

A RECENT ADVANCE IN HUMAN
ECOLOGY

PHILOLOGISTS may be interested enough to find out when this word 'ecology' became part of the language. Its frequent use in scientific writing today is a portent. The sister-word 'economy' has reflected the history of much of our modern thinking about man and mankind in the emphasis laid, not on 'goods' themselves as such, but on commerce in and distribution of such goods. Just as, from Devas onwards, there is a growing tendency among economists to consider human, as well as material, factors in the definition of such ideas as prosperity, so a new branch of science has found it increasingly necessary to study in detail what one may call the raw materials of prosperity.

Materially speaking, there are two main aspects of the environment of *homo sapiens* that repay modern study. One may be summed up under the term exterior influences—climate, housing, clothing, and the like. The others, subject of this short essay, are internal: in a word, man's diet.

Time was when science seemed to have summed up the whole matter of the human body and how it is nourished, in the three magic words: proteins, fats, and carbohydrates. But already the bio-chemists were beginning to analyse the individual components of each of these, and the necessity for certain minerals—at first the list was limited to iron and calcium—was emphasised, together with observations of their deficiency in the diet of civilised man. A little later, first Lunin and then Hopkins proved that there was a missing factor which the latter called 'accessory food substances' and to which Funk gave the name *vitamines*. We now prefer to write it *vitamins*. Subsequent research has been voluminous and epoch-making: to the list of common minerals we must now add 'trace' substances, and the number of proved vitamins, i.e. chemical entities that are not simple elements like the minerals, is being constantly added to. And all are necessary to proper nutrition.

Prior to the second war, the whole subject provided a good example of that 'fragmentation' of knowledge that besets much of our science and perhaps particularly medical science. Efforts at treatment, along the soundly established lines of restoring necessary substances to depleted tissues, shared, of course, in this fragmentation. The red light of danger gleamed once, when it was found that very large doses of vitamin D might be harmful to the body; and again, quite lately, when Richards and others showed that single components of the

vitamin B complex might prove worse than useless: evidently the Bs work as a team, or work badly.

It is always a salutary discipline for specialists, in whatever field, to turn round and ask themselves what common humanity is thinking about the result of their researches at the particular stage of the moment. 'Fools and bairns', we say in Scotland, 'should not see half-done turns', but those who peddle the wares of health are not allowed to quote this proverb in their own favour but must produce results as they go along. In this matter of the vitamins *et hoc genus omne*, the man in the street and the doctor in the back street were often indignant and sceptical. I may be permitted to refer to a friend and patient of mine whom I was all the more anxious to help because he was curate in our parish. He was among the sceptics and sniffed at the vitamin D concentrates that I was prescribing—in safe doses, I hasten to add. He came back from a holiday feeling much better: 'And what do you think did it?' he said. 'None of your vitamins but good old-fashioned Irish cod-liver-oil.'

This aspect of the situation was worsened by the big chemical firms that hastened to put on the market various preparations guaranteed to contain all the necessary minerals and vitamins in dosage for daily requirements of the body. Undoubtedly the scientific prescriber owed, and owes, a debt to many of these, which one suitably acknowledges in the right place. But it was an unfortunate by-product of their activities that their demand for the mineral-and-vitamin-rich parts of the wheat-berry, for instance, led to these being further 'refined' out of the people's bread (the staff of their life) by the flour trade and sold to the makers of medicines. In fact, as the present writer never tires of saying, the plain man (not to mention his wife) ate impoverished white bread, paid for it, were ill, bought the missing essentials of health (or some of them) in a bottle made up under a chemist's label, paid handsomely for that, paid their doctor, and continued to be ill into the bargain.

In the field of preventive medicine, those who tried to teach better habits of diet to the people laboured under the handicap of this fragmentation of knowledge. The stock lecture on dietetics, with its otiose introduction to proteins, fats, and carbohydrates, and its weary pilgrimage through the minerals by name and the vitamins by alphabetical denomination, came perilously near to providing healthily critical periodicals like *Punch* with a stock joke. A man's food, it was widely felt, should not be such a complicated, not to say polysyllabic, matter as all that. Does not the wild animal choose suitable food for itself? Even toddlers, as recent experiments in a nursery-school have indicated, tend when left to themselves and given *carte blanche*, to

find their way to a dietary that is found, over periods of, say, a week, to be what dieticians call 'well-balanced.'

Obviously, some simplification was required: in logical terms, a synthesis of all this knowledge. Such a simplification, such a synthesis, is beginning to be available, and it is my endeavour to put it before you.

First, let me re-state the problem. Your food nowadays, says many a simple observer, does not nourish you. This fact, realised by doctors, administrators and welfare workers for long enough, forced on the scientific world the vast and thorough researches indicated above. The first great war taught us that we were a C8 nation. When Sir Robert McCarrison in India fed rats on coolie diet and watched them sicken and die, and, in the third generation, die out, he was followed by Dr Marion Richards, of the Rowett Institute, who repeated the experiment with the diet of the working-class population of Peterhead during the inter-war slump: with the same results. Neither got the publicity they deserved. Perhaps we were tired of having it proved that we were under-nourished: we knew it already. And the very apathy that comes from malnutrition of body and brain prevented the mass of the sufferers from profiting by lectures on wise marketing and careful cooking, which they were barely able to follow.

