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Nutrition as a public health problem (1900-1947)

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Table of Contents

Abstract

This working paper examines the construction of a 'native' diet in India by the British from the early 1900s to mid 1900s when the country gained Independence. It was not until the 1920s that malnutrition was 'discovered' and constructed as an imperial problem worthy of systematic scientific inquiry in the colonies. This period also coincides with the increasing attention paid by the international public health community to nutrition. In the west, the existence of food deprivation in the context of plenty leads to the scaling up of standards of nutritional requirements and for defining the welfare role of the state as a way of solving the problem of the agricultural industry. Nutrition enters public policy and public policy influences nutrition. The term malnutrition is coined to describe inadequacy in diets of impoverished colonial people and quality rather than quantity of food is emphasized in nutritional research and advice. At the same time, a differential standard of nutritional requirement for the 'native' population is recommended as a practical way of attaining realisable goals. Depending upon the prevailing economic reality, science is brought in to justify standards and norms and to explain the exiting nutritional state of the deprived (workers in the west and natives in the colonies). Within the nationalist movement in India, the dual standard does not go unremarked. However, the continuities within the scientific community ensure that the dominant notions of nutrition are carried over even after the country is decolonised.

Keywords

Nutrition, malnutrition, colonial India, nutritional policy, agriculture, welfare state

Acronyms

IRFA	Indian Research Association Fund
LNHO	League of Nations Health Organization
ILO	International Labour Organization
FAO	Food and Agricultural Organization

Nutrition as a Public Health Problem[1] (1900 -1947)

1 Dietary determinism in colonial India

In the 1860s, after the take over by the British crown, that for the first time, the 'Indian' diet came to be studied systematically (Arnold 1994). This was in the context of provisioning in famine relief[2] and feeding prisoners[3] in the Indian prisons. According to Arnold (1994), the outcome of these studies, provided an insight into the European perceptions of the Indian diets rather than the actual nature of Indian diets. The Hindu and Muslim population were differentiated as flesh eaters and non-flesh eaters, and based on physique, occupation and the observers' own cultural bias, the Muslim meat eater's diet was considered superior to that of the vegetarian Hindu one which was said to be deficient in protein. On similar rationale, the northern wheat based diet was considered superior to the eastern rice based one[4]. All diets were thus evaluated using the western diet as universal standard. This was also the first time reference was made to the deficiency of protein in 'Indian' diet and the vast dietaries of the Indian sub-continent was cast into the mould of the upper caste vegetarian and categorized as the 'Indian' diet . Studies on soldiers and prisoners, led to associating diet, specifically the 'nitrogenous' balance, with physical development. This provided a 'scientific' explanation to the 'martial races' theory which formed the basis for the recruitment strategies in the British Army in India (Arnold 1994): '…what made the Punjabi a warrior and the Bengali a wimp was not caste and climate or heredity, race and selective breeding, but the simple matter of diet" (p 15). Where the diet of the poor was

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[1] I thank Prof. Ashwani Saith and Dr. Amrita Chhachhi for their comments and suggestions.This is a work in progress. It is a part of a broader review of literature which traces the emergence and the evolution of the science of nutrition from the mid nineteenth century till the first decade of the 21st century with India as a focus. I welcome critical feedback from other scholars to enable me to improve this work and deepen my understanding: Sathyamala@iss.nl

[2] Famine foods', grains and greens that were not cultivated but eaten in times of extreme scarcity by the Indians, were of particular interest for their potential as a safety net, although such foods were part of the regular diet of the poor peasants or eaten by tribal communities during seasonal scarcities (Arnold 1994).

[3] Because of the issue of caste which made common messing in prisons contentious, the prison administrators had to grapple with what to give as prison food. Similar to the debates in the Victorian prisons in Britain, there was the question of keeping the diet lower than what the 'honest' labourer was accessing but this, in the context of drought and famine situation, was difficult to arrive at without starving the prisoner to death. In 1861, the British government ordered the provincial government to study the jail diets and compare them with that of ordinary labourers' and this was when the question arose as to what was an ordinary labourer's diet (Arnold 1994).

[4] Justification came from such observations: 'It must always… be remembered that the very best rice has two capital defects, being deficient in potash, phosphoric acid, lime, and other mineral matters, as well as in nitrogenous or flesh forming matters, that is, albuminoids' (Church 1886:76).

concerned, the consumption of coarse, indigestible foods were said to be the cause of high rates of gastro-intestinal disorders including recurrent diarrhoea, but no connection was made between the inadequacy of diet and the high prevalence of disease.

It was in 1876 that Dadabhai Naoroji, an Indian nationalist leader, first called attention to the gross inadequacy of food available to the labouring people in the country. In his paper entitled 'Poverty of India', read before the Bombay branch of the East India Association of London, Naoroji presented information on the diets of Indian people (Naoroji 1962). He used the information on food provided for 'emigrant coolies' and the prison diets[5] as baseline. In comparison to this, he found that the diet of the agricultural labourers 'under the mark' (p27). He put forth his conclusion that the labourers did not get enough to provide the 'bare necessities of life' (p29) and averred that this was the condition of the masses in India under the British rule.

The first scientific study on dietaries in India was published in 1912 by D. McCay, physiologist at the Calcutta Medical College (Arnold 1994). This study was on the effects of jail diets on the 'Physical development and well-being' of prisoners in the United provinces. McCay concluded that the body's ability to absorb nutrients determined its quality, and that the rice based diet was poorer than those comprising wheat because of poorer nitrogen absorption of the former than the latter. This, he said, was obvious from the far superior physique of the wheat eating Rajput and Sikh when compared with the thin bodied rice eating Bengali.

McCay's conclusions were similar to that of Robert McCarrison, an Irish physician who had entered Indian medical service in 1902 (Walker 2002). McCarrison posted as medical officer to Indian troops guarding the mountainous northern frontiers[6] had been struck by similar observations on the physique and physical prowess of the people of the Hunza tribe[7], the Pathans and the Sikhs and had linked their physical strength to their diet. In 1918, on returning from serving in Egypt after the First World War, McCarrison set up a medical research laboratory in the cool climes of Coonoor, a hill station in the Nilgiris, India, funded by the India Research Fund Association (IRFA). Continuing with his work on nutrition, he compared the diets of the northerners with the other 'races' in the Indian sub-continent

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[5] This amount was calculated by the Government medical inspector for providing nourishment of 'absolutely necessary' ingredients to 'emigrant coolies', 'living in a state of quietude' (sedentary status) during their voyage to British and other colonies (Naoroji 1962:23).

[6] The McCarrison Society (undated) Sir Robert McCarrison. http://www.mccarrisonsociety.org.uk/founders-of-nutrition-othermenu-149/134-sir-robert-mccarrison accessed 6.5.10

[7] He is said to have commented, "How is it that man can be such a magnificent creature as the Hunzakut?" (http://www.vedicsociety.org/the-hunza-health-secrets-a-146.html accessed 7.5.10)

by conducting feeding experiments on rats giving them foods that mimicked the different diets[8]. He concluded that,

> …[t]he level of physical efficiency of Indian races is, above all else, a matter of food. No other single factor – race, climate, endemic disease, etc – has so profound an influence on their physique, and on their capacity to sustain arduous labor and prolonged muscular exertion. The physique of northern races of India is strikingly superior to that of the southern, eastern and western races. This difference depends almost entirely on the gradually diminishing value of the food …In conformity with the constitution of their dietaries, the best are the finest races of India, as far as physique is concerned, and among the finest races of mankind…In general the races of northern India are wheat eaters…Now the biological value of the proteins of whole wheat is relatively high;…In contrast…rice – a relatively poor cereal at best – is subjected to a number of processes before use by the consumer; all of which reduce …many of its proteins and mineral salts and of almost all of its vitamins. Add to this that the average Bengali or Madrassi uses relatively little milk or milk-products, that by religion he is often a non-meat eater, that his consumption of protein whether of vegetable or of animal origin, is, in general, very low, that fresh vegetables and fruit enter into his dietary but sparingly, and we have not far to seek for the poor physique that , in general, characterizes him…In short, it may be said that according as (sic) the quality of the diet diminishes with respect to proteins, fats, minerals and vitamins, so do physical efficiency and health; a rule which applies with equal force to the European as to the Indian (McCarrison as quoted in Walker 2002:107).

