

DIET AND NUTRITION IN POOR AND MINORITY COMMUNITIES IN THE UNITED STATES 100 YEARS AGO

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■ **Abstract** Atwater and his colleagues began studying food consumption in the closing years of the nineteenth century and from the very start devoted much effort to collecting data from poor and minority households. This paper reviews some of the fruits of these labors, particularly from the standpoint of what they contribute toward a better historical understanding of American food habits and nutrition. It surveys dietary data from African American, Appalachian white, Mexican American, native-born poor, and immigrant households. These data shed light on several areas of historical concern, including rural versus urban nutrition, seasonal hunger, class disparities, and food-habit change. I suggest the economically and culturally diverse sample of dietary patterns that comes to us as a legacy of the Atwater era sets the stage for a history of American food habits considerably more sophisticated than has been realized to date.

CONTENTS

INTRODUCTION	82
EARLY DIETARIES AND THEIR METHOD	82
AFRICAN AMERICAN DIETARIES	84
MOUNTAINEERS	87
MEXICAN AMERICANS	89
POOR URBAN AND IMMIGRANT HOUSEHOLDS	89
American-Born Poor	90
Immigrants	91
French Canadians	91
Europeans	91
DISCUSSION	95
CONCLUSION	97

INTRODUCTION

Food consumption studies have been conducted in the United States for over a century. The very earliest, carried out by Atwater and colleagues, embodied cutting-edge science. That science has been surpassed in most respects. Today interest in early dietaries usually has more to do with disciplinary history than with the data and analyses they contain.

This will change. With curiosity about the history of American eating habits growing and the historical disciplines begging for reliable data, early dietaries offer an important window on the past (21). Researchers, who have depended almost exclusively on literary sources (cookbooks, diaries, memoirs, novels, travel accounts, etc.) to glimpse the food habits of previous generations, will find late nineteenth and early twentieth century dietaries valuable reality checks. Indeed, it may be possible in the case of certain populations to augment culinary histories with genuine nutritional histories by recycling old but serviceable quantitative data.

With this prospect in mind, I review what the agricultural chemists who launched dietary studies accomplished and what their work revealed about nutrition between the mid-1880s and America's entry into World War I. This was a period during which poor and minority populations were arguably the stock-in-trade of research. It was the era of small-scale inquiries inspired by Atwater's concern with minimum nutritional requirements and the most economical means for satisfying them (15, 58). My concern is with the historical and nutritional issues these century-old investigations illuminate. I review studies of African Americans, Appalachian whites, Mexican Americans, urban slum dwellers, and various immigrants. My reconnaissance draws attention to a number of problem areas in which a re-examination of Atwater-era data promises to be particularly rewarding. These include rural versus urban nutrition, seasonal hunger, class disparities, and food-habit change.

EARLY DIETARIES AND THEIR METHOD

Systematically collected information about eating habits began to appear in the 1880s when science became interested in the composition of foods, nutritional requirements, and how people met them. Atwater, working under the auspices of the USDA's Office of Experiment Stations (OES), took the lead in the United States, organizing field studies to collect foods for analysis and to observe exactly how much people ate (15). He and his associates selected family households, boarding houses, and other groups regarded as typical of some region or segment of society. The investigators realized they needed to sample diverse communities in order to test and refine their generalizations. They knew too that support for their research depended on developing recommendations about what to eat, especially in low-income households where adequate nutrition was a pressing issue. For these reasons, early inquiries often focused on poor and minority populations. Dirks &

Duran compiled an extensive list of these and other early dietaries (20). Duran supplemented this list and added early cost-of-living studies (23).

Researchers throughout the Atwater era conducted dietary studies by inventorying food supplies. The process began by recording weights and costs of foods present at the outset of the investigation and continued by keeping close tabs on subsequent purchases and other acquisitions. Records were kept for periods of 7 to 14 days and occasionally longer. Amounts of food on hand at the start and those tallied later were added together. Wastes, if practical to measure, and food left over at the conclusion of the research were subtracted from the totals. The remainders represented net consumption.

These amounts were analyzed and compared in terms of adult male equivalents or "man-units" (46). The standard was a moderately active male weighing 150 lbs (68 kg). A man that size engaged in strenuous activity was the equivalent of 1.2 man-units. A woman engaged in moderate activity equaled 0.8 man-units, the same for a 14- to 16-year-old boy. A girl between 14 and 16 equaled 0.7 man-units, etc. Investigators calculated the number of man-units fed over the course of a dietary by multiplying the number of meals individuals consumed by the appropriate man-unit. The results were added together and divided by three (the assumed number of meals per day). The result represented the number of man-units fed per day. The total amounts of food consumed over the course of study were divided by man-units fed per day to arrive at estimates of consumption.

Experiment station chemists analyzed foods "as purchased" and in a relatively unprocessed state. Recognized nutritional components included protein, fat, and carbohydrate. Researchers tabulated food costs and energy values. Sherman & Gillett reported mineral contents at the end of the era (53). Vitamins remained to be discovered.

Finding subjects for dietary research often proved difficult. The invasiveness of the method did not sit well in communities that valued privacy or distrusted strangers. Fieldworkers in Chicago, for example, spent weeks attempting to enlist Italian families, but never succeeded in getting more than four to stay with the project (6). The suspicion that dietary research was designed to see how cheaply people could live so employers could cut wages accordingly was a recurrent impediment to investigations (15).

