ASPECTS
NEWFOUNDLAND AND LABRADOR HISTORICAL SOCIETY

MALNUTRITION RESEARCH IN NEWFOUNDLAND AND LABRADOR IN THE 1900S TO 1930S: Brown flour and the "dole plague" of beriberi

PART I: THE FIRST MALNUTRITION RESEARCH WAVE, 1900s-1930s

BY DR JIM CONNOR

BECAUSE OF NEWFOUNDLAND'S GEOGRAPHICAL LOCATION, AND ITS CULTURAL AND POLITICAL DEVELOPMENT, ANY DISCUSSION OF NUTRITION AND DEFICIENCY DISEASES NEEDS TO BE GROUNDED IN A BROAD HISTORIOGRAPHICAL CONTEXT. THIS ARTICLE ARGUES THAT WHATEVER BENEFITS MIGHT HAVE ACCRUED TO THE LOCAL POPULATION THROUGH THE RESEARCH UNDERTAKEN ON MALNUTRITION, THE RESEARCHERS THEMSELVES OFTEN HAD THEIR OWN AGENDAS. OFTEN, TOO, THE OVERLY GENERALIZED CONCLUSIONS OF THIS RESEARCH PROVOKED OPPOSITION AMONG SEGMENTS OF THE NEWFOUNDLAND POPULATION AS IT CAST THEM IN A BAD LIGHT. NONE OF THESE HIGHLY LOCALISED SURVEYS WERE EXHAUSTIVE, COMPREHENSIVE, OR "NATIONAL" IN SCOPE, BUT THE LIMITED STATISTICAL DATA OBTAINED FROM THEM WERE TYPICALLY PRESENTED AS BEING INDICATIVE OF THE WHOLE OF THE POPULATION OF NEWFOUNDLAND AND LABRADOR. CONCOMITANTLY, THIS DISCUSSION CHALLENGES THE PERSISTENT BELIEF THAT MALNUTRITION WAS WIDESPREAD – AN OUTCOME OF SUCH OVERGENERALIZATIONS AND ONE THAT WAS FURTHER ENCOURAGED BY JOSEPH SMALLWOOD'S POPULIST POLITICAL AGENDA IN THE CONFEDERATION DEBATE OF THE 1940S.

Historians of the British imperial world recognize the importance of malnutrition during the late decades of the 19th and early decades of the 20th centuries.[1] Josep Barona has also made clear during the interwar years, nutrition and public health became a major concern for European countries as knowledge based on laboratory science and that derived from population surveys coalesced. The poor nutritional status and monotonous dietaries of people, particularly those residing in rural communities, became clearer.[2] Other historians underscore the internationalism and maturation of nutrition studies, noting that in the 1940s this science had its own professional societies, scholarly journals, and academic courses; thus it became "consolidated as a discipline in its own right."[3]

These themes are deftly woven together in Anne Hardy's comprehensive study of beriberi, vitamin deficiency, and world food policy from 1925 to 1970. She also focused on the central research and policy tension predominating during the 1940s: whether the solution to malnutrition was technical (eg vitamin-enriched

foods), or structural (eg socio-economic planning). In her analysis of the career of Wallace Aykroyd, who would head the United Nations Food and Agriculture Organisation (FAO), and who favoured a structuralist solution, Hardy shows how this influential Anglo-Irish nutritionist's 1928 MD thesis – "a small masterpiece of epidemiological observation and analysis" – would shape "his approach to health and nutrition [and] became influential in shaping international approaches to nutritional problems." Even more pertinent to this discussion was the fact that all his seminal research work on nutrition and deficiency diseases was undertaken by Aykroyd while he was a physician in Newfoundland and Labrador in the 1920s.[4]