This passage is remarkable on several counts. First, the preoccupation of the nutritionists of the late nineteenth and early twentieth centuries with quantity had given way to the primacy of 'quality' of food. This was the consequence of the discovery vitamins and minerals and a reaffirmation of the role of proteins through studies conducted in the west. The value of food was no longer to be based on its calorie count but was to be assessed in terms of its protein, minerals and vitamin contents. Secondly, by asserting that the food composition or quality was the single most important factor in the formation of the physique, the implication was that it was possible for everyone, irrespective of where they originated from, to achieve the statuesque physique of the northerner, implying the notion of dietary determinism[9] . Thirdly, the people of the Indian sub-continent were crudely classified and stereotyped as binary wheat and rice eaters, flesh eaters and non-flesh eaters, with little appreciation of the complexity of diets which often comprised of more than one cereal. This was perhaps the consequence of basing their observations on the upper caste Indians to whom they had better access. And contrarily, there was no discussion on the stereotype breaking northern rice eating Kashmiris

[8] Rats as experimental subjects had been introduced by McCollum when he initiated the first experiments with rats which led to the identification of vitamin A. It is not clear if the health and vigour of the rats on a particular diet that McCarrison observed was only due to the contents of their diet or whether rats were more inclined to eat certain types of diet.

[9] Similar conclusions of dietary determinism were arrived at by British researchers in studies on African tribes in Kenya (Worboys 1989).

who were as well-built as the other northerners or the rice eating Bengalis whose diet, even among the upper castes, included fish.

Even when data contradicting the superiority of all wheat eating communities was available, scant attention was paid to such findings. For instance, in a study carried out among the 'wheat eating peoples (sic) in Northern India – Hindus, Muslims and Sikhs – each with their own racial characters and dietary habits', while the diets of the three communities showed no 'great' differences, the Sikhs who had the best physique also had the best diet in which the amount of every constituent was higher than the other two groups (Wilson 1937). This showed that it was not quality but quantity that mattered in terms of physique. In the same population when heights of the 6,000 children were compared, nearly a quarter of the Muslim children were below the normal standard of nutrition, as against the one sixth of the Hindu and one fourteenth of the Sikh children. Yet, the author wrote, '[i]t can therefore be concluded that the diets studied and the physical conditions of those consuming them are by no means unsatisfactory, and that McCarrison's experimental demonstration with rats of the excellence of Sikh's wheat-containing diet is fully borne out'(Wilson 1937, p 1446). The excellence of the diet was not merely because it was 'wheat containing', it was excellent because it was '*Sikh's* wheat -containing', diet presumably superior to other 'wheat-containing' diets, the difference being that this population consumed it in higher quantity.

> If the wheat that figured so prominently in European dietaries stood as the acme of all foodgrains, rice represented its oriental antithesis – all starch and very little nutritional substance… However prestigious rice might be in cultural terms, in nutritional terms it ranked among the lowest and least desirable of food grains (Arnold 1994:12).

2 Undernutrition or 'mal' nutrition?

With the shifting emphasis on vitamins in the west, the focus in the colonies too shifted towards identifying and describing clinical manifestations of diets deficient in these. Within a short period, such 'deficiency diseases' began to occupy the attention of nutritionists to the exclusion of all others[10] . McCarrison's research unit in Coonoor was initially started as a Beri-Beri Disease Enquiry Unit[11] (Goplan 1970), a disease that was originally found only

[10] Both McCarrison and Aykroyd had initiated their careers as nutritionists by working on deficiency diseases; McCarrison –goitre and Aykroyd – beriberi.

[11] Beriberi (meaning: I cannot, I cannot) is a disease due to the deficiency of thiamine (vitamin B1) found in population eating white milled rice. Parboiling , a traditional method used in India by populations who consumed rice as a staple, prevented the loss of thiamine due to milling and therefore this disease was not widely prevalent in most of India.

in narrow pockets within the rice eating belt in India[12]. In 1923, due to financial constraints the McCarrison's beriberi unit was closed down but it was re-established in 1929 as the 'Deficiency Disease Inquiry' unit which later went on to become the Nutrition Research laboratories (Arnold 1994). The problem of dietary deficiency was now cast as that of not eating right or eating wrong, i.e., 'mal' nutrition. This framing was despite the availability in the early 1930s of a much cited study referred to by the Director-General of the Indian medical Service that showed that only 39% of the Indian population was well-nourished while 41% were 'poorly nourished and 20% 'very badly nourished' , with 2.5 millions suffering from rickets and 3.5 millions from night blindness (Arnold 1994).

McCarrison was not particularly concerned with food inadequacy or starvation. He defined malnutrition as "'the impairment of the normal physiological processes of the body consequent on the use of a food which is deficient in quality although it may be abundant in quantity'" (McCarrison as quoted in Arnold 1994:19). For McCarrison, malnutrition was the most important public health problem in the Indian sub-continent as he wrote in his 'Memorandum on Malnutrition in India',

> Of all the disabilities from which the masses in India suffer, malnutrition is perhaps the chief. The most spectacular endemic and epidemic diseases, such as cholera, malaria, dysentery, tuberculosis and leprosy, kill their thousands every year; but malnutrition maims millions, and is the means whereby the soil of the human body is made ready for the rank growth of the pathogenic agents of many of those diseases which afflict the Indian people' (as quoted in Arnold 1994:19)

The Indian body was thus cast as diseased and disease generating, because of eating the wrong kind of food. McCarrison's research and eloquence was so impressive, that when the Royal Commission on Agriculture in India visited the Coonoor laboratories in 1926, the Rajah of Parlakimedi donated Rupees 1,00,000 (£7000) 'across the table' to set up two fellowships, the first private fellowships of its kind for research in nutrition (Obituary 1960).

However, although the dominant view favoured the deficient quality, there were dissenting voices within the medical community as to which was the overriding problem: under-nutrition or mal-nutrition, poverty or ignorance. In 1932, a joint conference of doctors from India and Africa focused on both sufficiency (quantity) and balance (quality) of food pronounced that,

> [i]n an undernourished population… the mere treatment of disease, no matter how effective and widely carried out, will achieve but negligible results. The first need is a continuous supply of sufficient and well balanced food for the native to resist infection …[which] depend[s] on the economic status of the community' (as quoted in Worboys 1989:215)

[12] Beriberi was unlikely to have been present among the non-Brahmin castes in the rice eating belt of eastern and southern India as they, unlike the upper caste Brahmins ate parboiled rice; the Brahmins on the other hand did not as they considered parboiled rice to be polluted (Carpenter 2007), as it had been boiled (cooked) once, albeit partially, by the non-Brahmin agricultural community.