Researchers addressed the trust issue by soliciting the support of well-regarded local agencies. Richards & Shapleigh pioneered this approach in 1892 by negotiating a cooperative agreement with the College Settlement Association for studies in Philadelphia and Chicago (49). Subsequent projects in Chicago, New York City, and Pittsburgh benefited from similar arrangements (6, 7, 9, 10). Tuskegee and Hampton Institutes lent their good names to studies of African American food habits (8, 11, 25).

The institutes and agencies also provided expertise. Chemists organizing dietary studies relied on the staffs of local institutions to identify and recruit typical families as research subjects. Agency staff and other knowledgeable individuals often did most of the fieldwork (e.g., 6, 49, 61). Isabelle Delaney, a physician

dedicated to work in the slums of New York, was ideal in this regard. Atwater recognized her deep understanding of tenement life, and acknowledged that she personally gathered nearly all of the 59 dietaries in the OES's New York City series (7, 9).

The extent to which subjects were asked to play an active roll in recording their food use varied. Often they were illiterate or judged otherwise incompetent, and daily visits were deemed necessary to insure accurate inventories. To save time and collect information from more households, Richards & Shapleigh began experimenting with questionnaires and self-kept account books in Philadelphia (49). In Chicago, they recruited members of the Hull House women's club as project participants and relied almost entirely on account books. The study produced relatively high nutritional values for what were supposed to be poor families—very likely the result of concentrating on the households of women possessing the wherewithal to be active in club affairs.

Richards & Shapleigh wrote typically terse descriptions of their subjects' families and communities (49). Authors usually went no further than prefacing individual dietaries with a few lines about household composition, occupation, income, type of housing, cost of rent, sanitary conditions, and general health. They occasionally reported body weights, distinctive foodways, and purchasing habits. One finds extended accounts of social conditions and cultural practices in rare instances. A study by Atwater & Woods of African American food habits in Alabama includes considerable ethnographic information (8). Substantial accounts of social and cultural life can also be found in Goss's New Mexican studies, Wait's work on Tennessee mountaineers, both Frissell's and Bevier's investigations of African American diets in Eastern Virginia, and Woods & Mansfield's account of nutrition in Maine's lumber camps (11, 25–27, 61, 66).

AFRICAN AMERICAN DIETARIES

Studies conducted in African American households added up to a substantial collection. It included 45 household dietaries, 39 of them products of major projects undertaken in Alabama and Virginia (8, 11, 25). The collection also included five household dietaries from Philadelphia and one from Georgia; institutional dietaries for the Maryland Home for Friendless Colored Children and the Institute for Colored Youth in Cheyney, Pennsylvania; and a nutritional study of 20 individual women in New York City (29, 32, 37, 49, 64). In addition, Forman published detailed budgets for two impoverished African American households in Washington, D.C. (24).

Atwater met frank hunger for the first time at Tuskegee, Alabama in 1895 and 1896. Fieldworkers visited households, both winter and spring, but their data showed remarkably little change in core diet, especially in the homes of tenant farmers and plantation laborers (22). Primary foods (those found in more than half the households sampled) included cornmeal, wheat flour (only recently available at an affordable price), bacon (from Chicago), lard, and granulated sugar. Secondary foods (those found in 25–50 percent of the households) included various cuts of

pork, milk, buttermilk, butter, molasses, sweet potatoes, and various greens. Eggs, rice, and cowpeas were peripheral foods (found in 10–25 percent of the households studied). Seen even less often were items such as cabbage, string beans, tomatoes, and turnips. Of 20 dietaries collected from 18 households, only 6 contained as much as one root, green vegetable, or fruit.

Despite the monotonous character of the core diet, nutritional values varied greatly from season to season. Table 1 displays winter and spring averages for

TABLE 1 Average values for various sets of African American dietaries

Place	Animal protein (g/m/d) ^a	Animal fats (g/m/d)	Animal cho (g/m/d)	%Food budget animal	Dietary variety (max. foods/wk)
Institute for Colored Youth (autumn)	79	114	36	n.d.	~70
Philadelphia (winter)	59	113	17	59	30
Hampton area (spring)	57	134	14	61	28
Franklin County (spring)	54	145	9	59	8
Tuskegee (spring)	23	295	0	38	5
Tuskegee (winter)	12	103	1	33	4
Place	Total protein (g/m/d)	Total fat (g/m/d)	Total energy (kcal/m/d) ^b	% Energy animal	% Energy fats
Institute for Colored Youth (autumn)	112	118	3245	n.d.	33
Philadelphia (winter)	107	121	3001	44	36
Hampton area (spring)	110	151	3751	41	36
Franklin County (spring)	111	165	3735	44	40
Tuskegee (spring)	70	313	4790	38	59
Tuskegee (winter)	50	120	3006	33	36

^ag/m/d, grams per man-unit per day.

^bkcal/m/d, kilocalories per man-unit per day.

tenant farmers and plantation laborers. Their average winter energy intake was 37% less than what they consumed during the spring. Total protein intake was nearly 30% less. Atwater & Woods blamed winter's scant nutrition on a "mortgage system" that favored cash crops over local food crops but left too little money in the hands of farmers to purchase sufficient food throughout the year (8).