Aykroyd was only one of a long line of international researchers who conducted nutritional research in Newfoundland and Labrador during the first half of the 20th century. The role of this research by American, British, and Canadian workers and its impact as "scientific" ammunition beyond Newfoundland has as yet been underappreciated. Historical examination of malnutrition in Newfoundland has been largely ignored by Canadianists, which although explicable by the fact that the research studies discussed here were pursued before Newfoundland came under Canadian political jurisdiction, remains an oversight.[5] Newfoundland scholars have addressed the matter of malnutrition, but their publications often lack engagement with the history of medicine and focus on issues of local concern. James Overton's study of brown flour and beriberi, in which he connects this food with political protests over government relief measures to combat malnutrition during the Depression, is important, but aspects of it need to be reinterpreted.[6] Linda Kealey and Seantel Anaïs have both addressed malnutrition within the broader topic of food security. The former's study provides an excellent, but brief, overview of various nutrition surveys undertaken in Newfoundland as well as the government's responses to them, as prologue to an analysis of women's roles in changing dietary practices up to the 1990s. The latter offers a comparison of "periods of economic turmoil" such as the 1930s and the 1990s (after the collapse of the cod fishery and subsequent federally imposed fishing moratorium) with respect to government's requests that people "take responsibility" to avoid food insecurity through "self-help" (the Great Depression) and the "informal economy" (the 1990s). Maura Hanrahan's study of changing dietary food ways of Indigenous populations in Labrador does not deal with malnutrition per se, but the shift away from traditional

foods that were hunted and gathered to "store bought" items. This transformation has led to significant ill-health amongst these peoples.[7] Most recently, Eric Strikwerda analyzed selected early 20th-century nutrition surveys in Newfoundland and Labrador while concentrating on mid-century surveys and their relationship to Confederation.[8]

LET THE "SPRING COME, THE ICE BREAK UP, AND A MORE VARIED DIET BE TAKEN"

During the first decades of the 20th century the discovery of "vitamines" and their role in the maintenance of good health resulted in diseases connected to diet becoming better understood. Beriberi and scurvy were perceived not as the result of bacterial infections, but effects of nutritional deficiencies: animals and humans alike could be spared from such diseases if fed a complete diet containing what would be later called vitamins A, B, C, etc. Illustrative of medical thought and practice in Newfoundland during the pre-vitamin era is an account by Newfoundlander Dr Cluny Macpherson, who trained at McGill University. Around 1903-04, Macpherson treated four Norwegian fishermen suffering from weakness and paralysis of the legs who had put into port at Battle Harbour, Labrador, the location of a small hospital operated by the Royal National Mission to Deep Sea Fishermen (RNMDSF). As Macpherson suspected beriberi, which he believed to be infectious, he placed the men in isolation. One of the men subsequently died. When informing Dr Wilfred Grenfell (the mission superintendent) and another medical colleague about his diagnosis, they broke into laughter as they believed that

beriberi could only be contracted in tropical zones such as Japan or Malaya. The surviving Norwegians were transferred to hospital in St John's where Macpherson's diagnosis of beriberi was confirmed; an autopsy of the deceased sailor further supported his diagnosis.[9]

Roughly ten years after Macpherson's clinical encounter, research published by the Harvard-trained physician John M Little of the RNMDSF's main hospital in St Anthony made clear how the understanding of beriberi was evolving, and how this new knowledge affected medical practice in Newfoundland's northern coastal communities. Little noted that recent research on diet, especially an overdependence on polished white rice as a staple food, pointed to its true causation. But Little cautioned that white rice must not be singled out as *the* cause, because based on his five years' experience in a "wheat-eating country [ie Newfoundland and Labrador] … beriberi is fairly common." In particular, at mid-winter and in early spring when fisher families might subsist only on tea and bread made from fine white flour owing to a paucity of other foods (such as game, vegetables, or berries), Little would start to treat "functional nervous troubles which are the prodromal stage of beriberi"; but let the "spring come, the ice break up, and a more varied diet be taken, and they disappear." If it was a bad case, Little would prescribe a diet of whole-wheat flour, peas, and beans, which allowed the patient to recover in two months. Although Little looked forward to the day when the "wanting ingredient of the diet would be isolated and possibly put on the market in easily handled forms," in the meantime he wished families, sailors, and ship-owners to appreciate the need for a varied diet, which included whole-wheat flour.[10]

