

Cultures on Ice: Refrigeration and the Americanization of Immigrants in the First Half of the Twentieth Century

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The introduction of refrigeration in the early twentieth century played a dramatic role in shaping American kitchens, determining thresholds of acceptance of various types of stored foods and framing an American attitude toward 'ethnic' food odours and tastes. That kitchens have refrigerators is assumed in developed countries today, and that refrigeration is essential for safety and health. However it was not always so. We explore here how the emergence and marketing of new technologies to refrigerate foods, especially 'fresh' meats, dairy products, fruits and vegetables, converged with the 1880–1920 influx of US immigrants from eastern, central and southern Europe to become crucial components of social programs to Americanize the new immigrants and of marketing strategies to sell refrigerated foods and electric refrigerators to them.

In 1927 the General Electric Refrigerator Company published a little hard-covered book, *Electric Refrigerator Menus and Recipes*, dedicated to 'the modern American homemaker'. The author, Alice Bradley, was a principal of Miss Farmer's School of Cookery and cooking editor of *Woman's Home Companion*. Miss Farmer's school was also a laboratory for scientific approaches to nutrition and food, the foundation of a growing home economics movement. This book of refrigerator recipes is surprisingly cautious and circumspect. Bradley, born in 1875 without a refrigerator, since the first household model appeared in 1914, seems to struggle with the very idea of what the device is for. In fact 1914 is conservative as a beginning for household refrigerators; the first ten years or so of modern electric household refrigeration were characterized by a leakage of harmful chemicals, the retention of disturbing odours and the need for frequent repairs. By the 1920s, some of the bugs were worked out, and aggressive marketing of refrigerators commenced (Cowen 1983; Nickles 2002). Alice Bradley's book conveys no particular urgency for acquiring a refrigerator. There is no indication that any normal kitchen would be considered non-functional and unsanitary without it. That rhetoric comes later. Rather, Bradley suggests that 'some family food problems and perplexities about entertaining' might be solved. She describes having an electric refrigerator as having 'an Aladdin's lamp and not knowing the right way to rub it' and notes that the 'total sum of its usefulness has not in any way been solved'. One of the family food problems that Bradley offers to solve centres on frozen desserts. One chapter describes preparing blocks of ice both 'plain and fancy'. Two chapters encourage starting meals with frozen salads, cold soups and aspic jellies. Another chapter entices invalids to enjoy food by freezing it; items for the sick include frozen chicken broth and clam juice.

123

The image conveyed is that a household refrigerator is an elaborate dessert-making machine with some additional highly specialized uses (Bradley 1927; Allen 1926). *Electric Refrigerator Menus and Recipes* also ventures, briefly and cautiously, to consider more basic practicalities. Bradley actually feels the need to ask 'Why a refrigerator?' and then attempts to convince the reader by citing the United States Department of Agriculture. According to the USDA, neither milk nor butter is palatable and safe except maybe in winter when 'nature can furnish you with adequate refrigeration'. Bradley notes that 50 degrees Fahrenheit is a 'danger line' above which bacteria proliferate. Conveniently, the typical temperature kept by early electric refrigerators was about 45 degrees; thus it seemed to be a perfect solution for keeping bacteria in check. (Today we know that cold-loving bacteria decompose food below 45 degrees.) Bradley also suggests that daily shopping trips become unnecessary when meat, fish, fruit and vegetables are chilled. And because fish and meat odours might taint butter and milk, she recommends refrigerator dishes with tight lids.

The various 1920s editions of the *Boston Cooking School Cook Book* (at which Bradley taught) seem to consider refrigeration optional in a typical kitchen (Farmer 1921, 1923, 1926; Fishkoff 2010). For example, butter could be kept, covered, in a cool place and salted to preserve it. Refrigeration was listed as merely one of many ways to preserve food including salting, drying and pickling. Even in 1944, *The Alice Bradley Menu Cook Book* maintained a very short list of what requires refrigeration; all else may be kept in a 'cool' or 'dry and cool' place in a cabinet or pantry.

124 When making frozen desserts alone was not enough to get refrigerators in most kitchens, a scientific approach turned out to be more successful. To broaden the market, refrigerators had to be heavily promoted using the authority of credentialed experts in white coats. The influential home economics movement provided exactly that. The campaign entailed convincing people that the food at ambient room or cellar temperature eaten by hundreds of generations of their ancestors was in fact unsafe unless kept at the somewhat arbitrary temperature maintained by early refrigerators.