OES projects in Eastern Virginia carried out in 1897 and 1898 provided data about black communities in very different circumstances. Frissell studied subsistence farmers who barely participated in the cash economy (25). Bevier studied families independently immersed in commercial markets (11).

Frissell's subjects rented small tracts amidst Franklin County's Dismal Swamp where they raised cotton, peanuts, and sweet potatoes. Farmers paid rents in produce and received "rations" as compensation when they took odd jobs. Some families purchased no food; others bought a few canned goods and a little coffee. The diet, nonetheless, was richer and more varied than Tuskegee's. People ate several cuts of pork in addition to bacon. Cabbage, mustard greens, and sweet potatoes were prominent foods. The swamp provided families with a relative abundance of animal protein.

Bevier's subjects, who lived in Hampton and nearby, pursued a wide range of occupations, and their economic situations varied. Diets were remarkably uniform, however. Fish figured prominently in the inventories, but pork, especially so-called "white meat" (salt side bacon) from Chicago, was more common. Other commercial foods, such as processed beef (smoked, dried, or corned), were central to the diet. Farmers made milk into butter and fed the buttermilk to their children. The butter itself went to the store in exchange for groceries. Rice, oat flakes, white bread, and macaroni ranked among the items most frequently purchased. Except for a somewhat lower intake of fat, average nutritional values were similar to Franklin County's. However, the variety of foods consumed exceeded the variety in Franklin County by far. Food variety is indicated in Table 1 by the maximum number of items consumed per week in any one household to compensate for the lack of a standard period of observation (31).

Table 1 includes average nutritional values for two northern metropolitan locations, an impoverished area of Philadelphia and the relatively affluent Institute for Colored Youth at Cheyney (32, 49). The Philadelphia values for the most part are similar to those of the Hampton area. Average winter energy consumption [3001 kilocalories per man-unit per day (kcal/m/d)], however, appears low and may have been problematic. Unlike Tuskegee, where farmers subsisted on just over 3000 kcal/m/d, Philadelphia had no dead season, only higher energy demands owing to the cold. There were other problems in urban areas. Rickets was a major problem in New York City, particularly among immigrants from the West Indies (29). Forman's data for near-destitute Washingtonians indicates little more dietary variety than Tuskegee's (24; see Table 1).

At the Institute for Colored Youth, variety was not an issue. During the month of October 1907, in the midst of an economy drive, the kitchen used nearly 100 different commodities. A typical week's menu listed approximately 70 different

dishes, many of them taken from Fannie Farmer's *Boston Cooking School Cook Book* (32).

Dirks & Duran placed the Institute for Colored Youth at one extreme on a folk-urban continuum (22). At the other extreme, "hog and hominy" diets ruled. Progressing toward the urban end, pork and corn gave way to beef and wheat. Sweet potatoes, however, held their own (22). They often came to the table as "sweet potato puffs" at the Institute for Colored Youth, but they rated as regulars nonetheless. In Philadelphia and Washington, where researchers looked at black and white families in similar circumstances, the presence of sweet potatoes on the table was distinctive.

Other Southern favorites appeared regularly on the tables of African Americans living in Philadelphia and Washington's slums. Pork sausage, bacon, rice, beans, and cabbage rated as core items. Ham, chicken, cornmeal, hominy, and peanuts were peripheral foods, but they were eaten less often, if at all, by poor whites.

Today, we think of such items as traditional soul foods. A century ago, however, most of them were far from prominent on African American tables, even in the rural South (22). Beans, for example, were all but absent from the dietaries of Tuskegee and Franklin County. The Tuskegee investigators counted cowpeas twice and rice just three times. Leafy greens such as collards and mustard were inventoried in only 25% of the households. One family in the Franklin County sample ate peas. None served rice. Chicken showed up in three of the Virginia dietaries and just twice in Tuskegee. Fieldworkers encountered no pork sausage at all around Tuskegee, and in Virginia, it was tallied only three times.

Location and season explain the spotty and fleeting appearance of some foods (22). In relatively isolated and self-sufficient Franklin County, for instance, nobody ate rice and beans, but around the market center of Hampton, people purchased rice and beans in considerable quantities. Meats as well as vegetables came and went with the seasons. Chicken, absent from Tuskegee households during the cold months, became an occasional part of the diet in the spring. Fresh pork appeared in 25% of the households in the winter but after that went entirely missing.

While some traditional foods may never have been as central to African American diets as one might think, others of unquestionable importance in the rural South were distinctly unpopular in the North. This was certainly the case with salted pork sides, bacon, and cornmeal. In Philadelphia, wheat flour cost less than cornmeal, and people could purchase fresh pork chops and shoulders daily in small quantities (alleviating any concern about preservation) for the same price as salt pork (22).

MOUNTAINEERS

The largest collection of early dietaries describing the food habits of Southern whites emerged from several years' research in the Appalachians. Wait produced 63 dietaries between 1901 and 1904, most of them recorded in two small communities near Knoxville, Tennessee (61). White added 11 more cases from Northeastern Georgia in 1903 (64).