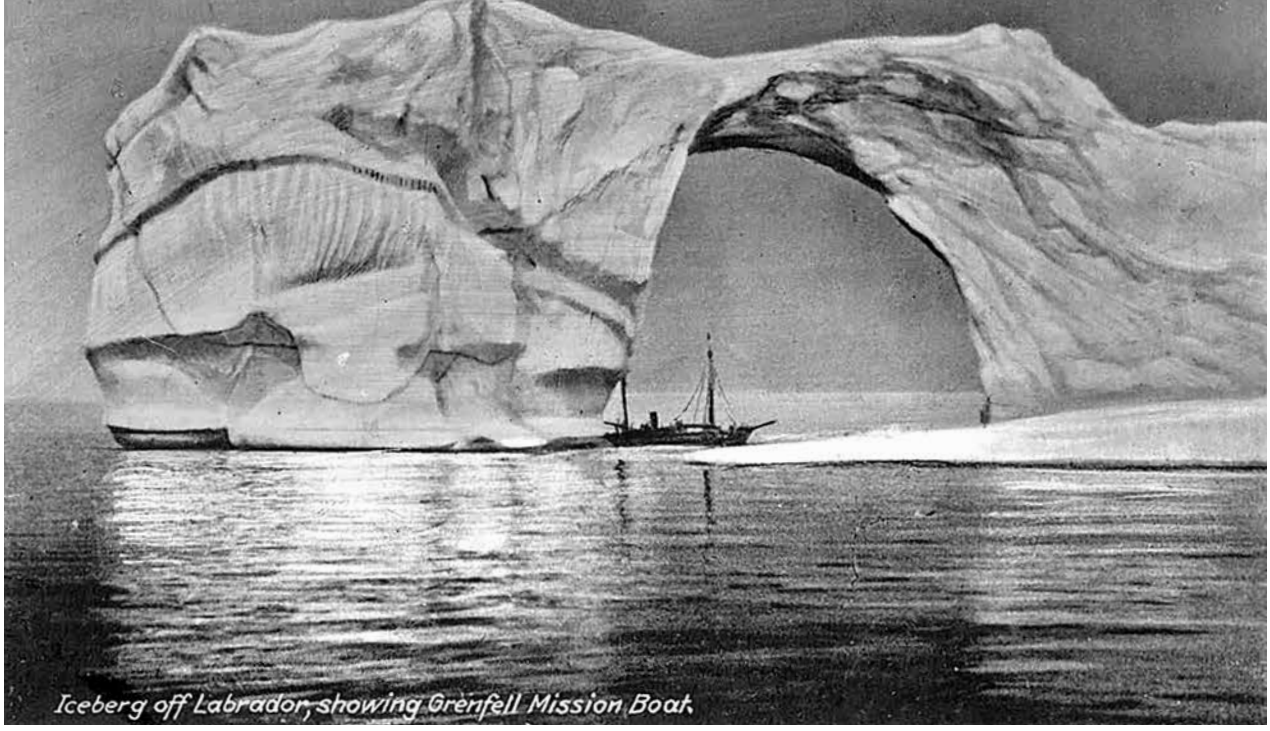
Augmenting Little's knowledge of beriberi was that of Dr George W Corner, who wrote about his experience of it in Labrador. In 1914 Corner was a newly minted Johns Hopkins medical graduate who had spent the summers of 1912 and 1913 as a volunteer medical assistant at Battle Harbour. He estimated that about 12 per cent of admissions to that hospital were due to beriberi, which he attributed to a diet consisting of "largely, sometimes entirely, of tea and bleached white flour. This diet lacks the same substance which is wanting in polished rice, and which seems to be present in the rice and wheat husks, in fresh meat, and in many vegetables.

"A fairly well-off family in the Strait of Belle Isle failed to get their winter supplies, owing to an early freeze-up," Corner recalled, "and had to subsist through the dead of winter on a few barrels of flour and a little tea; they had absolutely nothing else, not even sugar. At the end of February four of them were attacked by the paralysis of beriberi. In March they got some fresh game, and immediately began to improve, but one of the boys will not walk again." Although Corner displayed his understanding of the clinical etiology of diseases due to malnutrition, he also ventured a more critical social explanation for them: "The vexing and yet hopeful side of this matter is that in most cases the faulty diet is not due to forced starvation, but to ignorance of the people as to how to lay out their resources for proper food."[11]

Aggravating this situation was the "prejudice against dark flour," which Corner believed "to have arisen in days when darkness meant dirt, but at present it causes useless expense for bleached flour and aids the spread of beriberi."[12] Such observations throw into relief the notion that deficiency diseases such as beriberi were locally preventable; indeed, implicit in Corner's critique is that sufferers of such conditions had some personal responsibility for the situation in which they found themselves. Conclusions of several nutrition researchers in the decades after Corner followed similar lines.

