

Allergic to Innovation? Dietary Change and Debate about Food Allergy in the USA

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Introduction

The expert on nutrition is not the nutrition expert, but the man who has studied nutrition by the ultimate method of research, the struggle for survival. The Eskimo, living on the ice floes of the North Pole, the Red Indian travelling hard and far over wild lands in hunting or war, the trapper in the Canadian forests, the game hunters in Africa - these men must find food that gives the greatest nutritive value in the smallest bulk. ... All these men have found that a diet of meat and animal fat alone, with no carbohydrates, with no fruit or vegetables, with no vitamins other than those they get in meat, not merely provides them with all the energy they need, but keeps them in perfect health for months at a time. Seal meat and blubber for the Eskimo, pemmican for the Indian and the trapper, biltong for the hunter, have proved to be the perfect diet...¹

In the search for the ideal diet, is it best to innovate? Or is better to look to the past, perhaps even the distant past?² In his foreword to the best-selling *Eat Fat and Grow Slim* (1958), a diet book written by British psychiatrist Richard Mackarness (1916-1996), Sir Heneage Ogilvie (1887-1971) opted for the latter. Both argued that the protein- and fat-rich diets of early humans, which still endured in existing hunter/gatherer communities were clearly superior to anything

¹ Heneage Ogilvie, 'Foreword' to Richard Mackarness, *Eat Fat and Grow Slim* (London: Harvil Press, 1958), 1-2.

² See Kenneth F. Kiple, 'The Question of Paleolithic Nutrition and Modern Health: From the End to the Beginning', in *The Cambridge World History of Food*, Volume II, ed. Kenneth F. Kiple, (Cambridge: Cambridge University Press, 2001), 1704-10.

that had been developed since. Or, once humans began to develop agriculture twelve thousand years ago, cultivating carbohydrate-rich grains and rearing animals for dairy products, dietary problems started to emerge. Reflecting this connection with early human diets, what Mackarness described rather clumsily in 1958 as the Eat-Fat-Grow-Slim Diet in *Eat Fat and Grow Slim* became the Stone Age diet in an article that appeared the following year.³

The purpose of *Eat Fat and Grow Slim*, as indicated by the title, was self-evident. But by the 1970s, Mackarness, psychiatric registrar at Park Prewett Mental Hospital in Basingstoke, had begun to associate a much broader range of chronic health problems with diet, eventually describing his findings in *Not All in the Mind: How Unsuspected Food Allergy Can Affect Your Body AND Your Mind* in 1976.⁴ Mackarness, in other words, had stepped into the controversial world of food allergy. Coined in 1906 by Austrian paediatrician Clemens von Pirquet (1874-1929), the

³ Richard Mackarness, 'Stone Age Diet for Functional Disorders', *Medical World* 91 (1959), 14-19.

The famed Franco-American microbiologist René Dubos Dubos (1901-1982) also warned that dietary change could cause health problems, though of a different type. Two of Dubos' concerns were the toxicity of new foodstuffs and the inappropriateness of high calorie diets for people living sedentary lifestyles. René Dubos, 'Medical Utopias', *Daedalus* 88 (1959), 410-24.

See also Alan C. Logan, Martin A. Katzman and Vincent Balanzá-Martínez, 'Natural Environments, Ancestral Diets, and Microbial Ecology: Is There a Modern "Paleo-Deficit Disorder"?' Part I and II, *Journal of Physiological Anthropology* 34 (2015), <https://jphysiolanthropol.biomedcentral.com/articles/10.1186/s40101-015-0041-y> and <https://jphysiolanthropol.biomedcentral.com/articles/10.1186/s40101-014-0040-4>, accessed 20 October 2017.

⁴ Richard Mackarness, *Not All in the Mind: How Unsuspected Food Allergy Can Affect Your Body AND Your Mind* (London. Pan Books, 1976).

term allergy was originally defined broadly as ‘any form of altered biological reactivity’ and incorporated both functional immune reactions and dysfunctional allergic reactions, but was chiefly associated with asthma, hay fever and idiosyncratic reactions to animals, insect stings and food.⁵ The subject of food allergy quickly divided allergists.⁶ While self-described food allergists believed that it was a common and underdiagnosed explanation for a range of chronic health problems affecting virtually every system of the body, ranging from asthma and eczema to flatulence and migraine, orthodox allergists claimed that it was much less ubiquitous and that many patients were better served seeing a psychiatrist. In other words, the symptoms of many so-called allergy sufferers were presumably psychosomatic, as the historian Mark Jackson has explored.⁷ In turn, many food allergists believed that psychiatric symptoms were caused by food allergy. The complex relationship between allergy and mental health helps to explain why a psychiatrist such as Mackarness would have become interested in allergy, though he clearly already had a clinical (and possibly financial) interest in dieting and diet books. Making matters more complicated is the fact that allergists (then and now) struggle to explain what ultimately

⁵ Clemens von Pirquet, ‘Allergie,’ *Münchener Medizinische Wochenschrift* 30 (1906), 1457-58; Mark Jackson, *Allergy: The History of a Modern Malady* (London: Reaktion, 2006).

⁶ Much of food allergy’s controversial nature rested on the fact that the skin tests used to diagnose most allergies were not effective for food allergies. As such, elimination diets (where patients were prescribed a very simple diet consisting of hypoallergenic foods and introduced challenge foods individually) were preferred. Since the evidence provided by elimination diets relied on patient testimony, it was thought to be less reliable. Matthew Smith, *Another Person’s Poison: A History of Food Allergy* (New York: Columbia University Press, 2015).