3 Public health nutrition and the welfare state

This was also the period that, in the west, nutrition was beginning to be recognized as a factor of primary importance to the economic and social welfare of nations and public health (Eliot and Heseltine 1937). This was in the context of the collapse of the stock market in 1929 and the unexpected findings in the report of the US Surgeon General that described a positive improvement in mortality and morbidity statistics. In 1932, the League of Nations Health Organization (LNHO)[13] , initiated studies on the impact of the Great Depression on public health, particularly that on nutrition, in the affected countries (Perisse 1981). The stimulus came from Ludwik Rajchman[14], the then Medical Director of its Health Committee. Together with Rajchman's socialist sympathies, and the general ethos of an egalitarian belief system that prevailed in LNHO at that time, made it possible to explore such questions of social medicine (Borowy 2004). Faced with its own paradoxical findings that Depression and the resultant widespread unemployment did not lead to an expected increase in mortality rates in the affected population, the LNHO was forced to come up with some plausible explanations (Borowy 2008). The conclusion was that actual starvation deaths were not an adequate indicator to asses the impact of fall in food intakes (Sydenstricker 1933). Death rate as a measure was found to be relatively insensitive to sudden changes in living conditions for it did not necessarily capture the increased susceptibility to disease, or of malnutrition. Moreover, gross rates were unlikely to reveal a shift, if the adversely affected population was only a sub-group. A need was expressed to look for unobtrusive symptoms which might precede changes in mortality rates to lowered food intakes. This led the Health Committee to set for itself the task of evolving statistical methods to study the effects of the depression on public health, methodologies for studying individual nutrition and for working out ways of ensuring 'healthful' nutrition on a reduced income (Borowy, 2007, 2008). For the LNHO, this shift into studying nutrition was new as it had till then focused almost solely on infectious diseases.

Accordingly, in late 1932 a conference convened in Berlin was followed in 1933 by another in Rome, to reach a consensus on the most suitable method for detecting early indications of malnutrition and standard methods for studying dietaries (Bourdreau 1935). The members of the task force recommended both large scale surveys (covering at least 10,000 families or 10% of the population using simple methods) and small scale studies (using elaborate clinical criteria) as appropriate (Borowy 2008). To assess nutritional status, a combination of anthropometry (weight and height), colour of skin, subcutaneous fat, muscular development, nitrogen content in urine, protein in

[13]The League of Nations had been founded in 1919, its founding being 'the optimisation of the trend towards internationalism' (Amrith2006:5). The LNHO came into existence in 1921

[14] In 1939, Rajchman along with several of his friends were forced to leave the LNHO because of his Jewish ancestry and his hostility to Mussolini's Italy and Nazi Germany as well as his sympathies for the Spanish Republic" (Biographical sketch Ludwik Rajchman (1881-1965), http://www.pasteur.fr/infosci/archives/e_raj0.html accessed 12.5.10)

blood, measuring pulse were suggested. This was on the basis of studies by researchers in Vienna who had found that nutritional deprivation resulted in measurable effects on growth and weight and those from Germany among the unemployed that had shown weight loss, metabolic changes and mental effects (Borowy 2007). However, no uniform prescriptions were made for employing any of these methods in assessing nutritional impact.

In 1933, studies supported by the Milbank Memorial Fund (both financially and by the deployment of its own personnel), were carried out by the US Surgeon General on more than 10,000 families from the lower economic classes in three US cities (Birmingham, Detroit and Pittsburg) affected by the depression (Sydenstricker 1933). These studies were on illness rates, diet and housing of the affected families and nutritional status in school children. The results of the study, published in the Milbank Memorial Fund Quarterly Bulletin, examined the incidence of 'sickness' (total sickness, disabling illness, and that resulting in confinement to bed), considered '…a more delicate index of ill health than mortality' (Sydenstricker 1933: 277). The study found that these rates were more among the poorer house-holds than the richer households, and the rate was 60% higher among persons whose economic status had dropped from a 'reasonably comfortable circumstances in 1929 to poverty in 1932' (p 278). Among the school children, the extent of malnutrition in children from families that suffered the 'the greatest drop in income during the depression' was nearly twice as high as that from families not so seriously affected, 'which by the way, was not very high' (p279). Availability of social relief was important as children in families with no social relief were worse affected than those with social relief and families that were aided by relief funds had a better diet than families unemployed and without relief. The report concluded that Depression was having a serious impact on the health of many and that reliance should not be placed on a crude indicator as death. It also recommended that there should be no relaxation in the maintenance of preventive and relief measure. This study was later critiqued and downgraded for relying on reported illness and for relying on recall of the respondent for family income details prior to the depression (Borowy 2008).

However, the LNHO, despite its professed neutral scientific image, was ambiguous in its stand regarding the impact of depression on the health of the affected population. On the one hand the LNHO Bulletin did not publish the original report from the Milbank Quarterly. Instead, it published a different report by the US Surgeon-General which while using the same data as that published in the Milbank Quarterly, misrepresented and diluted the findings (Borowy 2008). By including some additional, albeit, not directly relevant data, and other statistical maneuverings, the US Surgeon-General's report diluted the results and concluded on a far weaker note on the ill effects of depression and the need for state intervention (Borowy 2008). On the other hand, within the LNHO, the original conclusions were retained.

Thus, according to Borowy (2008), while the LNHO '…helped draw attention to the importance of economic and social determinants of health ... It can ...be accused of complicity in obscuring what may be regarded as obvious political conclusions regarding the need for continued public relief schemes' (Borowy 2008: 41). This complicity was to continue into the future work of the

LNHO in the process of setting nutritional standards and assessments of malnutrition.

W.R. Aykroyd, a newly recruited British physician who had some experience in studying nutritional deficiency diseases, was put in charge of preparing guidelines for healthy diet on restricted budget. In his report published in 1933, Aykroyd found that poor families spent anything from 60% to 80% of their household budgets on food. While it was clear to him that low income was the most important cause of inadequate food intake, he contradicted himself by concluding that, '… where comparatively low income levels are concerned education of mothers is theoretically capable of bringing about dietary amelioration' (Aykroyd as quoted in Borowy 2008:48). Yet, he followed it with an admission that, '…such propaganda may easily become insulting if it is directed at a population struggling to feed itself on a totally inadequate wage or allowance. Further, there is implied irony in urging the use of frugal if well-balanced diets in a world suffering from over production of food stuffs' (Aykroyd as quoted in Borowy 2008: 49).

4 Marrying health with agriculture

In June 1935, the Nineteenth session of the International Labour Conference had to grapple with the twin problems of falling food consumption among the workers even while there was over-production of agricultural produce. Since the interests of the big farmers and industrialists in the western food-producing countries had to be safe-guarded, these countries were adopting measures such as restricting food production or destroying it to keep the prices up; grains were burnt or ploughed under, cattle was slaughtered, fish were dumped back into the sea and in the midst of this 'feverish destruction', millions in Europe and America were starving (Gangulee 1934:21).

There was a need for a solution to hunger in the context of plentiful production which would not affect profit margins. Thus, it was in 1935, the Labour Conference, while advocating for an adequate living wage, laid the foundation for economic considerations as a basis for setting nutritional standards. Stating that "'…large masses of people are at present underfed or wrongly fed'", the members opined that, it was "'… evident that a higher and more variegated standard of food consumption would go far to solve the problem of agricultural over-production…'" (Report of the Director I.L.O. as quoted in Aykroyd 1936:639). The report continued,

> This question of consumption is not only national but international in its scope. If it is agreed that the only real solution of the problem of economic balance is not through scaling down production but in leveling up consumption, then it follows that the best hope of finding a way out of the present troubles is to raise the standards of the millions who are now underfed, under-clothed and under-equipped. *The cares of the American, Argentine, Australian, Canadian or Eastern European farmer would be conjured away if the urban population of Europe and America could eat even a little more bread, butter and meat per head*…unless a general regression towards lower standards of living is accepted as the ironical but inevitable outcome of a civilisation condemned to decline through the excess of its own

creative ingenuity and technical perfection" (Report of the Director I.L.O. as quoted in Aykroyd 1936:639-670) (emphasis added).