"A FAIRLY WELL-OFF FAMILY FAILED TO GET THEIR WINTER SUPPLIES AND HAD TO SUBSIST ON A FEW BARRELS OF FLOUR AND A LITTLE TEA."

Further complicating the matter of understanding the healthfulness of brown flour was its advocacy in connection to anti-tuberculosis campaigns. English physician Dr Arthur W Wakefield, who was associated with Grenfell and his Labrador Medical Mission and who also worked for the Association for the Prevention of Consumption in St John's, wrote in 1911 that "[a]t present the staple dietary of the poorer classes consists almost entirely of 'loaf,' tea and molasses. The 'loaf' is made from the whitest of white (and therefore presumably bleached) flour, containing little but starch. We shall advocate the use of the wholesome, old- fashioned, protein, fat, and phosphate-containing, whole meal flour. We shall also recommend a more varied diet, including large quantities of beans, peas, lentils, rice, oatmeal, etc. All this will cost even less than the present insipid white flour, and will contain very many times more nourishment."



The following year, Wakefield's wife, Marjorie, reported that during the winter two nurses "have been at work in St John's. There are many families on our city visiting list, nearly all of whom belong to the poorest class. We have been advocating the use of the nutritious whole wheat bread, to replace the ordinary white bread which contains very little nourishment. One of our enterprising nurses has got under way a modest bakery, where at the same price as white bread the consumptive patients can procure whole wheat bread. I am glad to report that the venture has proved a decided success."[13] How long-lived this "decided success" lasted is unknown, but perhaps among some people the fear of contracting tuberculosis was greater than that of developing beriberi. Regardless, the conflation of items such as detrimental white flour, beneficial brown flour, a varied and nourishing diet, and tuberculosis highlight the interconnectedness of nutrition and infectious disease, which would be a theme continually explored and exploited in the decades to follow.

Yet more American physicians, and others interested in nutrition, undertook informal surveys of children's health in northern regions now under the auspices of the International Grenfell Association (IGA). In one project, children who were deemed to be "undernourished" were fed more nutritious meals and educated about the tenets of good health. In so doing, local cultural food prejudices had to be overcome: "Children who at the beginning of the summer," wrote one nutrition teacher, "had refused 'lettuce,' calling it 'hay,' and whole wheat bread because it was 'only fit for animals,' at the end of the summer enjoyed both." These programmes also encouraged agricultural reforms such as growing vegetable gardens and raising goats for their milk, for the "children of white races need milk" the same nutritionist noted.[14]

Collectively, the nutrition studies show that the routine diet of fisher families was less than ideal and contributed to poor nutrition generally, while at certain times of the year (usually spring), and in some families in some communities, deficiency diseases such as beriberi were recorded. Yet other than the frequently reported complaint of constipation, people seem to otherwise function adequately. These studies also showed that education and training in better eating habits could have a beneficial effect; in extreme cases of malnutrition the administration of corrective diets under medical supervision was highly therapeutic and able to reverse disease. But such studies were neither scientifically systematic nor exhaustive; at best their results remained suggestive only. The research of Wallace Ruddell Aykroyd (1899-1979), however, brought new rigour to the examination of deficiency diseases in Newfoundland.

POVERTY, CLIMATE, & THE SOCIAL DETERMINANTS OF HEALTH

As already noted, Aykroyd's early publications were based on his Newfoundland field studies of beriberi. This work led to an appointment at London's Lister Institute, and then in 1931 to the Health Section of the League of Nations as its first international nutrition

worker. Later, when Head of the FAO, Aykroyd undertook further nutritional research in Newfoundland to buttress his contention that malnutrition was less a medical problem and more one of politics and economics. In brief, Aykroyd became one of the most influential international nutritionists in the 20th century.[15]