Crooked Creek, located in the Chilhowie Mountains, was the more remote of the two communities Wait studied. Families lived in log cabins and produced most of their own food. Three-quarters of their diet consisted of cornmeal, wheat flour, and cured pork fat. Subtract the pork fat, and the diet was little else than grain and potatoes. Wait reported average total protein consumption barely above Tuskegee's [82 grams per man-unit per day (g/m/d)] and found suspected cases of malnutrition in nearly 60% of the 19 households he examined (61).

White found residence and subsistence patterns in the area he studied broadly similar to Crooked Creek's. His sample consisted of 11 families, mostly "poor whites" (64). His data, compiled from late summer through mid-winter, showed a 60% decline in the average fuel content of diets over that period. At 3557 kcals/m/d, the average daily winter intake was probably adequate, but for some households consumption dropped to little more than 2000 kcals/m/d. To make matters worse, winter dealt a sharp setback in protein nutrition (from 117 g/m/d to 84 g/m/d). This may help explain the high incidence of tuberculosis White noted.

To assess the food habits of the region's townspeople, Wait conducted dietaries in Maryville, Tennessee. At the time, it claimed a population of around 4000 people, many of them railway and factory hands (61). The core of their diet included the same foods prepared in Crooked Creek, but in addition, there was butter, buttermilk, granulated sugar, sweet potatoes, and cabbage. Folks also ate fresh beef, pork sausage, and beans, and occasionally they purchased canned vegetables and fruits.

Nutrition generally was not good, however. Nearly half of the families Wait studied failed to supply adequate nourishment to every member (61). The big issue was underweight children. Twenty-six families (60% of the sample) fell below the average level of energy intake (3662 kcals/m/d). Wait calculated that the average workingman required about 3500 kcals/d to keep healthy and hold his job, but 10 of the families averaged of less than 3000 kcals/m/d (61). Early spring was especially difficult, with average energy consumption dropping to just 3088 kcals/m/d from an autumn high of over 3900 kcals/m/d.

Besides their work among mountaineers, both Wait and White concerned themselves with eating habits of students and working-class whites (59, 60, 64). Between them, they produced four working-class dietaries (three from Knoxville and one from Athens). Meals featured the cured pork fat served in mountaineers' households, but in addition, they included a variety of meat and fish as well as eggs, milk, buttermilk, various grains, legumes, leafy vegetables, and fruits. Energy intake for winter and spring averaged 3865 kcals/m/d. Over half (52%) of this came from animal products. Nearly half (48%) derived from fats (compared to 30–32% for mountaineer households).

Dietaries carried out among students at the Universities of Tennessee and Georgia showed greater dietary variety and 20% less reliance on fats than in working-class families (59, 60, 64). Nonetheless, compared to mountaineers, students drew between 20 and 25% more of their energy from fats. Thus, it would appear that mountain folk, people who supposedly retained the "primitive diet"

of the South (61)—a diet believed to surpass the Eskimo's for all of its grease (1)—actually ate relatively little fat compared to town and gown.

MEXICAN AMERICANS

A chemistry professor at New Mexico's territorial college, A. Goss, submitted four dietaries from three Mexican American households for publication by the OES (26, 27). His original 1896 sample included one middle-class household situated in Las Cruces and two lower-class households located in a nearby *colonia* (26). Neither of these two households ingested a single gram of animal protein over the course of 14 days of observation. This prompted a restudy of one of the same households a year later (27). It revealed consumption of animal protein at a rate of 4 g/m/d, compared to 29 g/m/d for the middle-class Las Cruces household studied the year before.

Families of both classes ate meals structured around a common core: corn, wheat flour, beans, eggs, granulated sugar, potatoes, and chilies. Lard or "lard compound" was a core item as well, but meat products were peripheral. None of the families used dairy products. All told, animal products accounted for approximately 15% of the food budget in the *colonias*, 33% in the case of the middle-class household. The middle class enjoyed a somewhat more varied diet, but still the family ate just 7.5 different foods per week compared to 5 for the lower-class families.

On the subject of food variety, Bourke's paper on Mexican foods of the Rio Grande Valley contrasted sharply with Goss's (14). Intended as a comprehensive ethnological account, it contained everything from capsule descriptions of the 45 indigenous vegetables and fruits used in regional cuisine to notes on the 30 kinds of candy sold in a typical town. A list of foods a family might eat over the course of a normal day included 14 items. Goss's systematic record for a middle-class family, on the other hand, tallied just 15 items over a period of *two weeks*.

There is no telling what accounts for this difference. Bourke, who referred to Northern Mexico as well as the Rio Grande Valley in his title, had the wider scope. Possibly, he compressed observations of foods served over several days into a single day. Whatever the case, Bourke had little to say about households in the *colonias* where Goss counted as few as eight foods served over 14 days. Bourke's paper is about variety, but the impression it leaves is one of plenty. Goss's research mitigates that impression, and in so doing, it demonstrates the value of early dietaries from the standpoint of social and cultural history.

POOR URBAN AND IMMIGRANT HOUSEHOLDS

Early studies of food consumption (including cost-of-living studies) in poor white and minority urban households (other than African American) took place in Chicago, Cleveland, Hartford, Long Beach, New York City, Philadelphia,

Pittsburgh, San Francisco, and Washington, D.C. (5–7, 9, 10, 16, 24, 33, 49, 53). With the exception of Sherman & Gillette's aggregated data (53), these materials can be grouped for discussion purposes into two broad categories: investigations focusing on American-born poor and research involving various immigrants.

