

during late foetal development and the amount of folate in the liver. However, the mean birth weight of Asians is less than that of English babies born in Bradford and at all gestational ages the individual birth weights of Asians were nearly always relatively low; there was a relatively high proportion of Asian babies in which the amount of iron in the liver was small. Thus, there is a little evidence that the Pakistani infant born in this country may be slightly worse off nutritionally than the English infant, but the extent of the inquiry so far is not sufficient to justify firm conclusions about this.

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The nutritional status of West Indian immigrants

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As a paediatrician and not an expert nutritionist I shall have to confine myself to the nutritional status of West Indian children. My knowledge of West Indian children is derived from the in- and out-patients of several south-east London hospitals situated in areas of high immigrant density, and from observations of West Indian infants and toddlers attending an evening infant welfare clinic at Notting Hill Gate.

The percentage of West Indian in- and out-patients at these hospitals varies between 15 and 21. The total number of in-patients is about 2500 per year and the number of out-patients is about 5000 per year. Attendances at the weekly Notting Hill Clinic have risen from 486 to 1063 per year during the last 4 years. At that clinic almost all the infants and toddlers seen are West Indian.

The breast-feeding performance of the great majority of West Indian mothers is markedly superior to that of their non-coloured sisters. As a result the nutrition of their infants during the first 6 months of life is very good. In spite of their excellent lactation potential, discontinuation of breast feeding is almost universal once maternity benefits have ceased, because the great majority of mothers have to

return to work. The reason for discontinuing breast feeding among West Indian mothers is therefore an economic one, and not, as Aykroyd & Hussain (1967) found among Pakistanis, mainly due to imitation of British infant-feeding practices.

The nutritional status of the West Indian infant during the first 6 months is good provided his birth weight was normal. However, prematurity is known to be common among infants born to parents of lower socio-economic groups (Anonymous, 1958). In the United States the prematurity rate among negroes is twice that of the non-negro Americans. I cannot quote figures relating to the prematurity rate of West Indian infants born in this country, but judging by the Lewisham figures there is a definite excess of coloured over non-coloured babies of below average birth weight. Barron & Vessey (1966), in a very interesting paper, showed that the birth weight of 899 West Indian infants born between 1958 and 1960 in a south London hospital was significantly lower than that of British and Irish infants born during the same time in the same hospital.

The growth performance of prematurely born coloured infants is better than that of white prematures because they are more mature irrespective of birth weight and can tolerate larger feeds. However, because of a variety of West Indian food prejudices, to which I shall refer presently, these babies must be followed up with particular care.

Instances of suboptimal nutrition are found with disconcerting frequency after the first 6 months of life. In my experience instances of undernutrition, that is starvation, are not at all common. I have only seen two cases of malnutrition, that is protein-calorie malnutrition, in this country since 1961. Both were recent arrivals, one from Nigeria and one from the Caribbean.

Undernutrition is found mainly in children who are placed with unsatisfactory foster parents and only very occasionally in children looked after by unsatisfactory day-minders. As fostering is not widely practiced by West Indians, undernutrition is not a significant West Indian problem.

The suboptimal nutrition of the West Indian toddler is largely due to the inadequate weaning diet traditionally offered towards the end of the 1st year, but sometimes not before the child is 18 months old.

It is a commonplace that West Indians change their manner of dress first, their speech next, and their dietary habits last, if at all. This certainly holds for the West Indian infant-feeding pattern.

The weaning diet is almost identical to that offered to English children some 60 years ago. To this day Continental paediatricians recognize *Milchnährschaden* and *Mehlnährschaden*, that is, nutritional anaemia and nutritional hypoproteinaemia, in early life. In West Indian toddlers I have not seen severe degrees of hypoalbuminaemia, but low normal values are the rule rather than the exception. (Gans, 1964).

A more subtle but more sinister result of episodes of protein-calorie malnutrition in early childhood is the sometimes transient, sometimes permanent effect on the child's intelligence quotient (Cravioto, 1966). Many workers have noted this effect in countries where this type of malnutrition is common, but I do not know of any work on immigrant children here who suffered from protein-calorie malnutrition

before they came to this country.

Iron-deficiency anaemia at the toddler stage is so common that one is surprised when one finds a normal haemoglobin level. In the case of premature infants this iron deficiency is, of course, more common, more severe and occurs earlier unless the mother has been taught to offer iron-containing foods from the beginning, and there has been a close follow-up.

The iron deficiency is clearly due to prolonged milk feeding and the use, later on, of weaning diets, paps of various kinds, with a low or nil iron content. Many West Indian infants are fed on milk and pap for 10, 12, 14 months or even longer. This fact has been known to paediatricians for many years (Stroud, 1963).

The effect of a low maternal haemoglobin level on that of the newborn infant is still being debated, but in my experience the newborn has a normal level, even if the mother is anaemic.

The role of hookworm infestation in the anaemia of recent immigrants is difficult to assess, since there is usually an associated nutritional anaemia. The infestation presents no special diagnostic or therapeutic problem, and in my submission no public health problem either, in spite of claims to the contrary.

Malabsorption states associated with hookworm infestation, as described by Sheehy, Meroney, Cox & Soler (1962) have not been observed.