But work done for his 1928 MD thesis while a House Surgeon in the General Hospital in the capital city of St John's distinguished Aykroyd. This examination of beriberi and other food-deficiency diseases displayed Aykroyd's clinical acumen, and his skills as an epidemiologist, as a nutritionist, and even as an anthropologist cum historian.[16] Driving his discussion is what would now be termed his commitment to the social determinants of health, rather than a purely reductionist biomedical approach to explain disease. Thus beriberi was the indirect result of "poverty and the difficulties, due to hard climate, which attend the productions and transport of foodstuffs." Preventing this disease was an "economic rather than a medical problem."[17] Aykroyd's chart review of 174 cases of beriberi admitted to the hospital in St Anthony from 1912 to 1928 revealed that it was primarily a deficiency disease of adult men (80 per cent of all cases recorded), which he attributed to their continual exhausting outdoor manual labours. This survey also revealed that scurvy was occasionally encountered, but severe forms of this disease were of "comparative rareness." Similarly, rickets was not a serious problem. Dental caries was widespread; occasional cases of night-blindness, too, were recorded. Against this background, then, it was beriberi that stood out as the primary deficiency disease. Yet despite all this, Aykroyd concluded that such ailments and poor diet did "not appear to affect the general incidence of disease in any obvious manner."[18]

Aykroyd saw great merit in educating people on how to develop small-scale agricultural practices such as raising livestock and growing more vegetables. He was equally clear about the futility of altering food habits of local residents, such as replacing the entrenched use of white flour for baking with whole wheat (brown) flour: he stated unequivocally that such an action "may be put outside the sphere of practical politics." To buttress this assertion Aykroyd noted how 15 years of advocacy by the IGA about brown flour had produced "no effect" on peoples' eating preferences; also how brown flour deteriorated when stored long-term, which was necessary over the winter period.[19] NQ

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1 Marilyn Little, "Imperialism, Colonialism and the New Science of Nutrition: The Tanganyika Experience, 1925-1945," *Social Science and Medicine* 32 (1991): 11-14; Michael Worboys, "The Discovery of Colonial Malnutrition Between the Wars," in David Arnold, ed *Imperial Medicine and Indigenous Societies* (Manchester: Manchester University Press, 1998): 108-25; and David Arnold, "British India and the 'Beriberi Problem'," *Medical History* 54 (2010): 295-314.

2 Josep L Barona, "Nutrition and Health. The International Context During the Inter-war Crisis," *Social History of Medicine* 21 (2008): 87-105.

3 Harme Kamminga and Andrew Cunningham, "Introduction: The Science and Culture of Nutrition," in Kamminga and Cunningham, eds, *The Science and Culture of Nutrition* (Amsterdam: Rodopi, 1995): 1-14, quotation at p 13.

4 Anne Hardy, "Beriberi, Vitamin B_1, and World Food Policy, 1925-1970," *Medical History* 39 (1995): 61-77; quotation at p 64.

5 Tasnin Nathoo, Christina P Holmes, Aleck Ostry, "An Analysis of the Development of Canadian Food Fortification Policies: The case of Vitamin B," *Health Promotion International* 20 (2005): 375-82; Aleck S Ostry, *Nutrition Policy in Canada, 1870-1939* (Vancouver: University of British Columbia Press, 2006); and Ian Mosby, "Administering Colonial Science: Nutrition Research and Human Biomedical Experimentation in Aboriginal Communities and Residential Schools,1942-1952," *Histoire sociale/Social History 46* (2013): 145-72.

6 James Overton, "Brown Bread and Beriberi: The Politics of Dietary and Health Reform in Newfoundland in the First Half of the Twentieth century," *Newfoundland Studies* 14 (1998): 1-27.

7 Linda Kealey, "Historical Perspectives on Nutrition and Food Security in Newfoundland and Labrador," in Christopher C Parrish, Nancy J Turner, Shirley M Solberg, eds, *Resetting the Kitchen Table: Food Security, Culture, Health and Resilience in Coastal Communities* (New York: Nova Science Publishers, 2007): 177-90; Seantel Anaïs, "(Mal)Nutrition and the 'Informal Economy' Bootstrap: The Politics of Poverty, Food Relief, and Self-Help, *Newfoundland and Labrador Studies* 24 (2009): 239-60; and Maura Hanrahan, "Tracing Social Change Among the Labrador Inuit and Inuit-Metis: What Does the Nutrition Literature Tell Us?" *Food, Culture, and Society* 11 (3) (2008): 315–33. Of related interest is Hanrahan, "Pine-Clad Hills and Spindrift Swirl: The Character, Persistence, and Significance of Rural Newfoundland Foodways," in Franca Iacovetta, Valerie J Kornek, and Marlene Epp, eds, *Edible Histories: Towards a Canadian Food History* (Toronto: University of Toronto Press, 2012): 85-93.