In September 1935, the sixteenth session of the Assembly of the League of Nations, on the request of the delegates of twelve countries, added nutrition and health and its bearing on world agricultural problem as part of the agenda (Aykroyd 1936)[15] . Using an earlier publication by Burnet and Aykroyd, entitled 'Nutrition and Public Health' as the base document, the assembly arrived at a consensus that, 'increase (sic) consumption of agricultural products and the purchasing power of the agriculturalist must rise to the benefit of industry and world trade in general' (Aykroyd 1936:640). The imagination of the gathering was captured by a phrase coined by the Australian delegate, 'marry health and agriculture'[16] . To realise this, a 'Mixed Committee' comprising of nutritionists, economists, agricultural and financial experts was set up to look into health and its economic ramifications (Aykroyd 1936). A Technical Commission[17] , convened by the LNHO, was given the primary task of defining the nutritional needs of human beings from conception to old age (Eliot and Heseltine 1937), and the first meeting of the commission was held in November 1935 in the London School of Hygiene and Tropical medicine. This was the first time that, at an international level, European and American authorities discussed nutrition as an essential part of public health (League of Nations and Nutrion 1936). Two separate sub-committees dealt with the issue of nutrition requirements of 'energy-bearing' substances and protective foods (those providing minerals, salts and vitamins). The twenty-seven page report entitled, 'Report on the Physiological Bases of Nutrition', contained the recommendations of this committee. The nutritional requirements were stated in terms of optimal requirements instead of in average terms, and special emphasis was given for protective foods; the dietary needs in pregnancy, lactation and infancy were included for the first time (Eliot and Heseltine 1937).

According to Little (1991), the League's work on nutrition that resulted in the first internationally recognized table of dietary standards was the formalisation of a process of delocalization[18] of the European diet. The process of delocalisation that had begun to gain momentum since 1492 was fostered by European Imperialism explicitly after the eighteenth century. This resulted in improving the average diet of the Europeans by increasing the diversity of available foods, much of it through import, and by the decline of the diet of the people in the colonies who were producing for export.

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[15] The agenda engaged so much interest that three days were spent on it despite the assembly being 'perturbed' by the Italo-Abyssinian war (Aykroyd 1936:640).

[16] This became a very popular phrase as can be seen from its repeated use in several documents.

[17] The commission consisted of fifteen members representing seven western countries; of these three members were from the USA.

[18] Delocalization: "processes in which food varieties, production methods, and consumption patterns are disseminated throughout the world in an ever increasing and intensifying network of socio-economic and political interdependency' (Pelto and Pelto as quoted in Little 1991).

In 1936 the League of Nations published four reports (a total of 396 pages) and the International Labour Office one report (249 pages) on nutrition (Eliot and Heseltine 1937)[19] . These reports were more in keeping with the notion that nutrition was the key to physical and mental fitness than as reports responding to the mass misery due to the depression (Weindling 1995). For the western countries, the recommendations of the Mixed Committee was to, '…stimulate food consumption in the right direction…untiring efforts to make scientific knowledge, even in a rudimentary form, the property of the man in the street …investigate on a wide scale the relation between income, the "cost of living" and food consumption, and correlate the conception of a minimum wage with that of a minimum adequate diet'. The western governments were persuaded that,

> …subsidising certain branches of the agricultural industry (e.g., dairy products, eggs, fruit and vegetables) would stimulate production, and lower prices to the benefit of the consumer, … an increased national expenditure on unemployment benefit, the supply of milk and nutritious meals to school children, pregnant and nursing mothers etc., an improvement in the feeding of residential institutions under governmental control, would ultimately have a beneficial effect on the health of a large section of the population, and at the same time put more money in the farmer's pocket (Aykyroyd 1936:641).

The solution proposed by the Mixed Committee to increase nutritional standards, particularly of the more expensive foods, was greeted with great enthusiasm by the industry. However, the technical committee's recommended standards were subject to controversy because the LNHO standards were higher than those of most national governments' own advisory groups (Borowy 2008). For instance, the requirement for adult workers as recommended by the committee exceeded the earlier amount of 3,000 calories, leading to objections by member governments who were now forced to raise the minimum standards for calculating unemployment and maternity benefits for their populations. But more importantly, the scaling up of standards resulted in amplifying the proportion of malnourished even in countries in the west, for instance, Great Britain (Weindling 1995), in addition, the concept of balanced diets led to even those consuming enough calories being classified as malnourished because they were not eating 'right'[20]. Thus, these standards now provided universal measuring yardsticks for assessing the nutritional status of nations even though they were not necessarily linked to the actual health experiences of a population. All these 'standards' of nutritional requirements were made when

[19] The importance of nutrition can be seen from the fact that in 1936, the LNHO published 39 technical works and in 1937, 31 reports on nutrition (Weindling 1995).
[20]These dietaries gave importance to high milk intake, particularly for children and pregnant women(Aykroyd 1936) which could have been a consequence of the Mixed committee being chaired by Lord Astor, who was the Chairman of the Milk-in-schools advisory committee formed by the Milk Marketing Board in Britain (Weindling 1995). Boyd Orr another nutritionist, later to become the first Director of FAO was also associated with dairy research.

consensus had not been arrived at 'scientifically' speaking. But the adoption of such recommendations was seen to be very advantageous for trade and commerce as it,

> …would mean, even in a comparatively well-fed country like England, a very great demand for dairy products, eggs, fruits, vegetable etc., and … such a demand would enormously stimulate the agricultural industry. The ideas of our 'over-production' in agriculture, and of restricted production as a way out of the economic depression, seem to be finally defunct. (Aykroyd 1936: 640-641).

Solemnising the marriage between public health and commerce, Lord Astor, the chairman of the 'Mixed Committee', concluded,

> … If starting from the aspect of public health and continuing our enquires through the fields of national agriculture, of world trade, of industrial employment we come to the conclusion of welfare, using the word in its widest meaning, can be immeasurably raised through the application of the results of science, we shall open up a new era of progress to a suffering world. (as quoted in Aykroyd 1936:641).

5 Shift to 'expensive' food groups

With the focus shifting to protective foods, the concept of calories that had held centre-stage during the late nineteenth century, gave way in importance to the now deemed superior vitamins. The scientific discourse now shifted to the virtues of vitamins and foods containing them and 'calories' were relegated to the back, along with the notion of the human body being a heat needing machine. This shifting perception resonated within India as well.

> It is necessary to bear in mind that a diet may be adequate in its caloric values but it may still be deficient from the point of view of maintaining a proper nutritional balance. Many of the sophisticated foods may be actually high in caloric value but deficient in protective food constituents. The calorie is not the only criterion by which food should be valued (Gangulee 1934: 64).

> No one will of course seriously maintain that nutrition can ultimately be reduced to the satisfying of the energy demands: the calorie factor may be regarded as strictly secondary to the supply material. We do not live on calories, yet all our general estimates of food requirements are quite properly for the most part made in terms of calories. Calorie value is simply a very convenient physical standard for the assessment of diets, but merely because such a standard has proved of great utilitarian value there is no real justification for placing this standard as the foundation stone of hypotheses framed to offer an explanation of cellular activity. Many writers are obsessed with the idea of the calorie, forgetting that the organism is certainly not a heat engine. It is perfectly true that calories are a measure of heat, but it must not be forgotten that we do not consume actual heat units but only potential heat-giving substances which can eventually be degraded to the form of heat and be measured as such. The thermal apex of nutrition is unduly stressed, for, while heat may be a necessary product of tissue activity, it is after all a by product' (Cathcart as quoted in Gangulee 1934:64).

In the absence of satisfactory quantitative data, the emphasis was to provide 'a very abundant supply of the known vitamins' as there was, 'no evidence that any diet composed of natural foodstuffs contains vitamins in such excess as to produce harmful effects, and, on the other hand,… vitamin deficiency produces the most serious consequences' (Burnet and Aykroyd as quoted in Gangulee 1934 p 71).