⁷ Mark Jackson, “‘Allergy con Amore’: Psychosomatic Medicine and the “Asthmogenic Home” in the Mid-Twentieth Century’, in *Health and the Modern Home*, ed. M. Jackson (London: Routledge, 2007), 153-74.

causes food allergy. While theories about genetics, infant feeding and excessively clean domestic spaces abound, no definitive explanation has emerged. Into this vacuum, dietary theories have abounded.

Mackarness' influences included von Pirquet and his 'wide, biological view of allergy', but chiefly the more recent work of American food allergists, including Herbert Rinkel (1896-1963), Arthur Coca (1875-1959), Albert H. Rowe (1889-1970) and especially Theron G. Randolph (1906-1995). All of these Americans emphasised that food allergy was the cause of countless undiagnosed chronic symptoms in Americans (including themselves). Combining the ideas of his American mentors with his own clinical observations at Park Prewett Hospital, Mackarness eventually concluded that eating a modern diet rich in carbohydrates, dairy products and chemicals could cause a wide array of health problems in the hypersensitive.⁸

As its title and his vocation suggested, Mackarness was particularly interested in how reactions to foods could trigger psychiatric symptoms. The motivation of Mackarness and many like-minded physicians was largely due to the struggle to diagnose and treat patients suffering from depression, mania and other mental health problems who were ill-served by prevailing psychiatric treatments, such as psychoanalysis, psychopharmacology, electroconvulsive therapy and lobotomy.⁹ Underlying such clinical issues, however, were more fundamental concerns about modern diets and their propensity to cause chronic, otherwise unexplained, health problems.

⁸ Ibid.

⁹ Mackarness began *Not All in the Mind* with the story of a patient who would have been given a lobotomy had he not successfully intervened with his stone-age diet. Mackarness, *Not All in the Mind*, 11-24.

Historians, such as Jackson, Gregg Mitman and Michelle Murphy, have begun to examine the history of allergy and immunology, but few have explored in detail the relationship between changes in food production and the proliferation of allergy.¹⁰ More emphasis has been placed instead on the role of pollutants and chemical products. Similarly, food historians have researched the emergence of food processing, but have not fully examined ideas about the health implications of such changes.¹¹ The connections that have been between the rise in food production and the emergence of allergic disease have typically not been made by historians, resulting in analyses that are disconnected from the broader and deeper contexts of developments in allergy, food production and consumer practices.¹² In this chapter I attempt to

¹⁰ Jackson, *Allergy*; Paul Blanc, *How Everyday Products Make People Sick: Toxins at Home and in the Workplace* (Berkeley: University of California Press, 2007); Gregg Mitman, *Breathing Space: How Allergies Change our Lives and Landscapes* (New Haven: Yale University Press, 2007); Michelle Murphy, *Sick Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technoscience, and Women Workers* (Durham, NC: Duke University Press, 2005).

¹¹ Harvey Levenstein, *Fear of Food: A History of Why We Worry about What We Eat* (Chicago: University of Chicago Press, 2012); Geoff Andrews, *The Slow Food Story: Politics and Pleasure* (Montreal: McGill-Queen's University Press, 2008); Warren Belasco, *Appetite for Change: How the Counterculture Took on the Food Industry* (Ithaca: Cornell University Press, 2006); Harvey Levenstein, *Paradox of Plenty: A Social History of Eating in Modern America* (New York: Oxford University Press, 1993).

¹² Steve Kroll-Smith and H. Hugh Floyd, *Bodies in Protest: Environmental Illness and the Struggle over Medical Knowledge* (New York: NYU Press, 2000); Peter Radetsky, *Allergic to the Twentieth Century: The Explosion in Environmental Allergies – From Sick Buildings to Multiple Chemical Sensitivity* (Boston:

bring together these areas of historical inquiry together to explore how the relationship between food processing and allergic disease has been conceptualised in the US during the twentieth century. While Mackarness' advocacy of a stone-age diet may have gone further than most in critiquing dietary innovation, he was not alone in asking questions about the association between modern diets and disease.¹³ Many food allergists linked the emergence of processed food during the twentieth century with increased numbers of allergies. I begin by explaining why the emergence of food processing posed particular challenges to people with food allergies, and then provide two examples of foodstuffs that were indicted as particularly problematic, namely, corn and synthetic food colours. Although such ideas were highly controversial – and remain so - they nonetheless mirrored deeper concerns dating back to the early modern period about the emergence of diseases of civilisation and, more recently, escalating rates of autoimmune disease.¹⁴ Rather than dismissing these ideas as quackery, outdated or fanciful, we should engage with them more deeply in the hope of explaining why such diseases are on the rise.

Processing Allergy

Little, Brown, 1997); Richard A. Cone and Emily Martin, 'Corporeal Flows: The Immune System, Global Economies of Food, and Implications for Health', *Ecologist* 27 (1997), 107-11.

¹³ The stone-age diet has recently been transformed into the paleo diet. Although most adherents adopt it to lose weight, proponents also claim that it can reduce allergies and improve digestion. Most nutrition experts, however, remain sceptical of it and related diets, ranging from the similarly high-protein Atkins diet to the raw food diet.

¹⁴ Charles Rosenberg, 'Pathologies of Progress: The Idea of Civilization at Risk', *Bulletin of the History of Medicine* 72 (1998), 714-30; Roy Porter, 'Civilisation and Disease: Medical Ideology in the Enlightenment', in *Culture, Politics and society in Britain, 1660-1800*, eds. Jeremy Black and Jeremy Gregory (Manchester: Manchester University Press, 1991).