8 Eric Strikwerda, "Newfoundland and Labrador Maligned: Taking Stock of Nutritional Health in Rural Newfoundland and Labrador, 1912-1949," *Acadiensis* 47 (2018): 118-39.

9 Cluny Macpherson, "The First Recognition of Beri-beri in Canada?" *Canadian Medical Association Journal* 95 (1966): 278-79.

10 John M Little, "Beriberi Caused By Fine White Flour," *Journal of the American Medical Association* 58 (1912): 2029-30.

11 George W Corner, "Hospital Work of the Labrador Mission," *Among the Deep Sea Fishers* 12 (1914): 101-105, quotation at p 103-04. Hereafter cited as *ADSF*.

12 Corner, "Hospital Work," p 105.

13 AW Wakefield, "The Anti-Tuberculosis Campaign of the Labrador Mission," *ADSF* 9 (1911): 22-27; quotation at p 26-7. Wakefield also initiated a campaign for brown bread in the popular press; see his letter to the editor titled "A Flour Crusade," *The Evening Telegram*, St John's, 25 July, 1911, p 5; and the accompanying editorial that drew attention to Wakefield's letter and the British *Daily Mail's* drive to adopt "Standard Bread" (brown) in the United Kingdom, "Battle of the Breads," *The Evening Telegram*, St John's, 25 July, 1911, p 4. Marjorie Y Wakefield, "The Anti-Tuberculosis Work," *ADSF* 10 (1912): 35-8; quotation at p 37.

14 Marion R Mosely, "The Third Year of Health Work," *ADSF* 20 (January 1923): 106-9. For more details of Mosely's work with the IGA, see Gail Lush, "Nutrition, Health Education, and Dietary Reform: Gendering the 'New Science' in Northern Newfoundland and Labrador, 1893-1928," unpublished MA thesis, Department of History, Memorial University of Newfoundland, St John's, 2008, p 170-77. Mosely and her assistants also aided by referring residents of remote locations such as White Bay and the Notre Dame Bay area (Seal Cove, Jerry's Harbour, and Westport) to the hospital in St Anthony for clinical care.

15 "Obituary – Wallace Ruddell Aykroyd," *Lancet* (24 February, 1979): 450-1; R Passmore, "Wallace Ruddell Aykroyd, CBE, MD, ScD (30 July 1899-7 February 1979)," *British Journal of Nutrition* 43 (1980): 245-50; Marjorie Scott van Veen, "Wallace Aykroyd – A Personal Tribute," *Food Nutrition* 5 (1): 1979: 23-6; Marjorie Scott van Veen, "In Memoriam: Wallace Ruddell Aykroyd, MD, ScD, CBE," *Ecology of Food and Nutrition* 8 (1979): 155-6; and Kenneth J Carpenter, "The Work of Wallace Aykroyd: International Nutritionist and Author," *Journal of Nutrition* 137 (2006): 873-8.

16 WR Aykroyd, "Beriberi and Other Food-Deficiency Diseases in Newfoundland and Labrador," *Journal of Hygiene* 30 (1930): 357-86.

17 Aykroyd, "Beriberi," p 375.

18 Aykroyd, "Beriberi," p 383.

19 Aykroyd, "Beriberi," p 375.

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i'm missing my contacts
i yell up to him
from our new bathroom
in the city
i didn't plan on
returning to

you're missing your context? he calls back

– Sarah Penney

Sarah Penney is a visual artist and writer with a background in Art Therapy. She was born in St John's, but grew up in Dakar, Senegal. Her work centres around patterns of survival, reflected back through nature and humor. She is currently drawing inspiration from cats in windows and the uphill wind of St John's.