

not only in medicine but also in science and law. He is a barrister, a leading practitioner, and a well-known personality in East Anglia. I have a feeling that he will handle the gavel as expertly as he turns out his delightful articles for the press.

## THE ENQUIRING GENERAL PRACTITIONER

G. L. McCulloch, M.B., CH.B. (*March*)

"Brother Toby," quoth my father, "I do believe thee to be as honest a man and with as good and as upright a heart as ever God created;—nor is it thy fault, if all the children which have been, may, can, shall, will, or ought to be begotten, come with their heads foremost into the world:—but believe me, dear Toby, the accidents which unavoidably way-lay them, not only in the article of our begetting 'em—though these, in my opinion, are well worth considering,—but the dangers and difficulties our children are beset with, after they are got forth into the world, are enow . . ." "Are these dangers," quoth my uncle Toby, laying his hand upon my father's knee, and looking up seriously in his face for an answer, "—are these dangers greater now o' days, brother, than in times past?" "Brother Toby," answered my father, "if a child was but fairly begot, and born alive, and healthy, and the mother did well after it,—our forefathers never looked farther." My uncle Toby instantly withdrew his hand from off my father's knee, reclined his body gently back in his chair, raised his head till he could just see the cornice of the room, and then directing the buccinatory muscles along his cheeks, and the orbicular muscles around his lips to do their duty—he whistled Lillabullero.

Mr. Chairman, fellow general practitioners, is that our present attitude to the subject of human nutrition? Have we until now just been sitting around whistling Lillabullero?

We all have a far greater and more accurate knowledge of pharmacology than we have of nutrition. We can be reasonably certain of the results of subjecting living human cells to, for instance, digoxin or barbitone or insulin in measured quantities and over varying periods, and we apply or withhold these and innumerable other substances to produce anticipated effects upon the whole human organism. Their name is legion, they are enumerated and controlled with care. They are enjoyed by few.

Nutrition, on the other hand, the biochemistry of our living cells, is one of the great universal sources of pleasure in this life, from the breast onwards (for those who are lucky enough to start on the breast). Its constituents are legion, are subjected to little in the

way of control, and by the vast majority of partakers are understood or misunderstood. To all but the biochemists themselves they are a matter of guesswork and haphazard application.

Every now and again, as dramatically as the explosion of some new ballistic discovery, it is found that a nutritional error is the cause of some form of gross departure from a state of good health:—lack of fresh fruit equalled scurvy, lack of vitamin D and sunshine equalled rickets, polished rice equalled beriberi, absence of iodine equalled goitre. Spectacular phenomena. More subtle and insidious is the possibility that excess cholesterol derived from food over very long periods may have a bearing on cardiovascular disease. And if that were proved correct it is unlikely that finality would have been reached. It is reasonable to assume that living cells subjected for long periods to erroneous ecological factors must be expected eventually to depart in some way from their set tasks. We see this in the case of smoking and lung cancer. If habitual nutritional errors are committed a price will sooner or later be paid in terms of ill-health.

We are aware that nutritional processes begin in the womb. Whilst we are caring for the health and nutrition of the expectant mother we are not entirely unconscious of the multiplying living cells of the foetus. Since our influence at this stage is remote in that only the end-products of the mother's metabolism are applied to the foetus, only the grossest maternal errors could, in all probability, have more than a minimal effect on the foetal nutrition.

But as soon as birth has taken place responsibility for nutrition falls into the hands of—whom? The mother, the father, the grandparents, the midwife, the health visitor, the family doctor, the manufacturer of this, that, and the other,—all these will have a hand in the nutrition of the new human being. All these will subject the living cells of the future adult to an enormous armamentarium of proteins, carbohydrates, fats, vitamins, and minerals in a bewildering variety of permutations, combinations, adulterations and substitutions, according to traditions, beliefs, hopes, and desires born of almost anything but sober common sense. This will result in casualties, and more or less unscathed survivals according to the luck of the individual, first as to what he gets out of this lot, and second as to his innate powers of resistance.

It behoves us to ask ourselves some cogent questions. Are serious habitual nutritional errors being committed? If so, what are they? Where and when do they begin? What are their possible effects, short-term and long-term? What is the place of the general practitioner in observing and reporting and instructing? What further control and education are needed?

