.

⁵⁹ Bud, *Penicillin*, pp. 182 ff.

⁶⁰ Inferred from *Poultry Farmer* 30.7.55, 'leading seller 1 million, a number of others half a million a year'.

⁶¹ Maunder interview, and in subsequent quotations.

‘Supermarket selling’”, and the two, actually, drove each other, because one couldn’t survive without the other, in the sort of volume terms that we were talking about.’

Soon, recalled Maunder, he was summoned along with Fisher, Padley, Marshall and Western Chicken to Sainsbury’s Blackfriars corporate headquarters. ‘Max Justice said, “We’ve done our research, we’ve talked to people like Geoffrey Sykes, we believe this to be a real must for Sainsbury’s. And we’re going to organise the country into sectors.”’ Each of the processors was given a regional monopoly by the firm. With the supply chain thus organised, Sainsbury were able to meet a rapidly growing demand. Its sales rose very quickly to almost 5 million birds in 1958, then to almost 12 million in 1959, and then 13½ million in 1960.⁶²

Because of its disproportionate focus on own-brand goods compared with other retailers, much of Sainsbury’s credibility with its consumers was based on the quality of its produce. It followed that much of the risk associated with introducing such a novel food product, like intensively reared chicken, was also borne by them, as well as the suppliers. But with poultry sales and profits underpinning Sainsbury’s ambitious expansion and refitting programme, it was Sainsbury that had the stronger incentive to act.⁶³

‘They [Sainsbury] dictated this one. They were the ones who said ‘look our reputation goes with this,’ recalled John Maunder, ‘And I remember very clearly being told one day “If you mess up on this, it isn’t just you that goes down, it is going to *seriously* damage our profitability if consumers lose confidence in chicken and we can’t sell ‘em”... They realised how important... a slice of that business was in chicken, and not just in volume terms, but in profit terms as well. And... if there was to be a major consumer loss of confidence in the chicken industry, it would crucify us, but it would do them an awful lot of harm as well. We knew it and they knew it, and they were the ones with the influence. They were the ones who could actually say “you must not let this happen.” They were the driving force not just in marketing terms but in morality terms, if you like, as well.’

The result was that Sainsbury, supremely vigilant for their reputation, urged suppliers to be far more proactive than they would normally have been. They said to Maunder, for instance, ““go back and look at everything you do and say. Are you happy that the consumers should know about this? And if not, what are you going to do about it?” And... that has driven us, we’ve been driven by being much closer to the retailer – it has its down-sides, I might say.... But the up- side is the discipline that they..., by virtue of their realization of all the implications of their public reputation..., drove us into a position of really scrutinizing what we were doing in a serious way, and saying “are we happy with this? Are we prepared to justify what we’re doing in a public

⁶² Godley and Williams, ‘The Chicken, the Factory Farm, and the Supermarket’, covers this in more detail.

⁶³ There is a very great deal in the company’s official histories about the commitment to quality, Williams, *Best Butter*, pp. 104-5; and Emerson, *Sainsbury*, p. 32, for example. But it permeates the internal testimonial evidence and documentation too. See, for example, J.D. Sainsbury, ‘Merchandising of Home Grown Produce’, a paper for the ‘British Growers Look Ahead’ conference, April 2nd, 1968, pp. 11-14, or, the article in *Management Today* (April 1967), based on extensive interviews with senior executives, which summarised the firm’s position as, ‘What attracts the customers is the Sainsbury reputation for freshness and quality, combined with keen prices.’

arena? Because sure as eggs is eggs it's going to get into the public arena if we're not happy with it [and] we're going to have to take the consequences.”

As public concern rose with the chemical content of poultry production, so it was Sainsbury that intervened with its suppliers. For example, they ‘wouldn’t allow us’ to use any form of penicillin or antibiotic in the chilling process, ‘it was emphatic, “you must not do it”’.

Sainsbury’s intervention forced Maunder and its other leading suppliers to conform to far higher standards of quality control in all their procedures than the legal minimum. This in turn made processors more proactive in their own relations with their suppliers. Maunders integrated backwards into feed production so that they could control the inputs and guarantee the quality of feed, for example. Buxted moved into breeding. Maunders developed a contract system with farmers, which ensured that their suppliers had to conform to a range of pre-specified standards, standards which were derived with Sainsbury’s demands in mind.⁶⁴

V. Conclusion.

Within ten years the British poultry industry was transformed from an agricultural backwater to one of the most dynamic sectors of the British economy. This transformation was dependent upon a series of critical innovations: in poultry breed selection and reproduction techniques at commercial hatcheries; in nutrition, growth management and disease control, especially through exploiting developments in pharmaceutical technologies; in the accommodation of ever larger flocks, their feeding, ventilating, and in the control of their behaviour; in their slaughtering and processing, with the enormous investments in refrigeration throughout the distribution channels, and the ever more widespread use of antibiotics to minimise the degradation process; in retailing, where the emergence of supermarkets and the self-service format prompted so many of these changes in the supply chain; and finally in cooking, where families by the million took first to roasting chickens with greater regularity, and then frying, baking, and grilling in their experimentation with new culinary tastes.

Yet the wider costs of embracing scientific advance in intensive rearing head-on were that consumers were often left behind, concerned about any possible wider implications to human health from the unintended consequences of such a rush to intensify. Several of these concerns were indeed warranted, and were subsequently prohibited in Britain in 1970. But in those crucial years before then, as the market for chicken matured, the intermediary that both represented consumer interests and intervened with the industry was not a scientist nor a Government advisor, but a retailer.

In a market where legitimate consumer uncertainty might have prompted a loss of trust in the product, it was Sainsbury that took on the role of the key intermediary, bridging the asymmetries of information between consumer and producer. In the absence of other sources of information, this role was critical to the market’s continued growth. The producers’ responses to the public’s growing questions would

⁶⁴ Maunder interview. The US contract system, described by Fisher in Sykes, *Poultry*, pp. 33-5, appears to have been more focused at securing supply in quantitative, rather than qualitative, terms.

obviously have been open to doubt among sceptical consumers. And while the official response was relatively swift in Britain, it nevertheless lagged consumer concerns by several years. Scientific research also, as seen above, tended to lag substantially behind public opinion. Without Sainsbury there was no alternative credible intermediary, and the risk of market failure would have been significantly increased. But Sainsbury recognised that its own reputation was attached to the quality of the new chicken. Moreover, it was becoming increasingly dependent on the financial contribution of the rapidly growing poultry sales to its ambitious plans for moving into self-service. So Sainsbury forced its suppliers to meet quality standards far higher than any legal minimum thresholds, standards based upon what were defensible in the court of public opinion. And the consuming British public responded by eating ever larger amounts of chicken. The British model, with a highly interventionist retailer at its core, thus deviated very significantly from the U.S. industry, where feedstuffs producers emerged as the dominant players, with far fewer of the sensitivities to consumer opinion so important to British retailers.