At the time, microbiology was developing into a major topic in biology, driven by the study of disease organisms. As a result microbes became equated with pathogens, and all were viewed with suspicion, distrust and even fear. Fermenting microbes (food preservers and flavour enhancers for millennia) were categorized as food spoilers and even potential pathogens. The American Home Economics Association (named in 1899 and founded in 1909) maintained an objective stance on the serious business of keeping a household, using the latest information from biologists, chemists and sanitary engineers. Soon however, the manufacturers of appliances saw a great opportunity and some home economists succumbed to a much more subjective stance on behalf of particular foods and devices. In the field, whether to remain neutral or to participate in lucrative marketing campaigns became controversial (Zimmerman 2003).

Refrigeration companies quickly hired home economists (often dressed in lab coats) to put a scientific spin on the necessity of refrigeration. The phrasing of refrigerator

Refrigeration and the Americanization of Immigrants

advertising switched from 'You could make dessert!' to 'You should keep your family hygienically safe from invisible microbes'. 1920s advertising for Kelvinator refrigerators (named for the scientist whose temperature scale included absolute zero) referred to the protection of the 'zone of kelvination'. Even frozen desserts made in a Kelvinator acquired the safe-sounding name of 'kelvinated desserts'. White Mountain refrigerators of the 1920s were advertised as 'scientifically right' (Lifshey 1973; Waggoner 2007).

In 1923 the 'Household Refrigeration Bureau', initiated by the National Association of Ice Industries, hired a biological chemist, Mary Engle Pennington (Stephan 1996; Snodgrass 2004). The ice industry was concerned about perishable foods spoiling while being transported by rail. Pennington helped establish standards for industrial refrigeration to keep foods 'fresh' for weeks. That required a redefinition of the word 'fresh' (Freidberg 2009). Pennington also published 'Household Refrigeration Bulletin' brochures to promote the industry to home economics teachers. Her goal was an unbroken chain of chilled food from stockyard or field to market and then to home refrigerators (Stephan 1996). While long distance transportation of otherwise unpreserved food absolutely requires cold, the interesting extension of the idea was that households should expect their food supply to come from far away and arrive cold, that industrial cold storage ought to continue in grocery stores and even their own kitchens to keep food 'fresh'.

Keeping fresh foods 'fresh' on ice for days or even weeks (as though in a mausoleum) did not seem like a good idea to anyone who shopped daily: it was viewed suspiciously as a scheme to sell old meat, old milk, old eggs, etc. And indeed it was! Refrigeration on this grand scale enabled foods to be shipped from far away in railroad cars and required a project to convince consumers that these foods were not technically 'old'. Rather, after being held for weeks at chilled temperatures, it was 'fresh' (Freidberg 2009; Wilson 2012). This fact is still not obvious to most of the world where food is still local and purchased daily. Throughout the twentieth century, the refrigerator industry was mostly unsuccessful in France, where people chose to shop for fresh food regularly, kept it on countertops, and somehow managed with tiny refrigerators while maintaining admirable good health and a delightful cuisine. Even terminology referring to refrigeration entered the French language with confusion and ambiguity. In an earlier Symposium paper, Kyri Claflin calls the French view 'frigophobia'. Susanne Freidberg notes that the French engineers coined '*frigoriphobie*' to describe the stubborn recalcitrance of their hoped-for buyers (2009: 30). Contemporary chef Marcus Samuelsson describes his Swedish grandmother not trusting refrigeration because she was never sure of how old the chicken really was (2012: 24). In Agatha Christie's mystery, *4:50 from Paddington Station*, Alice notes, after reading about 40 people getting food poisoning at a hotel, 'All this refrigeration is dangerous, I think. People keep things too long in them' (1957: 242). In the early 1900s, a Jewish doctor voiced similar distrust of refrigeration to defend kosher dietary laws on medical grounds:

Meat kept over three days is very rarely used by the Jews, unless the same has been well washed and salted, and then only in exceptional instances and with much misgivings on the part of the consumer as well as the butcher. No such thing as indefinite or prolonged refrigeration or cold storage is permitted, so universally in vogue among Gentile packers and butchers. The meat that comes to the Jewish table is fresh, clean, wholesome, and free from patogenic [*sic*] organisms, in short, it is 'kosher'. (Aronstam 1912: 20–21)

Ironically, food purchased regularly and locally, preserved through traditional methods, does not typically become a teaming culture of pathogenic bacteria: fermenting bacteria prevent pathogens from growing. However food processed far away, handled in great industrial quantities by many middlemen, and transported and stored for weeks could contain pathogens. In fact it would be best held at chilled temperatures and then thoroughly cooked. In his 1906 novel *The Jungle*, Upton Sinclair exposed the unsanitary industrialized meat packing plants that shipped meat all over the United States. Around the same time industrialized milk production in crowded urban dairies (often in dank basements), where cattle were fed garbage, increased the incidence of tuberculosis bacteria in milk. Milk pooled from many such sources, stored in vast quantities, and then distributed long distances requires an unbroken chain of refrigeration. Any negligence around refrigeration endangered the health of the household. So keeping food cold, even at home, became an ethical mandate, no longer a luxury but an absolute necessity (Nickels 2002; Levenstein 1988, 2012).

126

Inconveniently for marketing refrigerators as ethical necessities, much of the United States was not electrified until the 1930s or even later. Therefore household advice continued to be circumspect. In *The Healthful Farmhouse*, Helen Dodd, 'a farmer's wife', tells us we need an isolated, sunny 'milk room' with a tank of cool spring water (1906: 22–23). The room is depicted with not only without the as-yet-uninvented refrigerator but even without an ice box. The cellar of the farmhouse is described containing the kind of fruits and vegetables that keep well there. Ellen H. Richards, the noted early founder of home economics, wrote the introduction for this book, presumably approving this handling of the milk. Richards was in no position to insist on ice. In 1929, after refrigeration was established and when marketers began appealing to science, the Women's Institute of Domestic Arts and Sciences of Scranton, Pennsylvania wrote *Buying and Preparing Foods: Cookery, Equipment, Selection, and Use of Equipment, Purchase of Foods, Preparation of Foods*. This exhaustive treatment by experts would surely promote a refrigerator in every kitchen! Yet it acknowledged the difference between the electrified cities and the rest of the rural country, and did not tout refrigeration as a necessity but rather as a nice labour-saving device.

Another book, *Dairy Products*, written in 1929 by the same women's institute, develops a different sort of concern. Butter readily absorbs odours. In long-term cold storage it might pick up odours from other foods. Refrigeration might co-mingle the

Refrigeration and the Americanization of Immigrants

smell of older rancid butter with fresh batches. From the very beginning of household refrigeration design, there was a concession to the special needs of butter. To this day, most refrigerators have a butter compartment where temperatures are supposedly less cold and from which odours are kept. Butter storage still divides families, with some preferring spreadable butter kept on the counter while others prefer cold, hard butter stored in the refrigerator. Such divisions have even spurred development of highly modified, ice-cold yet strangely spreadable butter-like products.

Meanwhile in the 1920s, another branch of the home economics movement strictly defined 'sanitation' to exclude just about everything that was not thoroughly scrubbed, well chilled, and tightly packaged. At the same time, newly-arrived immigrants were transforming American cities. Some initiatives around those arrivals comprised controlling their cuisines (deemed unhealthy) and household habits (deemed unsanitary). Fermented foods, especially odoriferous ones, kept at room temperatures were among the targets of well-meaning social workers and home economists. The refrigeration industry was also quick to see opportunity. Professionalization and the 'science' of homemaking became rationales for sanitizing the habits of immigrants, and insisting generally on a new regime of refrigeration for everyone.

Ellen H. Richards, who had written the introduction to Dodd's book, was a chemist with a degree from MIT. The original name she coined for the home economics movement – 'euthenics' or 'the science of controlled environment' – did not catch on. Richards was particularly concerned with outbreaks of disease and general unhealthy living that could be easily avoided by common-sense sanitation and, most importantly, education (Richards 1912; Hunt 1918). Early twentieth-century America was becoming more heterogeneous with the influx of immigrants, so the times were right for education and reform movements. Indeed a more homogeneous society would not have provided as much impetus for reform, since ordinary customs and foodways taken for granted as 'normal' would be overlooked. Cultural differences stood out, demanding assimilation to some idealized American standard.