American-Born Poor

Richards & Shapleigh's Chicago studies and Atwater's New York City materials are the principal sources of information about the diets of America's native-born urban poor (7, 9, 49). Atwater brought dietary research to New York with the promise of investigating prices, weights, and nutritional values. He left with data for 58 households, 27 of them native-born. Richards & Shapleigh's work yielded 31 dietaries, 7 from all-American households. The Chicago households appeared generally better nourished than those in New York did, perhaps because of the biased selection of subjects referred to earlier.

The New York data, which are distributed across all four seasons, indicate the urban poor, like their rural counterparts, experienced sharp nutritional ups and downs over the course of a year. From a high of 3175 kcals/m/d in the fall, average energy intake plummeted to just 2461 kcals/m/d in the winter, a figure well under the winter "dead season" average for Tuskegee (see Table 1). Average energy intake rebounded in the spring to 2733 kcals/m/d and continued to increase through the summer. Average intakes of fat and animal carbohydrates followed the same pattern. Total protein intake was nearly constant from spring through fall with averages between 100 and 106 g/m/d. However, the average dropped to a mere 87 g/m/d in winter.

Households in more comfortable circumstances did not experience such strong seasonal fluctuations. This becomes evident from an examination of 14 dietaries conducted in "professional households." These included the households of experiment station chemists, university professors, and others located in various places in the East and Midwest, including Burlington, Vermont; Chicago; Lafayette, Indiana; Middletown, Connecticut; New York City; Pittsburgh; and Urbana, Illinois (6, 9, 10, 28, 30, 57, 65). Their dietaries taken together represent consumption patterns from fall through spring. The range of variation across seasons in the average intake of both animal and total protein was just 3 g/m/d. Average energy values range from an autumn high of 3430 kcals/m/d to a spring low of 3332 kcals/m/d—a difference of less than 100 kcals/m/d. Comparing the average contents of diets consumed in professional households to the averages for poor families shows that relatively small differences in average protein, fat, and energy values in the fall became major differences during the winter. Among poor New Yorkers, a precipitous decline in the consumption of animal fat (from 115 g/m/d to 73 g/m/d) accounts for most of the drop-off in average energy consumption. In professional households, the consumption of animal fat increased from fall to winter (119 g/m/d to 134 g/m/d), helping maintain average energy intake at a relatively constant level.

Immigrants

Early nutritionists took great interest in the eating habits of immigrants. Over 30 percent of the Atwater-era dietaries dealt with groups that originated abroad. Almost without exception, these were French-Canadian and European families. The Eastern rice traditions found representation in a series of just three dietaries meant to gauge the consumption patterns of Chinese Americans under conditions of light, moderate, and heavy work (33). The Exclusion Act of 1882 had closed the door to Chinese immigration. However, the door remained open to Irishmen, Italians, Jews, and others regarded by many as only slightly less threatening to American institutions. In the political climate of the day, the OES would have been considered remiss had it not investigated immigrant food habits, found mistaken practices (such as the Italian habit of eating too many expensive vegetables), and recommended corrective measures.

French Canadians

Food consumption studies in the United States began with an initiative by the Massachusetts Bureau of Statistics of Labor to acquire information about the living conditions of workers throughout the state (2, 67). The bureau assembled information about French-Canadian immigrants during the course of its inquiry and promptly turned the food consumption data over to Atwater for analysis.

He detected a number of patterns. To begin with, French Canadians in Massachusetts generally spent more money for food than their counterparts in Quebec. They also took in an average of 28% more energy and 32% more protein, due largely to a higher consumption of meat and dairy products. Still, their meat and dairy consumption and protein intake fell short of state averages for other laborers. Atwater explained this in terms of income differences and proposed a general law: "... the total amount of food ... more especially, the amount of meat and other animal food consumed increases with the revenue of the consumer" (2). European data at the time suggested as much, and later research on European immigrants would corroborate the pattern.

French-Canadian immigrants exceeded Massachusetts's averages for fat and energy consumption. Intake of total fat nearly doubled the average for Quebec. It more than doubled the average intake of animal fat. In both Massachusetts and Chicago, where a total of six French-Canadian dietaries were recorded, an average of over 40% of immigrants' energy came from fats, almost all of it from animal sources (6, 49). The proportion reached 44% in Maine among mainly French-Canadian lumbermen (66). No other immigrant group came close to this level of dependence on fat as a source of energy.

Europeans

During the Atwater Era, investigators published 110 studies of food consumption in European immigrant households. These included 24 studies of German

households (3 Jewish), 23 Bohemian households, 19 Irish, 18 Russian (16 Jewish), 9 Italian, 5 British (4 English, 1 Scottish), 2 Polish, 2 Swedish, and 1 each Austrian, Hungarian, Romanian (Jewish), and Swiss. Investigators also tabulated consumption in several households of mixed or unspecified European nationality and for several American-born families retaining European ethnic identities (3 Bohemian American, 5 German American, 5 Irish American). These, together with dietaries from immigrant-sending countries, permit a diachronic perspective on late nineteenth- and early twentieth-century food habits and some insight into the process of their Americanization.

