

farming there has been an increase from 12,200 persons in 1921 to 27,700 in 1931. The manufacture of electrical apparatus, chemicals, paints and oils; hosiery; food; printing and bookbinding; road transport; and a number of other industries have expanded considerably in both census periods since 1911. An interesting fact recorded in the latest census is a great increase in the number of male commercial travellers, from 81,347 in 1921 to 120,212 in 1931.

#### Economic Study of Japan's Population Problems

"CONFLICT and Co-operation, Economic and Political, in the Pacific" formed the theme of the Cawthron Lecture, 1934, delivered by Mr. Frank Milner, at Nelson, New Zealand (Nelson, N.Z.: Cawthron Institute, 1934). There are, he said, ominous explosive potentialities in Japan's growing population pressure with its increase of more than one million per annum. Her population density is now 437 persons to the square mile, and though this is exceeded by Java, Belgium, England and Holland, the situation is complicated by the fact that only 16 per cent of the land is arable. With 2,774 persons living on each square mile of such land—not a foot of land being wasted—Japan has reached the point of complete saturation. Half the farms are less than  $1\frac{1}{2}$  acres in extent and three-quarters less than  $2\frac{1}{2}$  acres. The Japanese are not an emigrating people, and there are only about 635,000 living abroad. The only feasible solution of the basic population problem of Japan is the development of manufacture and trade, though inadequate resources of coal, iron ore, petroleum and other raw materials handicap her industrial expansion. Moreover, Manchuria, according to scientific experts, cannot provide coal or iron ore of the type needed for Japanese blast-furnaces. The shift from an agricultural to an industrial economy is far from complete, and at present less than 10 per cent of the population work in factories employing more than five persons. Japan to-day is the real problem of the Pacific, and her isolation is breeding an ugly mood in her militarists. The solution may involve regional allocation of raw materials and markets to Japan involving heavy sacrifices, but such co-operative effort must be made if a cataclysm is to be avoided.

#### François Emmanuel Fodéré

THE centenary of the death of Francois Emmanuel Fodéré, who was born on January 8, 1764, is to be celebrated on April 12 at Strasbourg, where he was professor of medical jurisprudence from 1814 until 1834. His "Traité de médecine légale et d'hygiène publique ou de police sanitaire", of which the first edition was published in 1798 and the second in 1813, was the standard work in medical jurisprudence in France during the early part of the last century. In 1819 he was appointed lecturer in the history of epidemic diseases and hygiene at Strasbourg, his lectures being afterwards published in four volumes in 1822-24. His other works included "Traité du goître et du crétinisme, précédé d'un discours sur

l'influence de l'air humide sur l'entendement humain" (1790), "Essai historique et moral sur la pauvreté des nations, la population, la mendicité, les hôpitaux et les enfants trouvés" (1825), "Recherches sur la nature, les causes et le traitement du Choléra-morbus" (1831) and "Essai sur les diverses espèces de folie" (1832).

#### Moses Maimonides

THE January issue of *Medical Life* is a Maimonides number containing an account by Prof. Louis Gershenfeld, of the Philadelphia College of Pharmacy and Science, of the Hispano-Jewish physician, astronomer and theologian, Moses Maimonides or Abu Amran Musa Ben Maimon, on the occasion of the octocentenary of his birth. Born at Cordova in Spain on March 30, 1135, he studied under Averrhoes, and in 1160 left Spain for Fez, finally settling in 1165 at Cairo, where he died on December 13, 1204. His best-known medical work is a collection of 1,500 aphorisms from Galen's writings with forty-two critical comments. His other chief medical works are a treatise on diet and personal hygiene written at the request of Saladin's eldest son, who suffered from melancholia, and a book on poisons and antidotes. In a work on astronomy, he recognised the limitations of astrology, and declared that all works on the subject were the products of fools. He differentiated between astrology and astronomy, maintaining that in the latter only was to be found true and necessary knowledge. His most famous work, however, was the "Guide for the Perplexed", which was not intended for popular consumption, but claimed to be written by a philosopher to the philosophically minded, his purpose being to reconcile Aristotelian philosophy with Jewish theology and the doctrines of Judaism.

#### Water with Heavy Oxygen

THERE has recently been erected in the Chemistry Department of the University of Manchester an apparatus of the type first described by Hertz (*Z. Phys.*, 79, 108; 1932) and afterwards modified by Harmsen (*Z. Phys.*, 82, 589; 1933) for the separation of gaseous isotopes by diffusion. The immediate object is to prepare oxygen containing an excess over the normal of the  $O^{18}$  isotope. For this purpose it is convenient to diffuse water vapour rather than oxygen itself. The abundance of  $H_2O^{18}$  is approximately 1 : 500 and the ratio of the vapour densities of the 'heavy' and 'normal' water is 10 : 9. The apparatus was designed to yield water containing about one per cent of  $H_2O^{18}$ . The process of separation is very much slower with water vapour than with permanent gases owing to the adsorption of the vapour on the walls of the porous tubes used for the diffusion. This adsorption is large even at 100° C. A trial run just completed has yielded about 20 mgm. of water the density of which is greater than normal by about 25 parts per million, which is scarcely if at all outside the experimental error of the density measurement. The apparatus is now being modified somewhat to allow of faster working, and it is hoped that it will yield about 20 mgm. a day of water