Impoverished, newly-arrived Jewish families living in squalid tenements were a favourite subject. In *97 Orchard*, Jane Ziegelman describes some of the conditions: unsanitary foods (at ambient temperature) sold by pushcart vendors were supposedly a leading cause of death among Lower East Side children. According to Bertha Wood, Jews ate highly seasoned food and not enough fresh milk and that is why they were so nervous; Jews ate far too many pickles and other fermented foods which 'renders assimilation more difficult' (1922: 90). Indeed Jewish children were known to spend their precious lunch money on pickles. Other assessments of the stench of Jewish immigrant markets and pushcarts were even harsher. One reporter describes a 'slatternly young [pushcart] woman who had a scarcity of clothing' selling cheese upon which 'it did not require a microscope to detect the mites ... for they were large and lively.' The ethnocentric journalist stated he 'received such a shock from the powerful odour thrown out that [I] almost had a spasm. Phew! How that cheese did smell. Yet the

long-whiskered descendants of Abraham ... put their fingers in it and then suck them with great and evident relish.' Another 'Times reporter maintained that a "writer might go on for a week reciting the abominations of these people. This neighbourhood ... [is] perhaps the filthiest place on the Western Continent. It is impossible for the Christian to live there, because he will be driven out ... by the dirt and the stench. Cleanliness is an unknown quantity to these people. They cannot be lifted up to a higher plane because they do not want to be"' (Burnstein 1996). Nevertheless, what repulsed some critics attracted some Jews. Even wealthy Jews were observed travelling by chauffeur from Fifth Avenue to the Lower East Side to buy odoriferous fermented herring and sauerkraut.

To help immigrants adjust to their new country, Settlement Houses were established. These sometimes included demonstration or model kitchens (often with refrigerators.) These were laboratories of a sort where immigrants might try the newest ideas in household management and nutrition (with controlled conditions and guidance) (Levenstein 1988: 104–07; Leavitt 2002: 76–82). Not only was the immigrant diet deemed unhealthy and unsanitary but also uneconomical because it was concocted from mixtures of foods purchased from various sources, which 'required uneconomical expenditures of energy to digest': 'one whiff of the pungent air in the tenements or a glance into the stew pots was enough to confirm that the contents must wreak havoc on the human digestive system' (Levenstein 1988: 104). A bland, white-sauced diet with surprisingly large quantities of fresh (presumably chilled) milk was considered superior. What immigrant women living in crowded apartments with no appliances were to do with their new cooking skills was another problem.

128

Many unforeseen consequences resulted from the campaign to sanitize the foods of immigrant Jews. Refrigeration provided the material circumstances for two significant shifts in first- and second-generation American Jewish immigrant eating habits in the first decades of the twentieth century. According to Joselit and Diner, these were the 'steady irrevocable decline' of *kashrut* (observance of the Jewish dietary laws), and the rise of Jewish restaurants and delicatessens and the Jewish predilection for eating-out (*oyesessen*) (Joselit 1994: 177; Diner 2001: 200). Since neither Joselit nor Diner trace these shifts specifically to refrigeration, it is worth showing how refrigeration in early twentieth-century American food culture shaped American Jewish immigrant food preferences.

Refrigeration of meat made it much less expensive and more readily available than it had been in the new immigrants' countries of origins (Friedberg 2009). For Eastern European Jews, 'where food was sacred for all, but in which scarcities loomed for most [it] was a rare text – novel, poem, short story, personal memoir – that failed to connect the sanctity of Jewish food to the inequitable distribution of resources' (Diner 2001: 147). For such Jews, America's food abundance was tremendously alluring. Diner describes how Jews' particular 'hunger for America' had,

Refrigeration and the Americanization of Immigrants

its roots in Eastern European Jewish foodways ... [which] connected food, sanctity, community, class, and the gendered nature of everyday responsibilities Jews bore to each other. These realities played a shaping role in the migration to America, an act best understood as a search not just for bread, but for *meat* and fish, noodles and soups, and all the sweet stuffs that the less well-off only got only at sacred time. (2001: 176)