In the historian Harvey Levenstein's recent apologia for the state of American food, he cites the emergence of large-scale food processing as one of the catalysts for concerns about the food supply.¹⁵ Food production moved out of American homes during the late nineteenth and early twentieth centuries as society urbanised, industrialised and took advantage of the rapid advancement of transportation networks.¹⁶ While most Americans in 1850 would have primarily consumed food produced nearby by people they likely knew (including themselves), by 1950 Americans ate food produced by large, impersonal food companies and were far removed from any aspect of its production. Distance from food production led to distrust and, according to Levenstein, an irrational fear of modern food and a counterproductive craze for the organic.

Levenstein's reassurances about the state of the American food supply has not been echoed by most other food historians and food writers, who have expressed grave suspicions about the dominance of large corporations in dictating the food we eat, the emergence of global food economies (at the expense of local food systems) and the reductive nature of nutrition science, which privileges industrial food production.¹⁷ Allergic Americans had more reason than most, however, to want to know exactly what was in their food and, therefore, distrust the food industry when ingredients were not clearly identified or left off the label altogether. Concern

¹⁵ Levenstein, *Fear of Food*, viii.

¹⁶ *Ibid.*, 2

¹⁷ For instance, Rima Apple, *Vitamina: Vitamins in American Culture* (New Brunswick, NJ: Rutgers University Press, 1996); Michael Pollan, *The Omnivore's Dilemma* (New York: Penguin, 2006); Marion Nestle, *Food Politics* (Berkeley: University of California Press, 2002); Michael Mikulak, *The Politics of the Pantry: Stories, Food, and Social Change* (Montreal: McGill-Queen's University Press, 2013); Gyorgy Scrinis, *Nutritionism: The Science and Politics of Dietary Advice* (New York: Columbia University Press, 2013).

about accidental exposure to peanuts and the seven other ‘major’ food allergens has led to at least a little more transparency with respect to labelling the ingredients of processed foodstuffs.¹⁸

Since 2006 and the enactment of the Food Allergen Labelling and Consumer Protection Act (FALCPA), warning labels have to be present on foods containing peanuts, milk, wheat, eggs, fish, tree nuts, soybeans and shellfish. But for Americans diagnosed with allergies prior to the passage of FALCPA and, indeed, Americans allergic to the 150 *other* foods known to be possibly allergenic, some suspicion was well-founded.

Food processing had a bearing on allergy in two ways: first, because the industrial processing of food made it difficult to identify the specific ingredients of food; and second, because food allergists began suspecting some of the core ingredients of food production as particularly allergenic. The emergence of mass food processing after the Second World War made it more difficult for people to know exactly what they were eating. A case from the 1930s featuring pioneering food allergist Herbert Rinkel illustrates how changes in how Americans sourced their food made diagnosis of food allergy more difficult. Rinkel had suffered from allergic symptoms, including a severely and persistently runny nose, throughout his medical training. Nevertheless, he had failed to identify a precipitating cause. After reading the food allergy research of Oakland allergist Albert Rowe, however, he self-experimented to determine if food was the cause of his agony. Eventually, he discovered that the culprit was eggs, which he had eaten in abundance for years. His father was a Kansas farmer and had regularly sent him cases of eggs throughout university. Rinkel immediately stopped eating eggs and the symptoms ceased after a few days.

¹⁸ US Food and Drug Administration, ‘Food Allergen Labeling and Consumer Protection Act of 2004 (FALCPA), Public Law 108-282, Title II’,

<https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Allergens/ucm106187.htm>, accessed 9 October 2017.

The fifth day, however, was his birthday and, accordingly, Rinkel ate a piece of birthday cake baked by his wife. Within minutes he had collapsed onto the floor. When he regained consciousness, his wife confirmed that the cake contained three eggs.¹⁹

In many ways, Rinkel was lucky. Given his ready supply of eggs and their dominance in his diet, eggs were a likely suspect for Rinkel. It is probable that most people suffering allergic symptoms would have similarly pinpointed eggs given similar circumstances, and not have gone to the same lengths as the curious clinician to confirm unequivocally that they were at fault. Compare Rinkel's situation, then, to Americans whose diet included considerable amounts of processed foods. There were far more ingredients in the television dinners, cake mixes and breakfast cereals that came to dominate the American diet, making it much more difficult to identify potential allergens. Even after the Fair Packaging and Labeling Act of 1966, which tightened the laws on listing food ingredients, the sheer quantity of contents and the use of synonyms for describing certain ingredients (for instance albumin for egg or groundnuts for peanuts) made it difficult for allergic consumers to determine exactly what they were eating.

Despite the difficulties inherent in identifying problematic ingredients, there was some help for allergic consumers. By the 1930s and 1940s, food companies had recognised a market in allergen-free food and had developed products guaranteed to be free of particularly ubiquitous ingredients, such as wheat, eggs and milk. The allergic could now turn to Ditek Oat Crisps, free of egg, wheat, corn and barley, washed down with maple-flavoured milk substitute, Allerteen.²⁰

¹⁹ Mackarness, *Not All in the Mind*, 59. Keen to replicate his self-experimentation, Rinkel tried eggs again five days later and suffered yet another acute attack. Presumably he avoided them after that.

²⁰ See volume 6 of *Annals of Allergy* (1948) for examples of allergenic products.