The final report of the Mixed committee, presented in 1937, confined itself to countries in Europe and the west (as there was little information available from the Far East, Asia and Africa), noted with satisfaction that the increasing consumption of the 'protective' foods such as dairy products, eggs, fruit and vegetables had led to the development of horticulture, particularly fruits and vegetables in all parts of the world (Campbell 1938). The report stated that it was not sufficient that doctors and scientists lay down nutritional requirements but that agriculturalists must produce sufficient food stuffs, particularly the protective foods within reasonable prices which would depend on the assistance rendered to them to overcome 'economic and political difficulties outside their own control' (Campbell 1938:253). The committee regarded '…the malnutrition which exists in all countries as at once a challenge and an opportunity; a challenge, as it rightly thinks, to men's consciences, and an opportunity to eradicate social evil by methods which increase economic prosperity' (Campbell 1938: 253).

6 Colonies as research laboratories

By the 1930s, the Indian sub-continent with its diversity of diets, population and diseases was perceived as a 'scientific laboratory' and a ' nutrition worker's paradise' (Arnold 1994:17) and to be carrying out research there was akin to an 'adventure' in the vein of the title of McCarrison's talk on his work in India, "'Adventures in research'" (Obituary1960).

When McCarrison retired, his work was continued by W.R. Aykroyd, the key person on the staff of the nutritional programme in LNHO, who, in 1935, had moved to India and taken over as the Director of the Coonoor Nutrition Research Laboratories. The laboratories now became the coordinating centre for studies in the Far East (Weindling 1995). Aykroyd infused his work with his firm belief in the correctness of nutritional science as against local knowledge and practices. For him a traditional food culture of 'primitive people' was equivalent to that of the chimpanzees in the forest as he observed,

> One of the commonest dietary superstitions of the day is a belief in instinct as a guide to dietary excellence… with a corollary that the diets of primitive people are superior to diets approved by science… that light might be thrown on the problems of human nutrition by study of what chimpanzees eat in their native forests…. Such notions are derivative of the eighteenth-century fiction of the happy and noble savage (as quoted in Carpenter 2007: 874).

Aykroyd's main task was to determine the nature of the nutritional problem in 'poverty stricken India' and suggest appropriate recommendations for alleviating it (Carpenter 2007). A major work of Aykroyd and his colleagues was in conducting experimental studies on ways of enriching the 'poor rice

diet' with skimmed milk, calcium lactate supplement along with skimmed milk, soybean milk etc.

In an editorial in *Current Science*, Aykroyd (1935) states, '… food deficiency diseases, beri-beri, certain forms of anemia, epidemic dropsy[21] , xerophthalmia, etc. (sic) – are common throughout most of India. The poor physique and lack of resistance to infection shown by the majority of the population in many parts of the country also suggest that the average Indian diet is a defective one'. This was, as the editorial indicated, before any major research had been undertaken in India.

In terms of assessing nutritional adequacy, while studying deficiency diseases, both known and others 'which have never been observed or described' (Aykroyd 1935:76), the emphasis was on collecting school data about 'average height and weight, for each age group, in different races, classes etc., throughout the various provinces… [as] *English and American standards are not applicable to India*" (p76) (emphasis supplied). This seems strange in the context of the proposition of nutritional determinism which maintained that as long as food intake was adequate in quantity and quality, there was the possibility of achieving the best physique possible for all people and races.

Although beriberi was not a significant problem in much of the rice eating belts of India[22] , beriberi became a major subject of Aykroyd's study, as he had researched on it in new Newfoundland before joining the LNHO. Later, by titling a research report he co-authored as, "The Rice Problem in India", he sought to universalise the problem of beri-beri to the entire 'rice-eating' population of India. This was despite his finding that beri-beri was on the increase because of increased milling and the flooding of the market with cheap non-parboiled rice from neighbouring countries which was reducing consumption of parboiled rice. By 1937, the nutritive 'values' of some 250 foods had been worked out in the Coonoor laboratory (Passmore 1980).

Following dietary surveys in China, India, Java and Japan, dietary tables incorporating the different food cultures, including vegetarianism, were constructed (Weindling 1995). Animal experiments on nutrition, mapping of nutritional deficiency diseases and trials with nutrient supplementation of the Indian diet, perceived to be deficient, were the other major activities of the research laboratory. Though until 1946 (till the Indian Independence), the unit was headed by the white colonisers, the laboratory was staffed by several Indian researchers as well. But trained as they were in western medicine and western ways of thinking, their specific influence in nutritional thinking is not discernible in the publications of this period.

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[21] Epidemic dropsy was wrongly thought to be associated with dietary deficiency; later it was discovered that it was caused by contamination of mustard seeds with the seeds of a poisonous weed *Argemone Mexicana*

[22] As populations who consumed rice as a staple traditionally processed the paddy by parboiling, prior to hand pounding it, a method that prevented the loss of thiamine even if the paddy was subjected to milling/polishing. Describing the process by which thiamine is retained by parboiling, Carpenter (2007: 875) observes, 'this was a fortunate happenstance because the procedure was presumably developed originally only because it simplified dehusking'!

The diet surveys during the interwar years led to a change in the till then 'enclavist' type of western medicine which catered to the army and European population (a predominantly male population), to a more 'community' based type of practice (Arnold 1994). The focus was now turned towards the rural masses and the health of women and children.

7 Nutrition and the Indian agriculture

This prolific activity on diet surveys and documentation of nutritional diseases was very much linked to the decision of a sub-committee of the Economic advisory Council (EAC) of the British Government in 1936 to undertake a survey of malnutrition in its colonies. The colonial governments were asked to not only provide information on the nutritional status of the indigenous population but also to explore agricultural polices that would balance export crops with domestic food crops (Worboys 1989).

In keeping with this dictate, as the Director of Nutrition Research in India, Aykroyd (1936), observed that there was a need to 'compare and correlate' agricultural production with food requirement. He also spoke about the need to look at it in the context of the population 'problem' as otherwise there was no way of assessing the possibility of improvement of nutrition on a wide scale. He said that there was a need to study the dietaries of both urban and rural populations and to carry out active educational and 'propaganda'. He observed that in the light of the fact, that the diet of mass of people in almost all countries falls below the optimum standards, the potential for agricultural growth, particularly the 'physiologically more valuable' food stuffs was immense. He recommended the need for a 'bold' national and international 'food policies' on the principles implied in the phrase – 'marry health and agriculture' (p642).

> If India is considered as a self-supporting unit, the problem takes on a somewhat different complexion…if, on the other hand, we regard India, not as an isolated unit, but simply as part of the world, the ideas formulated in Geneva seem to become more applicable. It is conceivable, for example, that increase of wealth and purchasing power would enable the country to benefit, by importation of the kind of foodstuffs she most needs, from a worldwide boom in agriculture. At all events, there is no reason why an attempt should not be made, when the fundamentals of the situation have been more fully investigated, to formulate a 'food policy' on a national and provincial basis (Aykroyd 1936:642).

In addition to outlining the types of data that needed to be collected on both dietary habits and deficiency diseases, Aykroyd in an earlier editorial (1935) had laid out the links between nutritional, food and agricultural policy, and the expected shortfall in food production to meet the needs of all the people.

While Aykroyd, in almost all of his major writings, mentioned that poverty or lack of income was the cause for overall inadequacy of food intake, he would often minimise their importance by adding additional factors such as ignorance of food values etc as reasons for undernutrition. In his advocacy for bettering nutrition of school children, Aykroyd proposed the use of calcium salts instead of the expensive skimmed milk. He also proposed replacing rice

with the cheaper but more nutritious millets although he recognized that it had a low status as prisoners' food (Carpenter 2007)[23] . Thus, while Aykroyd acknowledged the link between poverty and food intake, his solutions did not incorporate this perspective.

8 Differential norms for the colonised

The LNHO set standards of nutritional requirements for the west (which was higher than 3,000 calories), whereas, the Sub- Committee on Colonial Territories (1938), set different standards for the people in the colonies. While the sub-committee agreed that the dietary requirements of the population of tropical countries were not essentially different from those of the western populations, their recommendations differed. The sub-Committee considered the LNHO standards not within reach of their colonized masses, and suggested reducing it to '… some attainable goal for the purposes of practical nutrition work' (as quoted in Raymond 1940).

