I hope I have been able to show that healthy people capable of reasonable movement and expenditure of energy, even in their seventies or eighties, provided that they have sufficient money, will normally have a reasonably balanced diet. The things to watch for are diminution in total intake, particularly to below 1750 Calories a day, a level below which the elderly subject is likely to run into deficiency of protein, calcium, and other nutrients, and also the tremendous nutritional impact upon the elderly of infection. There is need, after a trivial infection, to restore the balance by an increased intake of food. I think this is a problem which might be taken up officially with the National Assistance Board. We still do not know what are the optimal nutritional needs of the elderly. Long term studies are needed to answer this question and general practitioners who have access to families might be able to take part in field research to determine the extent to which we can improve the health of old people by ensuring optimal feeding.

DISCUSSION

Question: What is the relation between nutrition and living in institutions?

Prof. Tunbridge: Our attitude to welfare homes has changed very much, because we have gone through a period of limited building. Everyone is agreed that the elderly should be kept in the community and in suitable accommodation as far as possible, but there is the question of providing this accommodation. There are many good schemes involving a certain amount of supervision, and I am afraid that we have to accept the fact that after 70 the decline in mental and physical powers is very obvious in most of us. We do not get about and we find it difficult to do things. These limiting factors and possibly finance are the reasons why many old people have a bad diet. Homes, although not emotionally so satisfying, do provide a certain amount of care. It would be fair to say that elderly people who are fit and retain their senses and their vigour rarely present clinical problems.

Question: Is confusion in the elderly often of nutritional origin?

Prof. Tunbridge: The causes of confusion in the elderly are legion,

and to prove that they are nutritional is very difficult though there is some evidence that nutritional factors can contribute. Probably the largest single factor in confusion is circulatory. I do not mean by that that they actually have an interacranial lesion or cannot maintain an adequate circulation, but when they move quickly or change posture they have momentary blackouts and this undermines their confidence even in their own surroundings. I think that this is a very important and simple factor. There are much more serious ones, and there is of course quite clear-cut evidence that vitamin B deficiency can be associated with confusional states. I regret to say that in our mental hospitals this used to be quite a common cause for making patients worse; in pre-war days when a survey was made the deficiency in B complex revealed was very serious. This was a question of bad feeding, and I would say that in those who are on a diet this is probably not an important factor. It has to be looked for when people begin to have abnormal diets. Cases of confusion arise sometimes from vitamin C deficiency, and it is often forgotten that the first sign of scurvy in the elderly is not necessarily bleeding or loss of such teeth as they have. One of the first effects of scurvy is mental slowing down. This was shown very brilliantly by work done on himself by an explorer. Long before he showed any signs of vitamin C deficiency his judgement was affected. This has been thought to contribute to the fate of Scott's expedition.

Question: If we can keep people mentally alive and vigorous by supplementing food intake, would it appear that reduction in food intake in those whose mental faculties have gone or are decayed is probably a natural way of dying gracefully?

Prof. Tunbridge: That might be true but I am not going into the ethics of living and dying.

Question: We general practitioners believe that confusion in the elderly is being caused in the hospitals right and left, and we want to know how to get rid of this confusion in elderly people's minds.

Prof. Tunbridge: I think that our assaults on the intestinal tract may cause a lot of aftermaths, the full significance of which we do not always appreciate, except as regards anaemia or diarrhoea after major operations such as gastrectomy. There is quite a lot of evidence that we may be causing other deficiencies.

Question: May I ask whether inadequate feeding in early life can have effects in old age?

Prof. Tunbridge: This is a very interesting point and of course it is a great hobby of Dr Sinclair of Oxford. We have no human evidence at all, but have some very good experimental evidence on this

point from New York, showing that life-span and health were not influenced by altering rat feeding after weaning, but if diet was reduced earlier life could be prolonged. Overfeeding in the early days did not seem to alter the life-span but it did seem to predispose rats to a number of diseases. Of course these were highly inbred strains and quite rare species, not even normal rats. The evidence from natural colonies would not suggest that you could alter the disease pattern very much. McCarrison fed rats on the diets of different tribes in India, and got a disease pattern in the rats similar to that in the humans. This is fascinating experimental work which might have a bearing on the human state.

Question: Is there any sociological research on the reason why so many young people are averse to looking after their elderly relatives?

Prof. Tunbridge: There has been a lot of research on this, and I must refute the statement that our pattern of behaviour is in any way different from what it was 20, 60, or 80 years ago. It is very difficult to get figures on this, but I think it would be fair to say that there is a higher degree of filial piety today than there was in the past, but there are also many more older people. Many more older people are living longer and are very disabled, and therefore the number at any one time not being looked after by their children is greater, but the percentage has not changed. We seem to have a lot in homes, but there is hardly anyone aged 45 today who has not the problem of looking after one of their parents. This is something quite new. I once had occasion to broadcast abroad together with persons from Thailand, Holland, and the United States. The man from Thailand was very brief, simply stating that there was no problem, for 30 years of age was old age in Thailand. We have gone a bit further than that, for at the turn of the century, 50 was old age in this country. The expectancy of life—60 in this country—had hardly changed between 1850 and 1950, but for a reason we do not understand this expectancy of life at 60 has gone up 4½ years n the last eight.