But overall, according to Pennsylvania home economist and poet Helen Morgan (1904-1989), the author of one of the first recipe books for allergy sufferers, ‘the attention given allergic’s dietary needs has been woefully meager’.²¹ The subtitle of *You Can’t Eat That! A Manual and Recipe Book for Those Who Suffer Either Acutely or Mildly (and Perhaps Unconsciously) from Food Allergy* (1939), which included a foreword by Mayo Clinic gastroenterologist and medical columnist Walter C. Alvarez (1884-1978), neatly revealed how food allergy was conceptualised by many food allergists during the 1930s, the era in which they enjoyed the most legitimacy and respect from their medical colleagues. It suggested that mild sufferers deserved the same support as those who suffered acutely (who likely found it easier to identify the foods to which they were allergic) and also reflected the belief of most food allergists that the condition was much more common than usually acknowledged. Although Morgan admitted that ‘[s]ome people have taken up allergy as a fad, the way they did mah-jongg and knitting’, the overall message of the book was that allergy was widespread and that sufferers needed more help in identifying safe foods and recipes.²²

Morgan worked with nutritionists, cooks, bakers and the California Health Food Service in order to develop recipes that avoided common allergens. She also received assistance from most, but not all, of the major American food producers with identifying the ingredients of various processed foods. Explaining the need for greater disclosure, Morgan declared: “This is the age of packaged goods, which are a boon to the average housewife but a bane to the individual on a

²¹ Helen Morgan, *You Can’t Eat That! A Manual and Recipe Book for Those Who Suffer Either Acutely or Mildly (and Perhaps Unconsciously) from Food Allergy* (New York: Harcourt, Brace and Company, 1939), 7.

²² *Ibid.*, 5.

diet.²³ While most of the food companies Morgan contacted were forthcoming, some ‘did not wish to disclose the ingredients of their products’, and others, including the National Biscuit Company, preferred to indicate which of their products did not contain certain ingredients, including egg, yeast, milk and sugar.²⁴ A subsequent chapter entitled ‘Jokers in Cooked Foods’, revealed processed and unprocessed foods that tended to contain hidden ingredients; ‘chefs and good cooks too, have a distressing habit of putting certain ingredients where you least expect to find them’.²⁵ Bread could contain fillers such as ‘fruit pulps, potato, nuts, all cereal grains, peas, beans, lentils, peanuts, cassava roots, cooked squash, pumpkin, and sweet potato’, which were ‘used when wheat prices are very high’.²⁶ Candies could contain eggs, milk, nuts or potato starch.

It is worth remembering that *You Can't Eat That!* was published in 1939, prior to the explosion in food processing that was fomented by technological developments during and after the Second World War.²⁷ Most of the foods it discussed were staples, such as wheat, milk and eggs. After the war, however, the number of food additives entering the food supply increased rapidly, as did

²³ Ibid., 247. Although Cone and Martin have asked questions about the health implications of consuming food from far-flung regions of the globe, Alvarez suggested that exotic alternatives, such as rice, chickpea, dates, sesame seed and rapeseed oils, might provide needed nutrients to those allergic to local foods. Ibid., xvi; Cone and Martin, ‘Corporeal Flows’.

²⁴ Ibid., 248, 282-7.

²⁵ Ibid., 300.

²⁶ Ibid., 301.

²⁷ For more on how American food became ‘industrialized’, see Gabriella W. Petrick, ‘Industrial Food’, in *The Oxford Handbook of Food History*, ed. Jeffrey M. Pilcher (Oxford: Oxford University Press, 2012).

the use of other staples that were ubiquitous in food processing.²⁸ Concern soon emerged about the allergenicity of these substances. In other words, many food allergists and their patients believed that the very foods and food chemicals that made food processing possible were those that were making an increasing number of people allergic. One of the chief instigators of this idea was the controversial Illinois food allergist turned clinical ecologist Theron Randolph.

A Corn-ucopia of Allergy

Randolph began training in allergy and immunology in the late 1930s, when Helen Morgan was writing *You Can't Eat That!* and when food allergy had reached its zenith in terms of legitimacy and respectability. Although food allergists and orthodox allergists debated defining allergy broadly or narrowly, the food allergy was still discussed in a relatively open and friendly atmosphere, and most acknowledged that it was a prominent source of chronic symptoms. The psychosomatic theories that would divide opinion during the 1940s and 1950s, for instance, had not yet emerged.²⁹ Equally, the ecological ideology that would influence many food allergists during the 1960s and 1970s had not yet been articulated. After the Second World War, however, and paralleling the rapid changes in food processing, food allergists led by Randolph became suspicious of the foods and food chemicals used in food production, associating them with rising rates of food allergy.³⁰ For Randolph, one of the most problematic of these was corn.³¹ As he

²⁸ Belasco, *Appetite for Change*, 37-41.

²⁹ Jackson, 'Allergy con Amore', 160-1.

³⁰ For more on trust in the food supply, see Karin Zachman and Per Østby, 'Food, Technology and Trust: An Introduction', *History and Technology* 27 (2011), 1-10.

³¹ Randolph's concerns about corn predated when high-fructose corn syrup, recently linked to increases in American obesity rates, became widely used in the 1970s.

would discover, however, questioning corn raised the hackles of the food industry and created divisions within the allergy community about the possible perils of food processing.

