Editorials

ANIMAL, VEGETABLE AND MINERAL

Two thousand years ago Hippocrates exhorted the physician to study the physical structure and climate of the places he visited because in so doing he would better understand what diseases he would be likely to encounter. Only recently the significance of his advice has been fully realized. Before techniques of micro-analysis had been devised by physicists and chemists it was impossible to attempt to link diseases with the mineral content of the soil.

To the superficial observer the environment is more or less constant. In the British Isles there are no wide climatic extremes, no major differences in race or in population habits, and it would appear that the inhabitants of these islands share a culture medium which does not vary to any great extent. By introducing foodstuffs from other lands civilization and commerce have made even less conspicuous such differences as exist. Advances in food preservation, packaging, and distribution, whatever benefits they may have brought to humanity, have done a disservice to the study of epidemiology.

Many complicating factors exist, and must be allowed for, but their existence should not preclude examination of our environment, in search for factors which may influence growth or development, health or sickness. Much is already known about the effects of the grosser deficiencies of nutrients and vitamins in animal diets, but much remains to be learned about the effects of excess or deficiency of the less common elements.

Mineral ores of trace metals are widely distributed in nature and where they occur their local concentration may be very high, a fact well known to the geologist and to the mining prospector. Living organisms in these areas of high mineral concentration cannot escape their effects. Some forms of life may be unable to adapt to,

say, a high copper content in the environment and may fail to thrive, leaving the field to others whose power of adaptation is greater. We are all vaguely familiar with the beechwoods on the chalk hills of southern England, the heather and conifers of moorland and the difficulty of growing roses on light sandy soils. Each has a characteristic flora of plants which can best incorporate the local concentration of minerals in their protoplasm. This flora may be food for man, and for the animals which he breeds for his food; either directly or indirectly the mineral content of each environment is reflected, though seldom as yet recognized, in its human inhabitants.

Minerals of different kinds, in varying quantities, enter the human body and are absorbed into the tissues. Hormonal control of the oceanic minerals—for example sodium, potassium, phosphorus, iodine, calcium and even of water itself—has been carried over into mammals from earlier stages of evolution;but in places on dry land we may meet much higher concentrations of these and other elements than ever existed in primaeval ocean. A frank excess of any mineral taken over a short period elicits a toxic reaction, but this reaction may not follow small excesses consumed over the years, building up slowly and cumulatively in a body whose cellular adaptation keeps pace with the increase in the amount consumed. Suppose the adaptation processes break down. Are these the circumstances in which degenerative diseases occur? Do we know the part played by trace minerals in the metabolism of the malignant cell or in the damaged islet-cells in the pancreas of the diabetic?

DR ERIC WILKES in *Journal* No. 38* in a survey of multiple sclerosis in his Derbyshire practice remarked on the prevalence of that disease and swayback disease in sheep in an area where lead has been mined for centuries.

PROFESSOR H. V. WARREN in his address to the Vernodsky Centennial Congress in Moscow, published on page 517 of this *Journal* draws attention to some of the problems which arise in the correlation of multiple sclerosis and gastric carcinoma with the lead content of soil. He has in his survey of the literature and in his personal work produced enough evidence to stimulate others to similar endeavours.

The geologist can measure the extent to which anomalous quantities of minerals are present in soil, in water, and in vegetation.

*J. Coll. gen. Practit. 1963, 6, 185.

The physicist can identify those minerals whose absorption carries the extra hazard of radioactivity. The general practitioner, who shares more closely than any other observer the environment of his patients, can—with the help of the veterinary surgeon—find out whether differences in the environment surrounding the individual are reflected in diseases of man or animals. Here medicine and geography meet, and with the support of the biochemist a field of research is opening up in which the family doctor may become a prospector, modern methods of morbidity evaluation serving as his pickaxe, shovel, and pan. New discoveries may await this work which could mean more in human terms than all the gold of Ontario and the silver of Broken Hill.

GENERAL PRACTICE TEACHING IN EDINBURGH

Part of the course of study of those who took their medical degree at Edinburgh University in the twenties and thirties was attendance at one of the dispensaries in the poorer and more crowded parts of the city. There the student in his fourth and fifth year found himself seeing patients not only in the dispensary clinic but in their homes. He would collect a few calls in an afternoon and go out alone to see these people. He was "covered" by the doctors attached to the dispensary but his alone was the first decision—to treat and follow up the cases himself, to ask the doctor in charge to see the patient with him or to recommend removal to hospital. Not many patients were thus visited, for there were many other things to do, but in the days after qualification, during the first locum tenens or assistantship, many a young doctor has been grateful for the experience so gained.

When the National Health Service assured even the poorest of a doctor's attention, it was out of these dispensary practices that the General Practice Teaching Unit of the university was created. Under the careful administration of Dr Richard Scott this unit has now two centres and looks after some 40,000 patients. There are six full-time and seven part-time doctors all members of the university staff and every Edinburgh medical student receives first-hand