EXHIBITION CIRCULAR No. 27.

DOMINION OF CANADA.

DEPARTMENT OF AGRICULTURE.

EXPERIMENTAL FARMS.

DIVISION OF CHEMISTRY.

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THE FARMER AS A MANUFACTURER.

BY

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Part II.—Soils: their origin and nature.
Fertility: its maintenance and increase.

HOW SOILS ARE FORMED.

The earliest surface of the world was composed of solid rock, like granite, which had cooled down from a molten state. Now, these rocks are nothing more than innumerable small pieces of mineral cemented together. The other type of rocks (marble, limestone, sandstone, &c.,) were formed later.

Soils are formed by the decay and crumbling of these rocks. The small pieces of mineral become separate and cover the surface. Then plant life began to develop. The vegetable organic matter (humus) resulting from the gradual decay of plants together with the small pieces of minerals give us our soils of to-day.

MINERALS IN SOILS.

If a soil be sorted out and the humus separated we can actually see, by means of the microscope, the great variety of small pieces of minerals. It is upon these minerals the plants must ultimately depend for their supply of mineral matter.

The plant requires a considerable variety of mineral matter but luckily in farming it is found that of this only Phosphoric acid, Potash and Lime run short. Of course, in addition to this we must consider the supply of nitrogen in the soil, as described before.

THE PHYSICS OF SOILS.

In general the constituents of soils are:—

1. *Clay*—The particles of which are extremely small; they measure $\frac{1}{25000}$ inch. Its plasticity and adhesiveness hold the particles of sand and these help to form soils of good tilth. The extreme fineness serves to hold moisture and gases and solutions of plant food.