In stories and lullabies Eastern European Jews fantasized about America's abundant food, especially meat, as in Leon Kobrin's *Lithuanian Village* (1927): 'on the very sidewalk lay precious things such as I could only wish you could have on your table for the holidays. ... [T]hey eat of the very best here. They don't lack even bird's milk! Roast hens in the middle of the week and so many other dainty dishes that I don't know how to name them' (Diner 2001: 176). In Sholem Aleykhem's lullaby, a mother sings to her child that they'll soon be able to join husband and father in America, 'where as everyone knew, they could have chicken soup and challah in the middle of the week' (Diner 2001: 177). This common conceit of eating holiday foods on weekdays became a reality for new Jewish immigrants that deeply affected their food expectations and preferences. The general accessibility of food outside the home, especially in delicatessens and restaurants,

complicated the meaning of food to people who had once lived with hunger. ... By eating foods once the reserve of the Jewish upper classes, they engaged in an act of class reversal. The formerly poor started to eat *blintzes*, *kreplach*, *kasha-varnitchkes*, *strudel*, noodles, *knishes*, and most importantly, meat every day. Their once meager cabbage or beet *borschts* now glistened with fat pieces of meat. (Diner 2001: 179–80)

129

Thus one Romanian Jewish immigrant exclaimed, 'In New York, every night was Friday, and every day was Saturday, as far as food went' (Diner 2001: 180). None of this would have been possible without refrigeration in processing, storage and transportation that made meat inexpensive enough to become everyday food.

Jewish delicatessens, small shops, cafés and restaurants were venues where Jews purchased this plentiful supply of meat inexpensively. Refrigeration played a special role in the production of two staples of these institutions: corned beef and pastrami. Corned beef originally referred to a medieval English way of dry-salting meat, which gave it the consistency of salt cod, and so took hours of soaking and boiling before it was edible. But later, according to Gil Marks:

in the mid-nineteenth century, artificial refrigeration allowed the substitution of a much weaker salt-water brine, which also contained less sugar that could be used for curing meat any time of the year and produced milder and tender meat. Toward the end of the nineteenth century, central European immigrants in America, including German Jews, popularized [this so-called] *pickelfleisch* made

from brisket ... typically flavored with peppercorns and bay leaves, ... cured using the lighter brine and the refrigeration method available in America.... Home kitchens and small stores, some called delicatessens, began selling food catering to Jewish immigrants, many of them males who were either single or attempting to save up enough money to bring over their families from Europe. These eateries commonly served the less expensive pickled and cured meats and much of it kosher, between slices of rye bread – the simple dish was a filling meal. Sandwiches were also more portable than plain meat and could be taken home or to work. (Marks 2010: 449)

Marks also suggests that Irish immigrants probably adopted this ‘Jewish’ corned beef in America as a substitute for Irish bacon. Similarly, ‘[m]odern pastrami is a relatively recent American innovation – to be precise, it emerged in New York City. As with corned beef, in the late nineteenth century, the advent of artificial refrigeration allowed for the use of a weaker salt brine for curing, leading to the development of a softer form of pastrami’ (Marks 2010: 450). These refrigeration-aided curing processes made inexpensive cuts of meat palatable and convenient, especially for immigrant adult males, but also for school children who had neither time nor inclination to eat food cooked at home.

130 Presumably, it wasn’t the refrigeration *per se*, but rather the pungent, aromatic spicing of these cold cuts that made them particularly palatable to their Jewish immigrant clientele. While corned beef tended to be flavoured with peppercorns and bay leaves, pastrami possessed a particularly ‘heady mix of spices – including allspice, bay leaves, cinnamon, cloves, coriander, ginger, juniper berries, paprika, pepper, and garlic’ (Marks 2010: 450). Jewish immigrants’ taste for these spicy, pickled, smoky flavours typical of deli and restaurant food was noted both in the fond reminiscences of their consumers and in the criticisms of well-intentioned nutritionists who sought to ‘cure’ them of these unhealthy preferences (Diner 2001: 214–19). So on the one hand, we have Alfred Kazin remembering the delicatessen food in his Brownsville neighbourhood as ‘our greatest delight in all seasons ...hot spiced corned beef, pastrami, rolled beef, hard salami, soft salami, chicken salami, bologna, frankfurter “specials” and the thinner wrinkled hot dogs always taken with mustard’ (Diner 2001: 201).