Thus, when Aykroyd proposed the nutritional requirement for the Indian population it was accepted at 2590 calories (Gangulee 1934:69) which was closer to the amount (2,600) recommended for a male sedentary worker by the Technical Commission of the LNHO. Aykroyd, interestingly, had calculated, in an earlier instance, the daily energy requirements for a carpenter weighing 11 stones as 3,380 calories (Gangulee 1934: 63) and Lusk had calculated that an active manual worker such as a farmer required 3,500 calories (Gangulee 1934: 40). Not only was the calorie requirement reduced for Indians, it was also not to be uniform throughout the country,

> '… because of variable conditions of life, racial habits, physique, and climate in different parts of India, it is impossible to suggest a standard of energy requirements applicable throughout the country… while suggesting a standard for dietary, we should bear in mind that it must not only provide the *bare* nutritional requirements but must ensure a margin of safety and degree of resistance to disease' (Gangulee 1934:232) (emphasis added).

For instance, for an adult male from southern India, the estimate was 2,600 calories (with 5% added for wastage in cooking, i.e., a total of 2,730 calories), and for the adult woman who would require less than the adult male a factor of 0.85 was to be used for conversion (Raymond 1940)[24] . The findings of a study carried out by the Women's Christian College, Madras, that the basal metabolism of south Indian women ranging from 17 to 31 years was less than western standards, was ascribed to racial factors (Gangulee 1934:40). The earlier discourse on diet determining the race now changed to a new discourse, that race determined diets.

Similar reduction in calorie requirement was made for populations in other colonies as well; for instance, administrators in East Africa felt that same

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[23] Millets were also part of the staple diet of the lower castes, particularly the agricultural labourers

[24]This was based on the decision by an Inter-Departmental conference on Far Eastern Countries.

dietary requirements as suggested by the LNHO could not be applied for the native populations because of economics and this unwillingness to apply the same standards was attributed to racism (Little 1991)[25] .

Despite the attempt to ascribe the problem of malnutrition to quality, that Indian diets lacked quantity was an inescapable fact. Comparing an 'ill-balanced' and 'well-balanced' diets of even the lowered norm of 2,600 calories, Aykroyd commented that, 'The well-balanced diet contains protective foods in reasonable quantities, though actually it is far from being an optimum diet according to modern standards', and even then, he admitted, that at the retail prices prevailing then in South India the well-balanced diet would cost one and half times more than the ill-balanced diet, and that, "If a coolie has to support himself, his wife, his father, and three children on 16 rupees a month, the diet of the family will *inevitably* be ill-balanced and probably insufficient in quantity as well. It will, in fact, be waste of time to attempt to persuade him of the advantages of the well-balanced diet, which is quite beyond his means'" (Aykroyd as quoted in Gangulee 1934: 233) (emphasis as in original).

9 Nutritional policy for the colonies

In 1939, the EAC Committee on Nutrition on the Colonial Empire published its final report which was a rewritten and reorganized version of the draft report that took a year to finalise (Worboys 1989). The essential modification from draft to the final was to change the tone of the report from pessimism to optimism. The emphasis of the causes of malnutrition was shifted from structural causes to one that was within the government's capacity to solve (Worboys 1989).

> In both versions colonial malnutrition was defined primarily as an agricultural problem. In the first draft this was presented as a matter of political economy; in the second version it was a matter of 'native education'. The 'native' was pictured here as being caught in a vicious cycle of ignorance, poverty and disease. Disease was being tackled by the medical services, poverty was dependant on world economic forces, so that left ignorance as the only area where worthwhile recommendations could be made… If people knew what to grow, how to grow it, what to eat and how to cook it, then there would be less poverty and hence less disease. Who would direct the 'ignorant natives' in good agricultural and dietetic practices? Why the very same colonial agencies that the Draft Report had condemned for their ignorance! Overall, the problem of colonial malnutrition had become one that was seen to be solvable by the deployment of appropriate expertise and cooperation between nutritional experts, agriculturalists, doctors, anthropologists, teachers and economists. In short, nutrition had been transformed from being conceptualised as a major structural problem to being conceptualised as a technical problem (Worboys 1989:221).

The Committee 'found' the 'principal characteristics of Colonial dietaries … predominantly vegetarian, in most parts of the Colonial Empire only very

[25] But the recommended calorie requirement for Africans was higher than that recommended for Indians indicating the perception of the white colonisers about the two population's needs.

small quantities of animal products being consumed. In general Colonial diets are apt to be low in first class proteins, in fats and in green leafy vegetables and fruits' (Nutrition in Colonial Empire 1939: 294). The colonial government was urged to spend money on improving nutrition as a sound investment which would lead to an improvement in the welfare of the community. The effects of malnutrition were found to be serious and low standard of living and 'ignorance coupled with prejudice' were considered the two main causes of malnutrition; increase in population was considered an additional cause in some territories. The low standard of living in the colonies meant that food intake was very often insufficient to produce adequate nutrients in addition to the family's other needs. The reason, the Committee said, for this was not because the available income was badly distributed but it was due to the fact that the total income of the community was very low' (Nutrition in Colonial Empire 1939).

With regards to nutritional requirements, the Committee felt that there was a need to take a practical and realistic approach in recommending diets which needed to be less than the optimum as the optimum diet would be 'far beyond the realms of possibility' (p295). The committee emphasized the need for the economic development of the colonies which would mean an improvement in agricultural production. This was to be through a close cooperation of the Department of Agriculture and Department of Health to establish a 'balanced agriculture which while safeguarding soil fertility, meets the food requirements of the people and gives them the greatest cash value for the products which they sell' (p295). Special mention was made for the inclusion of soya beans in the diet, and for importing of skimmed milk and other milk products. The colonial governments were urged to gather further knowledge about 'tropical' nutrition.

The prescription of the committee was to be universally applied in the colonial territories as all the territories under the British Empire were treated perceived as a single unified mass with common tropical environment, and uniformly backward people (Worboys 1989). The report, when published, did not receive much attention, and part of the reason was, 'its conclusions had been emasculated during drafting', and the other was the unfolding of the political crisis in Europe which were more pressing than colonial nutrition (Worboys 1989:221).

10 Discourse among the Indian nationalists

In India, the western nutritional science as exemplified by the studies and writings of McCarrison did not go unchallenged. Its undue emphasis on animal foods such as meat and milk and for its methods and premises was questioned by Gandhi (Arnold 1994). The unlimited capacity of the plant world to sustain human beings, Gandhi observed, had not been explored by modern medical science and his appeal was to the Indian medical community, 'whose tradition is vegetarian' [26] to explore the world of vegetable foods for its capacity to

[26] This was a reflection of the dominance of the upper castes, most of whom were vegetarians, in the population that was highly educated.

sustain life (Arnold 1994). But the Indian medical fraternity, trained in western medicine, in general, was largely in agreement with the findings of McCarrison and Aykroyd. For instance, Chunilal Bose, chemistry professor, Calcutta medical College, accepted the colonial representation of Bengalis as poorly nourished, but recalled a better past by lamenting at the degeneration of the Bengali physique from earlier times and ascribing it to poor quality diet (Arnold 1994).

Some of the leaders in the national movement who were eminent medical professionals, inspired by the welfare state movement in the United Kingdom and socialised health services in the Soviet Union, demanded an egalitarian health system as part of the freedom struggle (Banerji, 1985: 14). But it was with the setting up of the National Planning Committee (NPC)[27] in 1938, by the Indian National Congress that, for the first time, an attempt was made to plan on behalf of Indians by those who were spearheading the nationalist movement and who represented interests that were largely antithetical to the colonial rulers. One of the twenty-nine sub-committees of the NPC was on health and headed by Col. S. S. Sokhey (National Planning Committee 1948). Unfortunately, the work of the NPC could not progress as planned as it had to function amidst severe constraints. By the early 1940s when it became clear that the colony would be freed, the colonial government (Central Government of British India provinces) set up its own committee for health planning under Sir Joseph Bhore. Though the Bhore committee set up in 1943 began its functioning five years after the Sokhey Committee, it was successful in completing the report earlier. The report was published in 1946, two years before the publication of the Sokhey Committee report and one year before India gained Independence.