Is not the initial nutritional error in this day and age the depriva-

tion of an infant too soon or altogether of human milk? Cold, sober common sense should tell us, and science ought to confirm this in unmistakable terms, that the milk of a healthy fully lactating human mother is, or should be, for the first year of its life, a human infant's basic sustenance with, at suitable common-sense stages in its development, suitable additional simple nutrients whose solidity will keep step with the child's ability to masticate. Is it not probable that the most fundamental early nutritional error in modern civilized human life is the introduction of cow's milk? Once upon a time the use of such a substance would have been regarded as unnatural and dangerous. Those were the days of the wet-nurse, an idea held in far greater moral abhorrence in 1962 than adultery. Yet how often have we seen in contiguous maternity beds one mother bursting with enough good human milk to feed two infants, whilst her neighbour's offspring is offered a substance remotely and deviously derived from an anonymous cow? This rather suggests that there is a case for the marketing of deep-frozen human milk. Bovine milk, to begin with, contains the wrong protein, and, in order to correct its carbohydrate deficiency, has added to it the wrong sugar—two fundamental errors, surely. In pasteurized and evaporated milk this erroneous protein has been subjected to unnatural heat; and since many well-meaning mothers boil pasteurized milk, it is hard to imagine what eventual toughened protein is presented to the infantile metabolism. Moreover, if bovine fats have a tendency to raise the blood-cholesterol level, the basing of an infant's sustenance on cow's milk would appear to be starting this process at a very early stage of life. It is of interest in this connection that Guy's Hospital has initiated a long-term follow-up of the health of infants who have never tasted human milk.

Is not the next profound error, for which commercial pressure and professional indifference must jointly accept responsibility, the introduction at a too early stage of infant life of cereal starches in undue proportions? These are now given at an age when the infant would continue to thrive and develop adequately on a copious supply of milk, human for preference, alone. Is not yet another all too common error the over-dosing of the human infantile organism with sugar? Everything has to be generously sweetened; and to this is soon added the vice in an affluent society of the inordinate consumption of vitamin-free sweets.

I have dealt only with the first years of life. What are the possible results of these early nutritional errors? I have all too frequently been the dismayed witness of the extraction of permanent molars after only two or three years' service, molars which should have continued to function for several decades. I have known two female human beings under 15 years of age having to be equipped with

complete upper and lower dentures. In this same enlightened era I see children in their first year of school life losing the use of most of their primary teeth before their permanent teeth have begun to erupt. Am I right in observing that the minimum age for the occurrence of coronary thrombosis is getting progressively lower? Am I justified in suggesting that if all the instances of acute otitis media now occurring in young children were not countered by the fortunate availability of chemotherapy and antibiotics the incidence of chronic otorrhoea and mastoiditis and deafness would be vastly on the increase? In other words, may there not be a state of reduced resistance to infection disguised by prompt and efficient therapy? And could not these dental disasters, these early coronaries, this reduced resistance, be laid at the door of fundamental habitual nutritional errors in the early years of life?

The family doctor can make little claim to either skill or consistency in the role of instructor in nutrition, and, in any case, has been jostled out of his rightful position as chief adviser by the midwife, the health visitor, the press, and the commercial advertiser. Yet he is in the ideal position to observe what is going on in the home, to observe and to instruct. If I am right in saying that this is the first ever postgraduate symposium for general practitioners which has chosen to deal with the subject of human nutrition, then perhaps today marks the beginning of the end in this regard of just sitting back and whistling Lillabullero.

## FOOD, GROWTH, AND DEVELOPMENT

**Professor R. A. McCance**, *C.B.E.*, M.A., M.D., PH.D. (*Cantab*), F.R.C.P., F.R.S. (*Professor of Experimental Medicine, University of Cambridge*)

I do not know that I can answer many of the questions or conundrums put to you by Dr McCulloch. I hope that you won't go away afterwards feeling like the sheep in "Lycidas" that you have looked up without being intellectually fed. I can only do my best to give you a short paper on a subject which certainly does concern food, growth, and development and I would like to begin with nutrition *in utero*.

The food of the foetus is looked after in the early stages by the trophoblast. We do not know exactly what food the trophoblast