On the other hand, we have Jewish nutritionists in the home economics movement, like Mary L. Schapiro, identifying ‘high seasoning’ as one of the major ‘Jewish Dietary Problems’. She observes ‘the limitations of the diet, when unchanged by instruction, are evident. It is inadequately balanced, over-rich, and over-seasoned’ (Schapiro 1919). Yet the fact that Mary Schapiro, S. Etta Sadow and other Jewish women themselves embraced ‘American nutrition culture’ suggests the relations between new Jewish immigrants and the home economics was not as one-sided as it may have first appeared. Indeed Jewish nutritionists like Schapiro and Sadow played an important role explaining Jewish foodways to their Gentile colleagues, and advocated accommodations to

Refrigeration and the Americanization of Immigrants

Jewish kosher rules (like respecting the prohibitions against pork and mixing milk and meat) and tastes for pickles and highly seasoned food over fresh vegetables, in order to be win over their Jewish clients to adopt what contemporary science viewed as more nutritional and hygienic diets (Diner 2001: 214–19). Ultimately, the home economists successfully persuaded many Jewish immigrants to change their diets, ironically at the cost of the very kosher rules for which they urged respect.

The 'steady irrevocable decline' of *kashrut* in this period was made possible by the home economics movement and Jewish deli/restaurant culture, both dependent on refrigeration technology. First, easy access to inexpensive meat enticed many Eastern European Jews to America, and many of those immigrants were already less observant than those who remained (Diner 2001: 158–77). Second, the autonomy of 'rational consumption' advocated by the home economists appealed to Jewish women. 'Rational consumption' that 'embraced the values of sanitation, health, cleanliness, economy, and efficiency [were] hallmarks of new identity, secure points of reference through which to demonstrate that they belonged to this social group' of 'modern *American* homemakers' (Goldstein 2012: 13). *Kashrut* often opposed these values, like making milk part of every meal (especially children's), storing it next to meat in one's home refrigerator or purchasing meat economically (Schapiro 1919; Goldstein 2012: 126). Jewish women organized protests against kosher meat's high cost (Diner 2001: 206–07). Dr Noah Aronstam's defence of *kashrut* on microbiological grounds acknowledges the adoption of home economical values by Jewish homemakers. Jewish women's insecurity about home-cooking may also have weakened attachment to old kosher ways. A running joke in the Jewish community was that Jewish men deserted their wives because of bad cooking (Diner 2001: 215). In any case, home economics culture empowered Jewish woman to make decisions about diet traditionally made by male Jewish authorities.

131

Finally the options the new Jewish delicatessen/restaurant culture offered Jews to eat-out (*oyesessen*) resulted in new ways to express their American Jewish identity: 'selectively *treyf*' and 'selectively kosher'. As Joselit explains, American Jewish immigrants:

display[ed] what has [been] called 'selectively *treyf*' behavior, American Jews, as a group, avoid[ing] pork and patently non-kosher food products while vigorously indulging an appetite for chop suey and ballpark hot dogs whose *treyf*-ness was less overt. [Yet] they held on to their affinity for gefilte fish, brisket, and blintzes, chipping away at the identification between 'Jewish' and 'kosher' in the process.... Following the dictates of convenience rather than those of tradition, American Jews became 'selectively kosher' or 'kosher style.' This singularly American Jewish invention[,] ... [t]he gastronomic equivalent of ethnicity, 'kosher-style' enabled its adherents to practice kashruth 'without pain or effort' by disentangling food from the traditional restrictions governing its use, a Judaized version of having your cake and eating it too. (Joselit 1994: 172–174)

Refrigeration made these options possible by providing the material conditions for Jewish deli and restaurant culture, and by weakening Jewish immigrants' *kashrut* observance.

However, refrigeration's role in the development of the supermarket and 'big box' stores in more recent decades has had the reverse effect. That these stores now carry kosher meat alongside other foods, including different ethnic foods, has driven most smaller Jewish delis and markets out of business, and has expanded the market for kosher food beyond observant Jews to a much broader consumer base. The consumption of kosher food has become widespread enough to make kosher certification profitable (Fishkoff 2010).