As Paul Roberts describes in *The End of Food* (which conveniently features a cob of corn on its cover), during the '1920s and 1930s, scientists came out with hybrid strains of corn that not only had bigger, more plentiful ears, but also grew more closely together in the field – all of which meant more corn per acre'.³² Yields rapidly increased, going from less than 20 bushels per acre in 1935 to just under 100 bushels per acre in 1970, and over 160 bushels per acre in 2010.³³ New fertilisers and irrigation also meant that corn could be grown in new regions, such as the Great Plains. Finally, with the passage of the Agricultural and Consumer Protection Act (1973), corn farmers were ensured of a guaranteed price for their crop which encouraged even more production; today corn is the most subsidised crop in the USA.³⁴ Although most of the corn produced was used in livestock feed, it was also increasingly used in food production, where the processes of dry and wet milling broke the kernels up into the constituent parts, which could be then be used in a plethora of foods, ranging from candies and sauce mixes to soft drinks and

³² Paul Roberts, *The End of Food* (New York: Houghton Mifflin, 2008), 20.

³³ See chart in Brad Plumer, 'A Brief History of U.S. Corn in One Chart', *Washington Post* (16 August 2012), https://www.washingtonpost.com/news/wonk/wp/2012/08/16/a-brief-history-of-u-s-corn-in-one-chart/?utm_term=.edbdd9da25a1, accessed 17 October 2017. Productivity lagged until 1930, when hybrid strains were developed. Increased corn yields also led to more volatility in production during times of drought. After peaking in 2010 at 160 bushels per acre, production slipped to just over 120 bushels per acre in 2012, due to a severe drought in the American Midwest.

³⁴ By 2005, demand for ethanol, derived from corn, drove production even more. Today, 30 per cent of American corn is also used for biofuel. Roberts, *End of Food*, 206.

snacks.³⁵ By the mid-1940s, when he was in private practice and teaching at Northwestern University Medical School, Randolph was beginning to suspect it as a hidden source of allergy, responsible for everything from chronic fatigue and depression to muscle ache and sore throats.³⁶

Randolph's opinions about corn as an allergen were highly personal as he, much like many leading food allergists, was a sufferer himself. In 1944 Herbert Rinkel visited Randolph at his practice which had just opened and:

After an hour or so he commented: 'Ted, I don't think that you are diagnosing your allergy to corn.' Upon answering that I had not seen a case, he pulled from his pocket a small typewritten sheet of not more than a dozen lines of the sources of corn in the American diet.

However, all that I had needed was a mirror, for I immediately diagnosed my own allergies to corn, wheat and all other cereal grains by applying what I had recently learned from Herb –details of the individual food test and the corn sources. The avoidance of cereal grains not only relieved my frequent headaches and uncontrollable intermittent somnolence, but also provided a needed boost of energy and returned productive evenings for the first time in several years. Prior to this time, I had only known that I was sensitive to maple and peanut.³⁷

³⁵ Jeffrey A. Gwirtz and Maria Nieves Garcia-Casal, 'Processing Maize Flour and Corn Meal Food Products', *Annals of the New York Academy of Sciences*. 1312 (2014), 66-75.

³⁶ Beatrice Trum Hunter, *The Sugar Trap and How to Avoid It* (Boston: Houghton Mifflin, 1982), 23.

³⁷ Theron G. Randolph, *Environmental Medicine: Beginnings and Bibliographies of Clinical Ecology* (Fort Collins, CO: Clinical Ecology, 1987), 27. Rinkel was also allergic to corn.

Rinkel's list of hidden sources of corn indicates how difficult it could be for patients and allergists to identify it. Moreover, most food allergists thought that reactions to most staple foods such as corn did not typically occur immediately after ingestion, but occurred after a few days and, in other cases, only after the food was ingested repeatedly over many days. Among all the foods likely to cause such 'masked', allergies, the most common and most insidious, given its ubiquity in the food supply, was corn.³⁸

Randolph's emphasis on corn did not win him many friends within the food industry or within the orthodox allergy community. Following initial articles on how the use of corn starch in food packaging could cause reactions and on the allergenicity of corn sugar, Randolph was called to appear at the Food and Drug Administration's Bread Hearings in 1949, which were held to discuss the use of additives in bread.³⁹ During the Hearings, Randolph described how the surreptitious addition of corn and corn derivatives to bread caused allergy symptoms in 20 per cent of his patients. This claim triggered heated opposition from orthodox allergists and food

³⁸ Ibid., 26.

³⁹ Ironically, given his subsequent troubles with the food industry, the research on which this initial article was based was funded by food manufacturer Swift and Company. Theron G. Randolph, 'Cornstarch as Allergen, Sources of Contact in Food Containers', *Journal of the American Dietetic Association* 24 (1948), 841-6; Theron G. Randolph and L. B. Yeager, 'Corn Sugar as an Allergen', *Annals of Allergy* 7 (1949), 651-61; Theron G. Randolph, J. P. Rollins and C. K. Walter, 'Allergic Reactions from Ingestion or Intravenous Injection of Corn Sugar'. *Journal of Laboratory and Clinical Medicine* 24 (1949), 1741; Suzanne White Junod, 'The Rise and Fall of Federal Food Standards in the United States: The Case of the Peanut Butter and Jelly Sandwich', in *The Food and Drug Administration*, ed. Meredith A. Hickman (New York: Nova, 2003), 35-48.

manufacturers.⁴⁰ According to Randolph, orthodox allergists, sponsored by the Corn Products Research Foundation (referred to Randolph as the ‘corn people’) were called to the Hearings to negate his testimony and undermine his call for better labels.⁴¹ Undaunted, Randolph would proceed to stress the prevalence of corn as a food allergen again in the textbook *Food Allergy*, which he co-wrote with Rinkel and Michael Zeller (1900-1977) in 1951.⁴² The largely sympathetic review of *Food Allergy* by New York allergist Will Spain noted that the book’s emphasis on corn would ‘be challenged in many quarters’, but this proved to be an understatement.⁴³ Unwilling to back down from his views as demanded by his superiors, Randolph was fired from his position at Northwestern University Medical School in 1951 for being ‘a pernicious influence on medical students’, and was faced with the prospect of rebuilding his career.⁴⁴

While many of Randolph’s close friends and colleagues were sympathetic, the influential, yet controversial, Arthur Coca argued in a 1953 letter that he had gone too far:

⁴⁰ Harry S. Bernton, ‘Food Allergy with Special Reference to Corn and Refined Corn Derivatives’, *Annals of Internal Medicine* 36 (1951), 177-85.

