Hilda Minto de Kol was imported from Canada in 1913, and her ancestors figure in the pedigrees of several high-producing Canadian Friesians. The accompanying photograph shows her to be a good stamp of Friesian of the more robust type, her roomy body, well-sprung rib, and general appearance indicating her as an animal which with good handling might be expected to give a good account of herself. Mr. Steadman is to be congratulated on his ownership and management of an outstanding cow.

—*W. M. Singleton, Director of the Dairy Division.*

MANURES AND MANURING FOR GARDEN CROPS.

W. H. TAYLOR, Horticulturist, Wellington.

THE purpose in this article is to refer in a brief manner to the fertilizers and manures most commonly used, and to give some indication of the requirements of ordinary garden crops. It is understood that a number of elements are required by plants in addition to those usually applied in manuring. These are found in most soils in sufficient quantities, or are supplied from the atmosphere. Deep tillage and draining, where necessary, by warming the soil and admitting air assist nature in making available the natural constituents of soil and of the atmosphere. Most cultivated soils throughout the world are deficient in phosphoric acid, potash, nitrogen, and in some cases lime. All plants take out varying amounts of these elements, and manuring is designed to maintain the supply. New Zealand soils are generally very deficient in phosphoric acid; it is for this reason that phosphatic fertilizers are of such great importance in this country, and that they must be liberally employed.

The practice of crop rotation is based on the fact that crops that are unlike each other take up different amounts of the various elements. By rotating the crops a fuller use is made of the fertilizers, one crop taking what another has left. There also appears to be some other influence at work, as it is generally admitted that crops do not give the best results if grown repeatedly in the same soil, even though the proper fertilizers be applied for each crop. A notable exception is onions; these succeed for an indefinite number of years in the same soil. Probably this is because onions require a fairly well-balanced fertilizer, and take most of it out of the soil. An extra amount of nitrogen should be applied to crops that are required to make strong vegetative growth and are not grown for their fruit, such as the cabbage tribe, onions, leeks, spinach, and celery.

Theoretically at least large amounts of nitrogen would be wrong for tomatoes, which are naturally inclined to be gross in growth, and which are grown for the fruit. It is well known that plants making soft growth are those most liable to attack by fungus diseases, tomatoes and potatoes being noteworthy examples. Yet blood manure, which is almost solely nitrogenous, is the fertilizer most commonly used