Although the terms of reference were similar for both the Committees, i.e., to review the prevailing health situation in the country and to put together a feasible plan on public health for the future, their output reflected their different patronage and resource availability[28] . The Sokhey Committee, under the 'Nature of the Problem', noted that,

> The root cause of disease, debility, low vitality and short span of life is to be found in the poverty, – almost destitution – of the people, which prevents them from having sufficient nutrition, clothing and shelter. … its per capita income per annum…[t]ranslated into terms of the necessaries of life, this means barely sufficient to provide one meal per day, and that of the coarsest material (National Planning Committee 1948 :17 & 18).

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[27] Jawaharlal Nehru was nominated as the Chairman of the committee by Subhash Chandra Bose, the then president of the Congress, (Banerji, 1985:13).

[28] The Sokhey Committee had to work under extraordinarily difficult circumstances with the Central Government 'all but openly hostile to such attempts' (p12) of the NPC, and the work of the NPC was also delayed because of the incarceration of its chairman (and other Leaders of the movement) for varying periods by the British government, the outbreak of War, and scarcity of re-sources including personnel. Many members also moved over to work on other Government Bodies, Panels etc because of the 'war time needs'.

This, the Committee observed, meant that both in rural and urban areas, in 30% of the families, the food intake was insufficient to provide adequate energy and the diet was deficient in other nutrients as well (National Planning Committee 1948:21).Regarding the dietary requirements, the Sokhey committee observed,

> We do not propose, in this report, to say anything regarding the quantity of food we consider adequate for the people, but shall limit ourselves to saying that the needs of the people in this respect in this country are not different from the corresponding needs of the people in other temperate countries. Indians require as much food of different types as is required in other parts of the world, to permit of (sic) growth and to maintain health. This Sub-Committee cannot do better than suggest to the Planning Committee that they should adopt the standard fixed by the Technical Commission of the health committee of the League of Nations, both as regards caloric needs and the provision of proteins, fats and other dietary requirements (National Planning Committee 1948: 39).

Under the chapter entitled 'Problem of Nutrition', the Sokhey Committee (1936, Volume II: 13) gives the same dietary requirements as given in the League of Nations publication, which includes the additional work related energy demands. However, that there was dissonance among the committee members can be seen from the contradictory statement in the Introduction to the report. Under the sub-heading 'Dietary and Health', K.T. Shah, the author of this piece, refers to the Bhore committee report and states, 'For our purpose, it is enough if, as recommended by the National Planning Committee in its instructions for the guidance of its Sub-Committees, an average dietary of 2400 to 2800 calories per day per head were aimed at and achieved as amongst the first objectives of a successful National Plan' (National Planning Committee 1948: 34). Clearly there appears to have been some dissent between the National Planning Committee and the Sub-committee on nutritional recommendations. It also appears that a decision to scale down average requirements as directed by the National planning Committee had not been accepted by the Sub-Committee.

The Bhore Committee, on the other hand, is more guarded in their remarks. In Chapter 1 of their report (Volume I), under ' Causes of low level of health in India', nutrition comes as a second cause following 'The Prevalence of Insanitary Conditions' (Health Survey and Development Committee-Vol I, 1946,:11 &12). Under the sub-heading on nutrition, there are two paragraphs, the first one concludes with the sentence, 'Dr Aykroyd, the Director of the Nutrition Research laboratories , Coonoor, has said that an insufficient and ill-balanced diet is typical of the food consumed by millions in India' (p 12). The second para goes into a description of how the food production in India falls very much short of requirement for the country and implies that that is the reason for the inadequate food of the Indians (p12). Regarding nutritional requirements, in Chapter V, entitled 'Nutrition of the People', a table is presented of food items as suggested by the Nutrition Research laboratories, Coonoor, which would 'constitute a sufficient and well-balanced diet for an ordinary adult per day' without specifying any other information on type of work etc.(p56). This diet is similar to the diet that was

recommended by Aykroyd in 1941 as an example of well-balanced one yielding 2600 calories (as cited in Muraleedharan 1994)[29] . The only information in this chapter that links poverty to food intake is the admission that even this low level of calories was not possible for a peon in the Government of India secretariat (who had a regular income) to purchase for his family of members equivalent of four adults.

Gangulee's book, 'Health and Nutrition in India' (1939), published before these two reports[30] , also is silent on the debate of nutritional requirements. In his book, after several pages discussing the earlier debates on calorie requirements that end with the League of Nations' recommendations, Gangulee cites McCarrison and Aykroyd's suggested nutritional norms for Indian without contesting it (p 61-69). In Chapter 6, 'Diets of the Peoples of India', Gangulee refers to Aykroyd and endorses his, 'minimum calorie requirements of an "average" Indian at 2,600 calories per diem and …. a scale applicable to the different age and sex groups, which may be "sufficiently accurate for practical nutrition work in India"' (p232 & 233).

The question that arises is why did Gangulee not question the lowering of dietary standards for Indians? Could this have been a reflection of the ambivalence experienced by western trained indigenous elites, as Arnold (1989: 21) remarks,

> Perhaps the final contradiction of western medical intervention lay in its legacy for the unraveling of the empire. The position of western medicine during the Afro-Asian struggles for independence was often ambiguous. On the one hand some nationalists looked to a revival of indigenous medicine as part of a rediscovery of their own cultural roots and rejected the West's alien therapeutics. On the other hand, indigenous practitioners of western medicine were often influential members of the nationalist middle class and colonialism was condemned for its stinginess in bestowing the benefits of western medicine. Perhaps this very ambivalence was an indication of the strength of the impact imperial medicine had made upon indigenous societies.

The unquestioning acceptance by the Indian elites of the framing of the natives by the western sciences can be seen from the following passage from Gangulee (1939: 87 and 88). Discussing the 'development of psychological traits and abnormalities' of 'underfeeding', Gangulee states:

> Religious mania, crude forms of psychic exhibitionism, egoism of rather childish behaviour, vanity and certain types of sexual perversions are noticeable among people subject to chronic under-nourishment. It develops morbid nervous conditions and fosters inertia. It is certain that millions of children and adults in India are under-nourished and if the truth of the old saying – 'a hungry man is an angry man'— is not epitomized there in actual life, the reason may be traced to

[29] The Bhore Committee table had 2 ounce more of non-leafy vegetables and a range of 2-4 ounces of green leafy vegetables instead of just 2 ounces as in Aykroyd's original table cited in Muraleedharan (1994)..

[30] Gangulee, 'respectfully dedicate[s]' the book to 'Pandit Jawaharlal Nehru and other leaders of the Indian National Congress, who have undertaken the responsibility of shaping a national policy, based upon directed economy , for the rehabilitation of my country, where "for every three mouths, there are only two rice bowls"'

> psychological aberrations which give birth to and nurse the twin evils of fatalism and pessimism Aykroyd rightly observes that 'hungry men make no revolutions; if they break windows it is not as a protest against the greed of the rich but in order to be taken to goal and given something to eat. Hunger takes a man's courage and self-respect and leaves him a whining cadger of crusts and half-pence'…The fact that they subsist on inadequate food is not a proof that they do not remain hungry: it only suggests that under the circumstances of long continued under-nutrition there may be an adjustment of the body to the lower food intake. But the adjustment does not arrest the progressive undermining of the stamina of the underfed peoples and they remain susceptible to infectious diseases. And with lowered vitality their capacity as producers also remains low.