Judging from food inventories of nationalities represented by at least five dietaries, European immigrant diets shared a generic core. Diets consisted of various cuts of fresh beef, cow's milk, hens' eggs, wheat flour, wheat bread, butter, granulated sugar, white potatoes, and onions. Beef, milk, eggs, sugar, potatoes, and onions ranked as primary core items across the board. Butter was a secondary food for Italians. Wheat flour was secondary among Irishmen, and wheat bread ranked behind rye in Bohemian households.

Several other foods came close to having universal importance. Fresh pork and lard were core items for everyone but Jews. They also rejected ham. Italians relegated it to a peripheral position in their diets, but other groups made ham a core food. Fresh fish was a core food for everyone except Bohemians. Similarly, beef fat, mutton, aged cheese, rice, and cabbage were almost universals, occupying at least a peripheral place in six out of the seven best-documented immigrant diets of the day. Table 2 reports the average nutritional contents of these diets.

Of the European immigrants studied by early nutritionists, Russian Jews had the most unusual diet. In Chicago during the spring and fall of 1895, fieldworkers collected data from both Orthodox and "Liberal" households whose members did not submit to Jewish dietary laws (6). Most families had immigrated within the previous five years. The Orthodox appeared exceedingly poor. The condition of the Liberal families was generally better.

Average nutritional values in both groups, as shown in Table 2, tended to be extreme. Neither consumed much fat compared to other immigrants. Neither depended as much on animal foods as sources of energy. Beyond that, Orthodox and Liberal households parted company. The former ate relatively small quantities of meat and dairy products (an average of 661 g/m/d) while the latter consumed relatively large amounts (968 g/m/d). Chapin, comparing eight ethnic groups in New York City, found Russians spent relatively little on food (16). However, on average they spent more of their food budget on meat and fish than any other nationality (also see Table 2). The Chicago dietaries showed that Liberal Russian Jews consumed on average more food from animals by weight (968 g/m/d) than vegetable (914 g/m/d). Protein intake from animal sources averaged 27 g/m/d more than the average for European immigrants overall.

Chicago's Bohemians spent approximately the same portion of their food dollars on meat and dairy products as Russian Jews (see Table 2). Bohemians too

TABLE 2 Average values for various European immigrant diets

Nationality	Animal protein (g/m/d) ^a	Animal fats (g/m/d)	Animal cho (g/m/d)	%Food budget animal	Dietary variety (max. foods/wk)
Russian Orthodox Jewish	71	80	12	66	22
Russian Liberal Jewish	96	96	19	68	23
British	78	136	15	60	22
Bohemian	87	120	22	67	31
German	63	102	19	62	32
Irish	74	126	14	62	30
Italian	57	111	11	50	27

Nationality	Total protein (g/m/d)	Total fat (g/m/d)	Total energy (kcal/m/d) ^b	% Energy animal	% Energy fats
Russian Orthodox Jewish	121	87	2988	36	26
Russian Liberal Jewish	153	106	3373	40	28
British	133	147	3767	43	32
Bohemian	138	127	3553	44	32
German	112	114	3047	42	34
Irish	117	137	3404	45	36
Italian	112	125	3120	42	36

^ag/m/d, grams per man-unit per day.^bkcal/m/d, kilocalories per man-unit per day.

ate more meat and dairy foods by weight than vegetables and fruits. Animal products generally contributed 44% of the average energy intake. Table 3, which lists the average nutritional contents by length of residence in the United States, shows that the contribution of animal products to energy increased to nearly 50% among immigrants in residence for more than 10 years. The average exceeded 50% among the offspring of immigrants. The consumption of milk and other dairy items remained relatively constant as the barely changing values for animal carbohydrates suggest. Otherwise, Americanization among Bohemians entailed higher values across the board. Regrettably, the attention Atwater & Bryant paid to the immigration dates of their Bohemian subjects did not extend to other nationalities (6).

TABLE 3 Average values for Bohemian diets by length of residence in the United States

Length of residence	Animal protein (g/m/d) ^a	Animal fats (g/m/d)	Animal cho (g/m/d)	%Food budget animal	Dietary variety (foods/man/day)
<10 years	78	112	22	67	2.8
>10 years	96	133	23	67	3.5
Since birth	115	171	23	57	4.2

Length of residence	Total protein (g/m/d)	Total fats (g/m/d)	Total energy (kcal/m/d) ^b	% Energy animal	% Energy fats
<10 years	128	119	3469	42	31
>10 years	150	139	3706	48	34
Since birth	175	181	4160	52	39

^ag/m/d, grams per man-unit per day.

^bkcal/m/d, kilocalories per man-unit per day.

There are, however, data for second-generation German American and Irish American households (6, 49). Among second-generation Irish households, the intake of carbohydrates from animal sources increased with dairy consumption while fat intake decreased with the purchase of better quality meats. Average protein and energy intakes increased over the previous generation. Among Germans, averages for protein, fat, and energy exceed those of the first generation. The consumption of animal carbohydrates, on the other hand, declined.