Discussions of the effect of intestinal helminthiasis on the host's nutritional state all too often appear to be charged with passion rather than precision. Obviously the worm population must compete with the host for any food available. Therefore the parasites should be eliminated. It is, however, very difficult if not impossible, to determine how much blame for general ill health and various symptoms should be apportioned to the worms, and how much to the dysenteries, the poor calorie intake, the low dietary iron or the common emotional bellyaches of childhood.

At the time of school entry haemoglobin levels are usually normal, but there is no doubt that in those who are anaemic the low haemoglobin level makes for poor attention and poor retention. We now know that many West Indian children here do badly at primary school. It has been suggested that anaemia may be responsible. However, a language difficulty is much more likely to be the cause of poor scholastic performance (LePage, 1966).

Another nutritional disturbance which has reappeared, almost exclusively among immigrant children, is nutritional rickets. The total number of cases is not impressive, but it must be remembered that this deficiency state had virtually disappeared after the last war, presumably owing to the efforts of infant welfare clinics. In the case of immigrant mothers there may be a language barrier which prevents them from finding out about the need for vitamin D supplements (Stroud, 1965). She may be unaware of the existence or function of these clinics, but more commonly still she may not be able to avail herself of the clinic service because she goes out to work and does not return home until after the clinic has closed. Hence the need, in all areas of high immigrant density, for evening infant welfare clinics (Gans, 1964).

One other deficiency state, lack of fluoride, is more spectacular among immi-

grant children than our own. The West Indian child arrives here with a perfect set of teeth, yet after only a few months in this country caries is extensive and severe (Mitchell, 1966). No doubt the aetiology of dental caries is multifactorial, and ice lollies, sticky sweets and fluoride lack all play their part. It is my impression that the West Indian school and preschool child needs better than average dental supervision.

The very common pruritic skin lesion seen in immigrant children is definitely not due to an avitaminosis. This eruption is often, and erroneously, labelled 'eczema' for want of a better label. It does not occur in the tropics or subtropics where atmospheric humidity is high, and if children with this condition return from our climate to that of the Caribbean, the rash disappears spontaneously. It is, in my opinion, due to the effect of a low humidity on pigmented skin.

Finally, it may be worth commenting on the West Indian foods imported into this country. Quite a number of West Indian housewives buy these foods, which are mainly starchy vegetables, at considerable cost. For instance, whereas a pound of potatoes costs 4d to 6d, a pound of yam costs between 1s 6d and 2s 6d, sweet potatoes 1s to 1s 3d, coco or tania 1s to 2s 6d, breadfruit 2s to 3s. All these are potato equivalents, but much more expensive than potatoes. West Indian bread also costs more than ours as it is heavier and contains more flour. One of the imported green vegetables, okra, costs 4s a pound and a tin of akee 4s 3d (A. T. Jackson, personal communication).

Whilst one would not wish to interfere in West Indian food habits and practices, tactful nutrition advice at antenatal clinics and infant welfare clinics might lead to economies. If there are children in the family the purchase of protein-containing foods rather than traditional carbohydrate foods might be beneficial.

The phenomenon of buying imported West Indian food may well turn out to be transient and self-limiting, as immigrants' children, born here, are said to prefer English to West Indian dishes and are reported to like school meals.

To sum up, the nutritional deficiencies of West Indian children in this country are not uncommon, but neither are they severe. Lack of dietary iron, the commonest deficiency found, is easily corrected by haematinics and more slowly by dietary, particularly weaning, advice.

Borderline degrees of hypoalbuminaemia are almost as common and would disappear if the traditional weaning practices could be improved upon. We do not yet know whether episodes of severe protein-calorie malnutrition, experienced before arrival in this country, have an effect on the intelligence quotient of West Indian children later on. Helminthiasis and rickets must be borne in mind, but are infrequently found. Both respond to treatment. Caries is important, progresses rapidly and needs prompt attention. Many West Indian mothers spend a disproportionate part of the family budget on imported and expensive potato substitutes. Nutrition advice might result in this money being spent to better effect.

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Response of the food industry to minority demands

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It is perhaps a little late in this symposium to define 'minority groups', but there are some people who have not received a mention and who can claim to constitute minority groups in so far as they place upon the food industry a demand which is different from that of the majority. For the purposes of this paper such people as diabetics, obese persons, phenylketonurics, and so on, but not infants and the aged, will be included as minority groups.

This paper cannot, however, be claimed as an exhaustive survey of the contribution made by the food industry in these areas. The term 'food industry' may be taken to include not only the manufacturer but also the distributor and retailer. The response considered will be mainly that on the part of the manufacturing section of the industry, and the author is indebted to the Food Manufacturers' Federation and to The Nestlé Company for assistance in collecting information. References will also be made to products made by firms not in membership of the Federation.

Any manufacturer who is going to stay in business, and it is no good if a minority demand is to be met by one who is going out of business tomorrow, has got to run his business for profit. Without profit he cannot improve his existing products, cannot introduce new products, and he certainly cannot afford the services necessary to survey the market for a new product. Now the food industry consists of large companies and very small companies with, in comparison with other industries, few medium-sized companies. It is in the large companies or at the head office of a group of companies that one would expect to find market intelligence. Many of the larger companies are comparatively newly established or newly integrated, and in some their technical efforts have so far been directed to products with large-volume sales. They have, therefore, not been able to devote attention to the demands of minority groups. In general it seems that the food companies cater for popular demand and carry only very few, if any, products in demand by minorities. The large companies do not, however, dismiss the demands of minority groups lightly, in some cases