⁴¹ Theron G. Randolph and Ralph W. Moss, *Allergies: Your Hidden Enemies*. New York: Harper Collins, 1981), 5.

⁴² Herbert Rinkel, Theron G. Randolph and Michael Zeller, *Food Allergy* (Springfield, IL: Charles C. Thomas, 1951).

⁴³ Will C. Spain, ‘Review of *Food Allergy*’. *Quarterly Review of Biology* 28 (1953), 97-8.

⁴⁴ Theron G. Randolph to Harry G. Clark, 3 July 1951, Box 7, Folder 8, Theron G. Randolph Papers, 1935-1991, H MS c183, Harvard Medical Library in the Francis A. Countway Library of Medicine, Centre for the History of Medicine, Boston.

No doubt you realize that you aroused the instinct of self-preservation among the corn-products people by your rather unmitigated and, I believe, statistically exaggerated emphasis upon corn-sensitivity. Their persecution of you was dastardly, yet it might have been prevented if your reports had carefully avoided the implication that corn-products are a specially unwholesome category of food stuffs.⁴⁵

To this criticism, Randolph replied: 'I am obviously disturbed when my efforts to be thorough, as I attempted to be in dealing with the corn question, have been construed as a specific attack. That certainly has not been my intention.'⁴⁶ Although a dispute between the two about the allergenicity of Coca's 'Dust-Seal' spray (meant to keep dust out of homes) might partly explain Coca's lack of support, the exchange did highlight how food allergists' observations about reactions to foods used in processing had to run the gauntlet of food industry opposition.⁴⁷ Whether it be by producing Ry-Krisp crackers in the 1930s and gluten-free beer in the 2010s or by sponsoring allergy conferences in the hope of influencing allergists in the 1980s and 1990s, the food industry has always had a stake in how food allergy was defined and understood. Indeed, after Randolph's run-in with the 'corn people', he claimed that the Sugar Research Foundation (which represented the cane and beet sugar industries) approached him in hope that he would

⁴⁵ Arthur Coca to Theron G. Randolph, 9 June 1953, Box 7, Folder 11, Theron G. Randolph Papers, 1935-1991, H MS c183, Harvard Medical Library in the Francis A. Countway Library of Medicine, Centre for the History of Medicine, Boston.

⁴⁶ Theron G. Randolph to Arthur Coca, 16 July 1953, Box 7, Folder 11, Theron G. Randolph Papers, 1935-1991, H MS c183, Harvard Medical Library in the Francis A. Countway Library of Medicine, Centre for the History of Medicine, Boston.

⁴⁷ Ibid.; Mitman, *Breathing Space*, 189.

help them ‘regain some of the markets they had lost to corn sugar.... Of course there was nothing I could do.’⁴⁸

In spite of all his detractors, Randolph continued to attract patients and advocates who banded around him and his concept of clinical ecology. A series of letters exchanged by Elizabeth Magner, a patient of Randolph’s, Coca Cola and the American Academy of Allergy (AAA) in 1974 illustrates both the challenges he faced, as well as the support he enjoyed. Magner had written to Coca Cola to complain that corn syrup was not labelled on their bottles. The corporation responded by stating that Magner’s letter was the first they had received and that when they consulted with the AAA, they were informed that the refining process used in production made the corn derivatives ‘free from offending components and, therefore, such refined corn products would not require special labeling’. Magner followed with the AAA and declared that:

I first cried when I read your letter -- then I was tempted to scream.... I am stunned and disappointed to hear that there are board approved allergists who are not aware of the wide spread problems of corn....Dr. T. Randolph has testified several times over the years to government committees on the wide spread problems of corn, but those reports somehow got buried. None of us want to harm the corn industry! We fully realize the economics of the situation and appreciate the problems of cost and availability of sugar, production problems. What we are begging for is the proper labeling so that products containing any form

⁴⁸ Randolph, *Environmental Medicine*, 58.

of corn can be avoided by those who need to avoid such.⁴⁹

Lost somewhere in the vitriol spilled forth about corn allergy were patients such as Elizabeth Magner who did not necessarily want to transform the food industry, but rather wanted recognition for their condition and some basic support in dealing with it.

Allergic to Additives

Food allergists believed that nearly every system of the body could be affected by reactions to corn and other foods. Of particular concern to many, however, were neurological symptoms, ranging from headache and fatigue to hyperactivity and psychosis. Since orthodox allergists believed that allergic symptoms were often psychosomatic, claims that foods could cause mental health problems triggered heated debates between food allergists and their orthodox opponents. These debates became more vitriolic during the 1960s, when questions were raised about synthetic food additives and their possible effects on mental health and, especially, hyperactive behaviour in children.

