

different types of this series are all characterised by (1) the paucity of ferro-magnesian minerals, (2) the abundance of magnetite, and (3) the comparative abundance of monazite.

These seem to correspond petrologically to some of the newer granites or gneisses of Peninsular India which have been found intruding the Charnockites.

Pegmatites and basic dykes are also found and among the latter, dolerites, peridotites and pyroxene scapolite dykes have been noted.

Among the economic minerals found and worked in the island, graphite, various gem stones, mica, thorianite, monazite and zircon sands are the most important.

B. R. R.

### Diet and Climate.\*

DR. CHICK'S "Cantor Lectures" on "Diet and Climate" cover a wider field than their title indicates. While she deals at length with the specific question of ultra-violet light and sunshine in relation to vitamin D, calcium metabolism, rickets, osteomalacia, etc., she has included also sections on diet as influenced by locality, race, and custom. In the first lecture she points out that one of the first important clues as to the cause of rickets was found in the study of its seasonal incidence and geographical distribution. As long ago as 1890, Theodore Palm put forward the theory that rickets is a disease of sunless places. His theory, broadly speaking, was correct, but it was not until over 30 years later that the reason *why* rickets tends to be a disease of sunless places was discovered. The explanation, which is at once remarkable, unexpected, and completely satisfying, was provided during the years 1918-30 as a result of the labours of many investigators working independently at different aspects of the problem in their respective countries. No single worker can claim credit as the discoverer of the cause of rickets.

Dr. Chick comments on the existence of rickets, and especially osteomalacia, in Northern India and China. In these regions there is plenty of sunlight capable of transforming the eyesterol normally found in the skin into vitamin D, but there exist "social customs which hinder access to fresh air and sunshine for women and children". At the same time there tends to be a deficiency of mineral salts in the diet. "Vitamin D can only control and correct the metabolism of lime salts and phosphates if these are present in adequate quantities in the diet; sunshine can only provide vitamin D

if the inhabitants take advantage of the supply thus provided."

Wilson has shown that rickets and osteomalacia occur in Kashmir even in villagers fully exposed to sunlight. Here, it seems, the chief factor in the causation of these diseases is mineral deficiency rather than lack of vitamin D. The administration of tri-calcium phosphate has proved more effective in treatment than cod liver oil. As a result of the lack of calcium salts and phosphates in the diet, vitamin D, derived from sunshine, is unable to fulfil its proper function.

The lecturer emphasises the association between a high intake of milk and its products and good physique. As McCollum has remarked, "Wherever dairy animals are abundant in proportion to the population and their products form a staple article of diet, fine physical development is seen without exception." In India, McCay was the first to suggest a relationship between the physical characteristics of the various peoples and their staple diet. His investigations have been confirmed and extended by McCarrison, and precisely parallel observations have been made by workers in other parts of the world—notably by Orr and Gilks in East Africa. In England it has been amply demonstrated that an improvement in national physique could be brought about by an increased consumption of "protective" foods, notably milk.

Dr. Chick concludes with some wise remarks about the need for common sense in applying in practice the scientific principles of nutrition:

"A great deal of exact knowledge is now available and ready to be applied, but dietetics is not an exact science, and the application of the science of nutrition to the art of dietetics needs to be made with common sense and with intelligent adaptation to the particular circumstances. For example, it is vital that the Madrassi peasant or the Malay coolie should be weaned from rice

\* The Cantor Lectures. "Diet and Climate" by Harriette Chick, C.B.E., D.Sc., *Journal of the Royal Society of Arts*, Sept. 13 and 20, 1935.



that is highly milled and polished and persuaded to take it with the bran and germ adhering to the grain. But it is not only silly, but also misleading, to tell the poor English working woman that she must pay more to secure 'unpolished rice' for her occasional rice pudding. In any case, the milk in the pudding and the egg, if present, will correct the deficiency of the highly-milled rice, even if the effect of other constituents of the diet is disregarded.

The use of pasteurised or boiled milk is another example. Milk so treated has a slightly impaired nutritional value, it loses most of its antiscorbutic value, which is never great, and some portion of its content of lime salts is converted to a less digestible form. In this country, however, the heating of milk before consumption is a necessity, since the danger of milk-borne disease is so great. Tuberculosis alone is widespread among our dairy cattle and is a menace to children taking

large amounts of raw milk. Yet there are people who insist on the need for raw milk on dietetic grounds, although the defects in heated milk can be simply repaired by giving a little extra fruit juice or vegetable food.

These examples will suffice to show the need for common sense, and the dangers of faddism, in applying the results of scientific investigation to the practical problems of diet.

There remains the economic difficulty of providing a perfect diet upon inadequate means. The provision of cheap milk for school children by the local authorities is an important step in the direction, and other ways of encouraging the consumption of dairy products should be welcomed. In any case, the spreading of knowledge and the popularising of the less expensive 'protective foods' should do much to secure improved nutrition for our own population."

W. R. A.

### Andrew Carnegie.

THE Centenary of the late Andrew Carnegie will be celebrated on November 25, 26 and 27 in New York, Pittsburg, Washington and other cities, according to an announcement made by Dr. F. P. Keppel, President of the Carnegie Corporation of New York, the largest of the six Carnegie Foundations in the United States.

Andrew Carnegie was born on November 25, 1835, in a weaver's cottage in Dunfermline, Scotland, the ancient Caledonian capital from which his family emigrated to America in 1848. It was in Dunfermline that Carnegie built his first library and began in 1881 his series of library benefactions that continued until 1917, by which time he had built 1,946 free public libraries in the United States and 865 in other parts of the English-speaking world.

The six Carnegie trusts in the United States are: Carnegie Institute of Pittsburg (1896) which conducts an Institute of

technology, a museum of fine arts, a music hall, a museum of natural history, a public library and a library school; Carnegie Institution of Washington (1902) devoted to scientific research; Carnegie Hero Fund Commission (1904) to recognise heroic acts performed in the peaceful walks of life; The Carnegie Foundation for the Advancement of Teaching (1905) to provide retiring pensions for teachers and to advance higher education; The Carnegie Endowment for International Peace (1910) to serve the purpose indicated by its name; and Carnegie Corporation of New York (1911), for the advancement and diffusion of knowledge and understanding among the people of the United States and the British Dominions and Colonies.

The four British Carnegie Trusts are: Carnegie United Kingdom Trust; Carnegie Dunfermline Trust; Carnegie Trust for the Universities of Scotland; and Carnegie Hero Fund Trust.

—*Science*, 1935, 82, 365.