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THE FARMER AND THE CHEMIST.

AT the eighth International Chemical Congress, it is stated, Professor Hofrat Bernthsen, an eminent German scientist, announced that a method had been discovered in Germany of manufacturing ammonia synthetically by uniting nitrogen and hydrogen. This is said to be of great interest to farmers as it may cheapen the cost of fertilizers. As a matter of fact there is nothing new about the production of ammonia synthetically by mixing nitrogen and hydrogen. In all probability the professor simply announced an improved method of production, the older process, which needed an electric discharge, being confessedly imperfect. Under the new method the ammonia is prepared by passing the gases through a tube containing a substance for promoting reaction, at a temperature of about 900 degrees Fahrenheit and under a pressure of 150 atmospheres. As ammonia is extensively used in the manufacture of ice and in the preparation of fertilizers, notably ammonia sulphate. Dr. Bernthsen predicted that its synthetic preparation was an important step forward in scientific achievement, inasmuch as its components—nitrogen and hydrogen—may be obtained from water and air respectively at a negligible cost. The world's consumption of ammonia for 1911 is estimated in value at \$80,000,000.

What seems to be wanted now is some invention that will make the average farmer take a more lively interest in the use of nitrogen as a fertilizer. For centuries it has been known that by growing red clover, beans, peas, vetches, alfalfa, or other leguminous crops the farmer could enrich the soil for wheat or other cereal crops to follow. For many years the agricultural chemists have been teaching that this was due to the absorption of free nitrogen from the air. In 1886 two German chemists, Helbrigel and Wilforth, announced the important discovery that the function of the root nodules of the clover was the assimilation of the atmospheric nitrogen. More recently it has been demonstrated that the process was effected by micro-organisms in the soil and practical methods have been discovered of inoculating the soil with organisms suitable for each crop. This inoculation has been tried extensively in the United States with the most satisfactory results. In England, after centuries of cropping, thanks to intelligent farming, during the last forty-eight years they have grown an average of 28 1-4 bushels of wheat to the acre. In the United States from 1900 to 1905 they only averaged 13.6 bushels per acre. In the decade ending 1880 it was only 12.4 per acre. In Ontario they

manage 19.10 per acre and in the west it varies from 20.02 in Manitoba to 26.49 in Alberta. At present the western Canadian farmers are largely mining or quarrying their wheat land rather than farming it and this is a process that cannot go on for ever. With a system of crop rotation or fertilization, their land would be getting richer instead of poorer, and they would not be under the necessity of importing dairy produce. Of course when farmers are getting big crops out of cheap land with little work and big profit it is hard to interest them in any preparation for a comparatively remote future, except a big bank account. For the present the question is a national one rather than a personal one; but the experience of the United States shows what may happen in the way of reducing the productiveness of land.

CANADA AND THE BRITISH CONSULAR SERVICE.

THE Colonial Secretary, Sir Edward Grey, and the Hon. George E. Foster, Canadian Minister of Trade and Commerce, have made

an arrangement by which the aid of the British Consular Service all over the world will be at the disposal of Canadian business men.

Our Department of Trade and Commerce will be furnished with copies of all trade reports from British consuls in any districts specified by Canada as well as with lists of the consuls. Canadian firms or business men will be at liberty to apply direct to any of His Majesty's consuls in any part of the world for information as to the sale of Canadian products, methods of business pursued, and the best means of getting into touch with markets. Persons so enquiring will receive all possible assistance. His Majesty's consuls will be supplied through the Foreign Office with statements of Canada's commerce, resources and development, with lists of the principal industries and sources of supply, and the questions upon which Canadian merchants and manufacturers desire information. The consuls will render every assistance to Canadian trade representatives and when possible give them office accommodation at the consulates.

The arrangement evidently provides a very economical system for facilitating Canadian foreign trade and will be a great convenience to Canadian experts who realise the advantages of the service. The consular services of Germany and the United States are of the greatest value to the exporters and importers of those two countries.