Although Rachel Carson's *Silent Spring* (1962) is often hailed as precipitating fears about environmental chemicals, concerns about the health effects of food chemicals escalated

⁴⁹ Letter (October 30, 1974) from Elizabeth B. Magner (Geln Ellyn, Ill.) to James O. Kelly, Exec. Secretary of AAA, American Academy of Allergy, Asthma and Immunology Records, 1923-2011. University of Wisconsin-Milwaukee Libraries, Archives Department. Emphasis in original.

throughout the 1950s.⁵⁰ One example of this is the Chemical in Food Products hearings, which began in 1950 and resulted in the Delaney Clause, which banned food additives proven to cause cancer in test animals.⁵¹ For allergists, the most notorious food chemicals were synthetic coal tar dyes, which transformed the food manufacturer's palette (if not doing much for the palate of consumers). Food colours had been used for centuries for decorative purposes and to disguise low quality foods or foods cosmetically damaged by processing, but up until the late nineteenth century, most of these dyes were natural (such as carmine, saffron or beetroot). Coal tar dyes would replace these natural alternatives primarily because they were cheaper.⁵² While there was some justification for some food additives (for example, preservatives and pesticides) on the grounds that they made food less expensive by reducing waste, food colours were chiefly marketing tools used to target the children and their parents with garish candies, technicolour breakfast cereals and lurid drinks.

The first reports that indicated how food dyes could trigger strange reactions were presented by Pennsylvania allergist Stephen D. Lockey (1904-1985) in a presentation to the Pennsylvania

⁵⁰ Rachel Carson, *Silent Spring* (New York: Houghton Mifflin, 1962). There were earlier concerns about food chemicals, but these tended to concentrate on chemicals used illicitly, rather than those included on purpose. Randolph warnings about environmental chemicals also preceded those of Carson, but were not as eloquently expressed. Theron G. Randolph, 'Human Ecology and Susceptibility to the Chemical Environment', *Annals of Allergy* 19 (1961), 518-40; 657-77; 779-99; 908-29.

⁵¹ Levenstein, *Paradox of Plenty*.

⁵² Alison Downham and Paul Collins, 'Colouring Our Foods in the Last and Next Millennium', *International Journal of Food Science and Technology* 35 (2000), 5-22.

Allergy Association in 1948.⁵³ Focussing especially on the yellow dye tartrazine, Lockey claimed that such substances could cause allergic symptoms including hives and asthma in children, and published further findings sporadically in subsequent decades. Concurrently, an increasing number of food allergists were also claiming that behavioural problems in children could be caused by food allergies, a phenomenon that had been reported as early as 1916.⁵⁴ By the 1970s, these two separate observations – that food colours could cause allergic reactions and that childhood behavioural problems could be caused by food – merged into one in the form of the Feingold diet.

During the late 1960s and early 1970s, San Francisco allergist, Ben Feingold (1899-1982) developed the idea that the behavioural problems of many hyperactive children (hyperactivity had been coined as a distinct psychiatric disorder in the late 1950s) were caused by the ingestion of food additives, including synthetic colours, flavours and preservatives.⁵⁵ Writing up his findings in the popular book, *Why Your Child is Hyperactive*, Feingold would spend the rest of his life promoting his food additive-free Feingold diet and warning Americans about food chemicals.⁵⁶ The story of the Feingold diet is described elsewhere, but what is worth emphasising for this

⁵³ Stephen D. Lockey, 'Allergic Reactions Due to Dyes in Foods', Speech presented to the Pennsylvania Allergy Society, 1948.

⁵⁴ William R. Hoobler, 'Some Early Symptoms Suggesting Protein Sensitization in Infancy', *American Journal of Diseases of Children* 12 (2016), 129-35; T. Wood Clarke, 'The Relation of Allergy to Character Problems in Children', *Annals of Allergy* 8 (1950), 21-38; Frederic Speer, 'Allergic Tension-Fatigue in Children', *Annals of Allergy* 12 (1954), 168-71.

⁵⁵ Matthew Smith, *Hyperactive: The Controversial History of ADHD* (London: Reaktion, 2012).

⁵⁶ Feingold opted for a popular publication after being rebuffed by his medical colleagues. Benjamin F. Feingold, *Why Your Child is Hyperactive* (New York: Random House, 1974)

chapter is the broader claims Feingold made about exposure to food chemicals and human health.⁵⁷

Quoting figures provided in 1971 to the U.S. Congress for a set of hearings entitled, ‘Chemicals and the Future of Man’, Feingold stated that Americans consumed five pounds of additives every year.⁵⁸ What effects did such consumption have on human health? Mirroring Mackarness’ view that humans had simply not evolved to eat such substances, Feingold speculated that food chemicals could be responsible not only for behavioural problems in children, but also for increased levels of violence and aggression in American society, disrupting both neural pathways and mutating genes. The effects, Feingold warned, could be far-reaching:

In this rude dawn and uneasy period of questioning, it is not too surprising to find that the rapidly developed food synthetics have been introduced into the fuel that operates the human body with little public awareness. Realization often comes only at the precise moment of reading the fine print on a food-package label. The time is now long overdue to look at these chemicals, not in regard to the H-LDs [children with hyperactivity and learning difficulties] but in regard to the human species as a whole.⁵⁹

Read today, Feingold’s words might have the ring of Cassandra to them. But two factors should be taken into consideration before dismissing them. First, while debates were raging about the

⁵⁷ Matthew Smith, *An Alternative History of Hyperactivity: Food Additives and the Feingold Diet* (New Brunswick, NJ: Rutgers University Press, 2011).

⁵⁸ Feingold, *Hyperactive*, 135.

⁵⁹ *Ibid.*, 162.