About this time, Dr Lionel Picton was lecturing to Women's Rural Institutes and similar bodies in Cheshire, and his efforts were more successful. In the practical field he has been one of the great pioneers of the new synthesis. Already in the years just preceding the war, he had the secret, and he was wont to disclose it in the following vivid manner. He entered the lecture-room, as Mrs Doris Grant relates in her admirable little book, *Your Daily Bread* (Faber), carrying two baskets. In the one he had guinea-pigs fed on milk, greens and white bread. The ladies looked at them and admired their sleek coats and healthy appearance, as they nuzzled one another in the opened basket. The other basket contained guinea-pigs fed on milk, greens and whole-meal bread. Dr Picton opened the basket, and in a twinkling the guinea-pigs had jumped out and were all over the room. This, said Dr Picton, is positive health.

Dr Picton was prominent in bringing out the Cheshire *Medical Testament*, signed by an array of working doctors, and offering, as the one available single measure calculated to check the growing malnutrition and its attendant ills, a return to bread made from whole wheat, stone-ground so as to preserve the vital parts of the grain in a flour that would lend itself to baking in a palatable loaf with good keeping qualities. A little later, the war forced a rational loaf on the country from economic motives; it will be a tragedy if the scientific

case for 100 per cent. extraction, as it is called, is forgotten by our bureaucrats when the economic situation improves.

It is convenient now to work back from Dr Picton to the body of scientific experiment and observation on which his *Testament* was based. The story is one of a succession of contributions to our knowledge, flowing in, over a quarter of a century, from departments so widely separated as arboriculture, mycology, ethnology, vital statistics and public health, plant physiology, agriculture, general medicine, and of course the science of nutrition. All contributed to the greatest advance human ecology has ever made. Perhaps the most interesting feature to the non-expert is that one significant contribution had been waiting all along, unappreciated and all but unrecognized except by the common sense of the peasant and small farmer, but trumpeted (it is pleasing to recall) by our own Father Vincent McNabb, whose name must be added to the roll of fame in this connection.

The clue to what we are all seeking, positive health, was provided by savages, the Hunzas of Gilgit in North India. They presented a picture of positive health. Subject, as we all are, to the changes and chances of this mortal life, unfavourably placed as regards climate and natural resources, and with no better racial stamina than their neighbours, they achieved, by means of hard living and careful husbandry, a freedom from both major and minor maladies that makes them to be envied by other peoples, and especially by urbanised peoples. The catarrhal and rheumatic diseases, dental decay, stomach and bowel ailments (with their dreaded outcome in alimentary tract cancer) and the vague depression of physical well-being that leads to apathy and even mental breakdown—all are commonplaces in the life of our people and almost unknown among certain primitive peoples like the Hunzas.

The epic of it all is well told by Lady Eve Balfour in *The Living Soil*, published by Messrs Faber and Faber, who have brought out so many books dealing with the springs of our vitality. She relates how both McCarrison and Howard, practical scientists, the one studying human nutrition, and the other working on industrial cultivation, followed up the Hunza clue. Sir Albert Howard was quick to see the significance of discoveries by Dr C. M. Rayner's tree-planting in Dorset. She had proved that certain fungi, notably the mycorrhizas, found in association with the rootlets of plants and previously considered parasitic (except by the botanist Frank, of a hundred years ago) worked in symbiosis with the plants to form a living link between them and the inorganic constituents of the soil. In the absence of these fungi, as in soil over-worked and over-treated with artificial

'fertilisers,' crops diminish in quantity and in quality. Especially do they lose the power of resisting diseases like the 'take-all' blight of wheat, for instance. What is more important, crops grown on a natural soil 'in good heart' pass on the disease-resisting qualities to the consumer. It is perhaps significant that among the beneficent fungi Dr Rayner, writing ten years ago, listed *Penicillium*, source of the recently-discovered penicillin.

Dr Rayner showed that the mycorrhiza can be restored to soil where it has been allowed to die out, by proper use of animal manure. Howard, inventor of the Indore process of making compost (now almost a household word), realised that here was the explanation of the good results he was getting from a process that imitated the Hunza agriculture by incorporating a percentage of animal waste in all vegetable manure. McCarrison fed his rats on a diet that included compost-grown cereal, and the rats were 'positively' healthy. Scharff in Malaya met war-time conditions by giving his Tamil coolies allotments to grow vegetables on the Indore system; the increase, within two years, of the health and stamina of the coolies and their dependents was phenomenal. The head of a residential school in New Zealand, a country where the rapid spread of dental decay, catarrhal conditions and mental decline is giving grave concern, set the boys growing much of their own food in composted plots, with almost spectacular improvement in a year or two. Lastly, at Papworth village settlement for cases of tuberculosis, they have not had one child developing tubercle in twenty years: the diet is a rational one, based on wholemeal bread and home-grown vegetables, and Dr Wrench (*The Wheel of Health*, Daniel, 1940) considered this, with general hygiene, the main cause of such a triumph over a disease once considered both familial and hereditary.

The moral of it all is this. If we are to survive as a civilisation and not succumb to megalopolitan ill-health and consequent sterility, we must put back into the land the riches we have extracted from it. America and New Zealand are now awakening to the danger of exhausting the natural humus of the soil. We must conserve and use our animal wastes; or foods, especially wheat, must be grown from biologically sound soil, and as little as possible impoverished in the processes of preparation—milling, baking, etc. Too long we have accepted disease as inevitable. Now, without any Utopian nonsense, it may be seen as nature's penalty for man's stupidity.

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