11 Changing rhetoric in a decolonising world

World War II saw Aykroyd largely absent from Coonoor to attend to 'government affairs'. In May 1943, one such official engagement was to attend the Hot Springs Conference in Virginia as a representative of India. This conference had been called by the US president Roosevelt to which delegates from 45 countries had been invited with the aim of reviving agriculture throughout the world in order to 'ensur[e] that there was enough food for all mankind as soon as possible after the end of hostilities' (Passmore 1980: 247). Aykroyd played an important role in drafting the final report which was set out in three section, viz., production, consumption and distribution. One of the major outcomes of this meeting was to set up of the Food and Agricultural Organization (FAO) in 1945. Aykroyd was invited to become the first head of its nutrition division.

With the impending liberation of some of the colonies, the rhetoric on 'colonial nutrition' within Britain changed to one of 'developing' the natives. In March 1946 the theme of the Thirty-first Scientific Meeting (seventeenth English meeting) of the Nutrition Society, held at the London School of Hygiene and Tropical Medicine (LSHTM) was 'Nutrition in Colonial Territories' (Elliot 1946). One of the discussion points[31] during the meeting was on ways of imparting the 'great deal of knowledge of nutrition…acquired in recent years and …not yet been passed on to administrators and the technical staff of colonial territories or to their populations' (p13). The need for colonial governments to cooperate with the 'people' was stressed. The '[n]ew knowledge and a new point of view' needed to be passed on 'through newly recruited staff until existing staff can be spared for further training'. An elaborate diagram was presented on how to 'plan for teaching and training personnel and its relationship to other activities connected with the development and welfare of colonial peoples' (p13). It was recommended that training in nutrition was to be included in the curricula of the LSHTM and the London School of Economics, and the trainees were expected to assist

[31] In this meeting a film 'Today and Tomorrow' on the work in a Middle East supply centre was shown which served, 'far better than any words to illustrate the nature and magnitude of the tasks which have to be undertaken in most colonial territories…record…of achievement…success in our efforts to improve the lot of colonial peoples' (Platt 1946a: 2).

Colonial Government nutrition Councils in 'the organization of nutritional investigations and in any steps taken to improve the nutrition in the territories' (p13). Sociological approach to nutrition was considered important for, 'the framing of nutritional policies…particularly necessary in dealing with the colonial peoples' (Richards in Elliot 1946:29). On the eve of Independence, the natives had metamorphosed into 'colonial people' but their 'welfare and development' was still a matter of concern to the colonizers. The negative impact of industrialization that the colonial territories might adopt was stressed.

> …since all schemes need financing, it seems that the native will be called upon to become productive. If this means eventually the direction of the native away from his home and from the production of his food crops, more specially if it means direction into industry, then the results might be disastrous. With industrialization we might see in Africa the development of a half civilized, wholly syphilized, detribalized native become "nigger", colour conscious, imbued with an inferiority complex displaying itself in disgruntlement and unrest, accompanied by ill becoming clothing, poor housing, overcrowding *and* malnutrition., bought at considerable price in the local store, with the complete sacrifice of what I believe to be the greatest thing in the world, happiness (p23) (emphasis as in original).

The chairman of the meeting summed up with,

> It was said long ago that the life of the savage is naturally brutish and short, and he knows that too. He wants to share in what he believes to be the ideals of civilization, which, as I say, consist of seeing Deanna Durbin on the films and going for motor tours, and he will destroy anything to get that…The colonial populations are about to undergo the impact of industrial civilization and, in that process, they may find help from those of us who have already studied some of their problems. The difficulties will be immense, and one of the features of the change will certainly be a very extensive alteration in the diets of the peoples; for that reason alone any consideration that we can give to this question will be of the utmost importance in the future (p 42, and 43).

In December 1946 the Royal Society of Tropical Medicine and Hygiene, UK, had another meeting on nutrition. Dr B. S. Platt, Director of the Human Nutrition Research, Medical Research Council, presented the findings of the surveys that had been carried out from 1937 to 1946 on the 'nutritional health of colonial peoples' as per the recommendation by the EAC (Platt 1947)[32] . The data he presented showed that the 'colonial people' suffered from several deficiency diseases, with their diet grossly deficient in proteins, energy and vitamins. According to the presenter, these findings had led the Royal Society Empire Scientific Conference to recommend that 'essential food factors – vitamins and food concentrates' be made available to treat deficiency diseases and to fortify wheat to increase nutrient contents. He rounded off his presentation with an excerpt from a dispatch of the Secretary of State for the Colonies:

[32] Platt had presented some of this data in the earlier meeting of the Nutrition Society and in the Royal Society Empire Scientific Conference as well.

> …an ignorant man and his wife with a hoe are a totally inadequate foundation for an enlightened society, a high standard of living and elaborate social services, and that unless an alternative foundation capable of bearing these things can be devised or, when it exists, can be expanded a great deal of modern talking and writing about colonial development and welfare is moonshine' (Platt 1947: 380).

Although the data he presented at this meeting did not contain any information from India as such, the discussion that followed the presentation is illustrative of the lack of consensus within the medical community that had worked in the colonies on 'colonial nutrition'. Dr W.A.Young who had worked in Africa, middle east and India, opined that there was a racial, endocrine adjustment to food conditions and that 'unless we take him in hand, the primitive African may pass out from the modern world as did Neanderthal man with the ice ages' (as quoted in Platt 1947: 391). Major J.A. Manifold, who had worked in India and other tropical countries, countered what he termed was a '"hormonal" red herring' and stated that he had been 'appalled' at the lack of money and therefore the lack of protein in the diet which was 'universal' in the colonies; that he, 'did not really understand the conditions existing in [the] Empire until [he] saw the awful poverty that exists in India, the "brightest jewel in our crown"…about to lose … but if we rid ourselves of our responsibility for her we shall also lose our debt to the Indian races, which is to raise their standard of living' (as quoted in Platt 1947: 393). Dr.J.B. Davey, who had worked in East Africa, stated that while currently severe undernutrition was widespread there, it had not been always so, for in the past these communities had high standards of nutrition as many early travelers had recorded them to be of fine physique (Platt 1947: 391). Dr C. C. Chesterman who had worked in Africa spoke in defense of the 'ignorant man, woman and a hoe', that, 'if left reasonably free to look after themselves', they would be fine, for many of their customs and dietaries were conducive in maintaining good nutrition and balanced diets . Dr H.S. Stannus, concluded that, 'from the discussion which has followed Professor PLATT's (sic) very interesting paper, one lesson would appear to emerge – interference on our part with the native customs of the native populations of Africa is associated with a lowered state of nutrition. Endemic diseases and occasional famine may take their toll but on the whole the bulk of the population was healthy and happy (Platt 1947:396-397).

12 Post Independence continuities

Internationally, after its formation, the FAO took over the task of recommending nutritional standards and nutrition moved from the domain of public health and social medicine to the world food trade, confirming the enduring marriage between agriculture and health. In1948, Boyd Orr who was the first Director of FAO, resigned when his proposal to stop the commodification of food was not accepted (Passmore 1980). Aykroyd's role as the head of the nutrition division of the FAO, was reduced to publishing monographs and holding conferences with no possibility of a decisive role in the policies of FAO (Passmore 1890).

In India, following independence, an Indian was made the Director the Coonoor laboratories which grew from strength to strength and is now the National Institute of Nutrition, Hyderabad. In the words of Passmore (1980), a former British colleague of Aykroyd who worked with him in Coonoor, 'It is a fact that should please Indians and British alike that the changeover from an 'imperialist' to a 'nationalist' government in Delhi made no difference to the progress of the work. Aykroyd and his successors deserve credit for this' (p 248). In post independent India nutritionists had to contend with these continuities while trying to break new ground in their effort to change the discourse on nutrition in keeping with the postcolonial realities both nationally and internationally.

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