Dietaries recorded in Germany and summarized by Atwater offer baselines from which to gauge the initial changes immigrants experienced (3). These could be drastic, particularly for the sorts of agricultural and industrial laborers who made up the bulk of the immigrant flow. In the Zittau region of Saxony, for example, the typical "potato diet" of 52 households yielded an average of 2594 kcal/m/d. Small amounts of milk and cheese were daily fare (except in winter), but people ate meat on Sunday only. Protein intake averaged 65 g/m/d. A broader average for Saxon workers was only slightly higher (69 g/m/d). By comparison, average protein consumption among German immigrants reached 112 g/m/d, 70% more than the Zittau average. German immigrants in the United States drew an average of 34% of their energy from fat, more than twice the average for Zittau.

The picture, it would appear, was the same for other immigrants. Compared to the diets of poor working-class families in York and Edinburgh, the diets of British families studied in the United States averaged as much as 50% more protein and 67% more fat (see 45, 52). If one takes Neapolitan mechanics as a rough baseline for measuring change for Italian immigrants, average protein intake increased by 60% and fat consumption by over 200% (see 3).

DISCUSSION

Any science as it was practiced a century ago appears crude and in some respects backward, and early dietary studies are no exception. Knowledge of food composition was incomplete. Stitt recalculated early dietaries using current knowledge (56), but historical changes, especially in the mineral content of vegetables and fruits, cast doubt on the utility of this exercise (40). Studies focused on families and other groups as units of observation and relied on arbitrary man-units for analytic purposes. Dietary research did not touch most parts of the country. Investigators knew nothing about sampling and worked intensively with few subjects selected opportunistically. Whether a group chosen for study represented a population's central tendencies was a matter of impression.

On the positive side, Atwater and his colleagues went to considerable lengths to base their work on well-informed impressions. They consulted with people who "knew the territory." They drew on experience when it came to fieldwork, and they conducted it in economically and culturally diverse settings. The number of cases studied was small, but the overriding concern was for careful and systematic measurement.

That concern from the standpoint of history makes issues like rural-versus-urban nutrition more than a matter of nominal differences. Before Atwater, there are narratives to suggest that African Americans living in Black Belt communities like Tuskegee were poorly nourished, but with the advent of dietaries the magnitude of their plight becomes apparent. Tenant farming in Alabama meant consuming half as much protein as in Virginia. It entailed eating one-sixth the number of foods obtained by a poor blacks in Philadelphia and almost no carbohydrates derived from animal products, a considerable source of nourishment in Philadelphia and especially important at the Institute for Colored Youth (see Table 1). With their systematic lists of commodities and prices, dietaries offer grounds for explaining such discontinuities. Why, for example, was a traditional Southern food like cornbread largely absent from African American tables in the North? Poe suggested a desire to appear respectable as motive (47), but a comparison of costs explains it in economic terms (22). One can test the hypothesis that the Great Migration later increased black populations in the North to the point that supplying traditional Southern foods at popular prices became feasible.

There remains much to be learned from early dietaries relating to seasonality and class inequities. What is evident at this point is that seasonal hunger a century ago was not confined to the Deep South. It evidently afflicted towns like Maryville and the tenements of New York City. The difference between being relatively affluent and frankly poor from a nutritional standpoint was most palpable from the onset of winter through early spring. This, of course, is not to say that there were no differences in quality of diet at other times, only that from the perspective of early dietaries families of professionals did not experience the annual nutritional roller coaster endured by the poor.

Nutritional changes affecting late nineteenth and early twentieth century immigrants can be inferred by comparing dietaries from immigrant-sending countries and first- and second-generation households in the United States. On average, immigrants consumed substantially more protein, fat, and energy than their counterparts in Europe and Quebec did, and there is one set of data to suggest that protein, fat, and energy intakes increased with length of residence in the United States. Households founded by the children of immigrants seem to have pushed averages higher as well. Did these increases take place within the bounds of ethnically distinctive consumption patterns or did they occur as traditional patterns began breaking down? Close comparisons of patterns of commodity usage may suggest an answer.

Early dietaries provide baselines for studies of long-term change. Looking beyond the Atwater era, World War I had major effects on food consumption, and the Great Depression brought on stark crises (36). Comparing patterns represented in the dietaries discussed here to those that developed in the 1920s and 1930s can reveal how the diets of particular groups were affected by the events of those years. In the case of African Americans, for example, studies conducted in rural areas of Alabama, Mississippi, South Carolina, Texas, and several major cities should make it possible to trace continuities and changes from the late nineteenth century through the Great Depression and into the early years of the Great Migration northward (12, 17–19, 43, 44, 55, 63). Indeed, taking the entire run of African American food consumption studies from Tuskegee to the present carries us through the entire nutritional transition recently described by Luke et al. (38; also see 34, 35). Crooked Creek, by virtue of a diet nearly identical to pioneer days (61; also see 39), very likely represents a white counterpart to Tuskegee in the nutritional transition of the Upland South.

The dietaries conducted at Tuskegee, Crooked Creek, and elsewhere documented largely pre-industrial patterns of food consumption. Judging from conventional historical sources, these patterns were nearly identical to what a fieldworker might have witnessed many years before. Here nutritional history fades into culinary history but not without exciting possibilities for dialogue. A fine but as yet unrealized example can be found in a recent study of the Five Points neighborhood in New York City (68). Historical archaeologists, excavating the remains of this once notorious slum, unearthed and analyzed 65,000 animal bones; 212,453 seeds, husks, and other plant remains; and 103 fragments of condiment containers and serving pieces (13, 41, 42, 48). These remains and others provide evidence of food habits from colonial times to Atwater's day, and help create a surprising detailed portrait of a changing, multicultural urban neighborhood.