Freezing and chilling have become the preferred way to offer ethnic foods in a modern supermarket. Previously for the Oxford Symposium, we wrote about the emphatic odours of well-fermented cuisines as shibboleths to unite an ethnic group around celebratory foods and distinguish their foods from those of other groups. Cultures of microbes build food cultures in both microbial and sociological senses of the word. So we lament the olfactory contrast between American style grocery stores and open-air markets, traditional delicatessens and small ethnic food markets. A shopping cart gliding down the 'International Foods' aisle in a well-chilled grocery store passes seamlessly through a dozen ethnic neighbourhoods, each occupying a sliver of frozen shelf space. Thus the title for this paper: 'Cultures on Ice'. If all is well (that is, no package or jar broken open) you should smell exactly nothing. Nor should you smell anything in the refrigerated aisle where a selection of more labile ethnic foods (cheeses, sauerkrauts, pickles) may be found, tightly packaged and briskly cold to suppress volatile emissions. A modern grocery store seems to protect us from encountering those intriguing olfactory shibboleths, and maintains an illusion of olfactory neutrality, a uniform harmony or truce of sorts.

132

When we don't smell food, we forget much of what makes the smell. Microbes. For most of the twentieth century one could scarcely find a grocery store pickle or home-pickling recipe in the United States that acknowledges lactic acid bacteria's role in food preservation (Pollan 2013: 291–305). However, recently in developed countries including the US, there is a popular new movement to revive authentic, ancestral recipes. Pickling with microbes has been cautiously rediscovered; in Sandor Katz's case, not so cautiously. In *The Art of Fermentation*, he envisions a future where 'the refrigeration bubble could burst' (due to a greater need to conserve energy), necessitating a return to fermented foods. Certainly Katz has paved the way with his exhaustive research, writing and speaking on fermentation (2012: 32).

Many modern American and European refrigerators are designed as behemoths crammed full of a couple of weeks' worth of groceries. Yet there are subtle changes in attitude about what must be refrigerated and what is better at ambient temperatures. Internet movements are afoot promoting anti-refrigeration, e.g. Nicola Twilley's post 'The Anti-Fridge' on her blog 'Edible Geography'. Throughout the twentieth century,

Refrigeration and the Americanization of Immigrants

a wistful nostalgia has developed for the pantry as a keeping place. In *The Pantry*, Catherine Seiberling Pond illustrates her book with gorgeous still-life photographs of foods at ambient temperature. Some of this nostalgia fuels the trend in eating locally and shopping more mindfully and regularly.

Home economists are great list- and rule-makers, yet there has never been a strong consensus on exactly what should be on the list for refrigerator storage besides perhaps fresh meat and milk for the next several days. A refrigerator could hold a special, fragile, invented-for-refrigeration dessert, as it did originally as a dessert-maker. The list is getting shorter. Do not refrigerate most cakes and breads nor root, tuber and bulb vegetables. Both cabbage and apples are ‘keepers’ according to our ancestors. Keep tropical fruits and vegetables including eggplant, tomatoes, and mangoes in a fruit bowl to be eaten soon. Other fruits like pears, plums, and bananas do not ripen well in the refrigerator. Savoury, salted cured meats and cheeses taste better at room temperature. Eggs fresh from your backyard chickens can stay in a bowl on the countertop. Even last night’s stew may remain well covered on the cool stovetop and then brought to a boil before making it lunch the next day. It should go without saying that food already preserved such as condiments, pickles, jams, chutneys and the like belong in pantries. Butter remains a huge dilemma, though a growing Internet presence encourages us all to relax and leave it out on the counter as long as it takes for the family to eat it.

The marketing of refrigeration took many convoluted paths and unexpected detours. We take for granted the ubiquity of refrigeration. Yet without explicit advertising, the new appliance might not have become a necessity. The cultural heterogeneity of the US in the early twentieth century was a perfect storm. Electric refrigeration then evolved its own uniquely American foodway inventions: the delicatessen, corned beef, and pastrami; ‘selective *treyf*’ and ‘selective kosher’; and ‘rational consumption’— with the women of the home economics movement leading the way to shape uniquely American immigrant food identities. The technology of refrigeration was the unexpected catalyst.

133

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