Feingold diet in the American media during the 1970s, other scientists were making connections between lead exposure in children and a wide range of health problems, including hyperactivity.⁶⁰ Forty years on, scientists are investigating broader claims about lead exposure and levels of societal violence during the twentieth century.⁶¹ While the removal of lead from petrol has been far less contentious than the debates about food chemicals (partly because there were broader environmental rationales for reducing atmospheric lead), this has perhaps paradoxically stymied more research into the link between environmental pollutants and mental health. Second, Feingold might have failed in his attempt to convince physicians, food manufacturers and the FDA that food additives were harmful to human health, but his diet won over the parents of thousands of hyperactive children. Thirty-five years after his death, the accumulation of anecdotal reports – along with a handful of positive clinical trials – finally swayed some food manufacturers to remove synthetic dyes from their products and some regulators to issue warnings on labels. Again, these successes, along with the lingering notion that the Feingold diet was nothing more than a food fad, have not prompted much more serious research into the link between food chemicals and behavioural problems. We are left wondering, as did Feingold, if the link between food additives and hyperactivity is merely the tip of the iceberg.

Conclusion

In the last thirty years, debates about food allergy have changed dramatically due to the rapid increase in the rate of peanut allergy. Largely unknown prior to the late-1980s, peanut allergy

⁶⁰ E. K. Silbergeld and A. M. Goldberg, 'Hyperactivity: A Lead-Induced Behavior Disorder'. *Environmental Health Perspectives* 7 (1974), 227-32.

⁶¹ H. W. Mielke and S. Zahran, 'The Urban Rise and Fall of Air Lead (pb) and the Latent Surge and Retreat of Societal Violence', *Environment International* 43 (2012), 48-55.

quickly became the most feared type of food allergy, leading to new labelling legislation, changes in the ways foods are processed and marketed and the creation of peanut-free zones (for instance, in schools, airplanes and sports arenas). Although increases in the consumption in packaged, processed food containing peanut products (possibly as a by-product of processing) in the past few decades may have contributed in small part to the peanut allergy epidemic, many of the dietary innovations with respect to peanuts and peanut butter emerged during the early twentieth century, long before fatal peanut allergy reactions became commonplace.⁶² The emergence of peanut allergy transformed food allergy (or, at least, anaphylactic food allergy) from being a pariah subject that divided the allergy community into a topic that commanded attention. The reason for this was simple: unlike allergies to corn and dyes, which caused chronic symptoms that were difficult to substantiate, peanut allergy could and did kill. In order to deal with the dangers posed by peanut allergy, the food industry had to innovate. Companies, such as Mars Canada and Kinnerton Confectionary in the UK, developed either nut-free facilities or nut-free production lines complete with different coloured uniforms for staff on either side of the dividing line. There has even been research into whether it might be possible to use processing methods to reduce or eliminate the allergenicity of certain foods.⁶³

⁶² Andrew F. Smith, *Peanuts: The Illustrious History of the Goober Pea* (Urbana: University of Illinois Press, 2002); Pedro A. Alvarez and Joyce I. Boyce, 'Food Production and Processing Considerations of Allergenic Food Ingredients: A Review'. *Journal of Allergy* (2012), <https://www.hindawi.com/journals/ja/2012/746125/>; Jon Krampner, *Creamy and Crunchy: An Informal History of Peanut Butter, the All-American Food* (New York: Columbia University Press, 2012); Beatriz Cabanillas and Natalija Novak, 'Effects of Daily Food Processing on Allergenicity', *Critical Reviews in Food Science and Nutrition* 11 (2017), 1-12.

⁶³ S. K. Sathe and G. M. Sharma, 'Effects of Processing on Food Allergens'. *Molecular Nutrition and Food Research* 53 (2009), 970-8.

Similarly, the apparent rise in gluten intolerance has also thrust food allergy into the spotlight. While gluten intolerance can be a serious and life-altering health condition (for instance, in the form of coeliac disease), there has also been concern that the prevalence of the condition has been vastly exaggerated in order to sell gluten-free products and cookbooks.⁶⁴ Overarching the debates about ‘gluten-free lifestyles’ has been the same idea that has underwritten many dietary explanations for ill health: specifically, that humans have not evolved to eat many of the foods found in the shelves of supermarkets.

The juxtaposition of a peanut allergy epidemic that has been treated with alacrity and a fashion for gluten-intolerance that has been viewed with widespread scepticism glosses over the experiences of the vast majority of allergy sufferers and obscures a great deal of what really matters with respect to dietary innovation and allergy. So, what is the part of the historian in resolving these debates? Ultimately, the history of food allergy is a story of division and discord, where the experts became more strident and stubborn in their views over time. The role of dietary innovation in the broader history of food allergy has been similarly contested. While some have blamed the first agricultural revolution for much undiagnosed chronic ill health, there have been numerous counter claims that modern food production has only been a force for good, lowering food prices and increasing choice.⁶⁵ In both cases, personal interest – whether it be ideological or financial - has played a role in entrenching these positions. Recognising this, historians can help to sort the wheat from the chaff, so to speak, and identify topics that would

⁶⁴ Norelle R. Reilly, ‘The Gluten-Free Diet: Recognizing Fact, Fiction, and Fad’. *Journal of Pediatrics* 175 (2016), 206-10.

⁶⁵ Elizabeth M. Whalen and Frederick J. Stare, *Panic in the Pantry* (New York: Anthem, 1975).

benefit from more fundamental, objective scientific research. The two cases discussed in this chapter – corn and food dyes – would be good places to start.

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