The Five Points archaeologists made considerable use of primary historical documents, including Riis's eyewitness accounts and photographs of tenement life (50, 51). At about the same time Riis was depicting tenement life, Delaney was a few blocks away collecting nutritional data for Atwater and the OES. Regrettably, this work did not come to the attention of the Five Points archaeologists. It could

hardly have been otherwise given the obscurity of the OES bulletins (7, 9). In any event, the data they contain now stand central to an as-yet unwritten local history of food and nutrition with national implications spanning well over 200 years. Because of the rich literature dealing with the cultural history and historical archaeology of slavery (see 54), the early African American dietaries are in much the same position.

CONCLUSION

Previous retrospectives looking at early twentieth century diet and nutrition have described historical trends in nutrition. Stitt, relying exclusively on dietary data for whites, and Welsh & Marston, using national food supply estimates, found that modern Americans consume more food energy than in the past (56, 62). Both studies also discovered that people 100 years ago consumed a smaller proportion of energy from fats, a larger proportion of energy from carbohydrates, and about the same to slightly less protein. This review suggests that we can do more with early dietaries than compare their averages to those at later points in time. There are essential distinctions to be made between economic classes and cultural groups, and important questions to ask about the development of specific diets and the processes involved. The pluralistic, multicultural perspective that Atwater and his colleagues developed set the stage for a history of American food habits and nutrition more sophisticated than has been realized to date.

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CONTENTS

FRONTISPIECE— <i>Frank Chytil</i>	xiv
ROUGH AND ROCKY ROAD TO THE RETINOID REVOLUTION, <i>Frank Chytil</i>	1
MECHANISM AND REGULATION OF SELENOPROTEIN SYNTHESIS, <i>Donna M. Driscoll and Paul R. Copeland</i>	17
IRON STATUS AND NEURAL FUNCTIONING, <i>John L. Beard and James R. Connor</i>	41
INSIGHTS INTO THE PATHOGENESIS OF GALACTOSEMIA, <i>Nancy D. Leslie</i>	59
DIET AND NUTRITION IN POOR AND MINORITY COMMUNITIES IN THE UNITED STATES 100 YEARS AGO, <i>Robert Dirks</i>	81
DIFFERENT APPROACHES TO DEFINE INDIVIDUAL AMINO ACID REQUIREMENTS, <i>Paul B. Pencharz and Ronald O. Ball</i>	101
VITAMIN D AND ITS ANALOGS AS REGULATORS OF IMMUNE ACTIVATION AND ANTIGEN PRESENTATION, <i>Matthew D. Griffin, Nianzeng Xing, and Rajiv Kumar</i>	117
NUTRITION AND PREVENTION OF TYPE 2 DIABETES, <i>T. Costacou and E.J. Mayer-Davis</i>	147
BIOLOGIC MECHANISMS OF THE PROTECTIVE ROLE OF LUTEIN AND ZEAXANTHIN IN THE EYE, <i>Norman I. Krinsky, John T. Landrum, and Richard A. Bone</i>	171
NUTRITIONAL REGULATION OF MILK FAT SYNTHESIS, <i>Dale E. Bauman and J. Mikko Griinari</i>	203
TROPHIC AND CYTOPROTECTIVE NUTRITION FOR INTESTINAL ADAPTATION, MUCOSAL REPAIR, AND BARRIER FUNCTION, <i>Thomas R. Ziegler, Mary E. Evans, Concepción Fernández-Estívariz, and Dean P. Jones</i>	229
NUTRITION IN THE PERIOPERATIVE PATIENT, <i>Lyn Howard and Christopher Ashley</i>	263
PHYSIOLOGY AND MOLECULAR BIOLOGY OF DIETARY IRON ABSORPTION, <i>Silvia Miret, Robert J. Simpson, and Andrew T. McKie</i>	283

GUGULIPID: A NATURAL CHOLESTEROL-LOWERING AGENT, <i>Nancy L. Urizar and David D. Moore</i>	303
CHALLENGES AND APPROACHES TO REDUCING FOODBORNE ILLNESS, <i>Catherine E. Woteki and Brian D. Kineman</i>	315
DIETARY, EVOLUTIONARY, AND MODERNIZING INFLUENCES ON THE PREVALENCE OF TYPE 2 DIABETES, <i>Leslie Sue Lieberman</i>	345
IN VIVO MEASUREMENT OF FLUXES THROUGH METABOLIC PATHWAYS: THE MISSING LINK IN FUNCTIONAL GENOMICS AND PHARMACEUTICAL RESEARCH, <i>Marc K. Hellerstein</i>	379
COMMON ENDOCRINE CONTROL OF BODY WEIGHT, REPRODUCTION, AND BONE MASS, <i>Shu Takeda, Florent Eleftheriou, and Gerard Karsenty</i>	403
INDEXES	
Subject Index	413
Cumulative Index of Contributing Authors, Volumes 19–23	433
Cumulative Index of Chapter Titles, Volumes 19–23	436
ERRATA	
An online log of corrections to <i>Annual Review of Nutrition</i> chapters (if any, 1997 to the present) may be found at http://nutr.annualreviews.org/	