

LIEBIG ON AGRICULTURE.

Baron Liebig, the world renowned chemist, is publishing in the *Bavarian Gazette*, a new introduction to his well known "Agricultural Chemistry" which is just coming out in a seventh edition. The following extracts will afford material for thought to agriculturists generally; and though they have a special application to England, the suggestions implied or expressed will be found to have no unimportant bearing on our Canadian agriculture. It is a fact too palpable to admit of doubt, that both in the neighboring States and in Canada, thousands and tens of thousands of acres of land formerly rich and highly productive, yielding profitable returns, have now become, in consequence of the exhaustive system of tillage comparatively barren, and in some cases abandoned.

"Exhaustive agriculture (Raub-Bau), which renders the country a desert, and makes it unfit for human habitation, may be described in a very few words. On a virgin soil, and during the first period of its subjection to the plough, the farmer sows his corn, year after year, in the same ground. When a deterioration of the crop becomes visible, he passes on to another field. As population increases, this extension becomes more and more limited, and the farmer is confined to one and the same plot, different portions of which are successively left to lie fallow for a time. The yield goes on decreasing year after year, and the original fertility is now sought to be restored by the artificial resource of manures. The meadows are gradually absorbed in the process, and the three-field system introduced. But as these resources do not hold out for ever, the production of manure by the cultivation of fodder becomes a necessity. The lower depths of the soil are used for the rearing of plants originally confined to the meadows, until at length these, too, are exhausted. Peas are first employed for this purpose; shamrock, turnips (Rube), and potatoes then follow in disastrous succession. At length cultivation becomes impossible; the soil being no longer able to produce crops. This is a process that may extend over many hundreds of years, and in some cases even up to a thousand. At length the exhaustive effects of his labour reach a point when they become too clearly visible; expedients are then resorted to one after the other, each of which recognises the deterioration of the soil.

"English agriculture will best exemplify the disturbance of nature's economy on the part of a highly civilized nation. In the last quarter of the eighteenth century was com-

menced the importation of bones into England, which continues uninterruptedly to this very day. The importation of guano began in 1841; in 1857, 286,000 tons were brought to England, while the average importation of bones had risen to from 60,000 to 70,000 tons a year. One pound of bones produces in three seasons 10 lbs. of corn, while 1 lb. of guano in a course of five years makes 5 lbs. of corn. It may be supposed, without danger of falling into a mistake, that in the 50 years between 1810 and 1860 4,000,000 tons of phosphates have been imported into England in the form of bones, linseed cakes, rape-seed, &c. These, in the same time, have produced 40,000,000 tons of corn, sufficient for the sustenance of 110,000,000 of people. Supposing that, from 1845 to 1860—that is, in 15 years—the English fields have received an addition of 15,000,000 tons of guano, the corn produced by this artificial manure must be estimated at 7,500,000 tons, sufficient to feed 20,000,000 of people. Again, it is self-evident that if the phosphates imported since 1810, and the guano forwarded to England since 1842, had not exhausted part of their productive power by employment upon the fields, these fields would have possessed in 1861 the essential conditions for the production of food for 130,000,000 of people. But with this calculation must be contrasted the astounding fact that Great Britain is not even able to produce the amount of food required for its 29,000,000 of inhabitants. The introduction of closets into most parts of England results in losing annually the material capable of producing food for 3,500,000 people, the greater part of the enormous quantity of manure annually imported by England being regularly conveyed to the sea by its rivers, and the crops grown not sufficient to feed the ordinary increase in the number of its inhabitants.

"Although not in the same proportions as in England, the same process of self-destruction is going on in every European country. In all the great towns of the Continent large sums are annually expended by the authorities in order to make the material requisite for the improvement of the fields unattainable by the farmer. In Bavaria, for instance, one of the richest and most fertile countries of Germany, the average crops of the Danubian districts, although proverbially abundant, have been found to decrease year after year, and are already inferior to those in the Palatinate. To form a correct notion of what is shortly in store for Bavarian agriculture, it may be sufficient to mention in this place, that a single factory at Henfeld, in the course of last year, only exported seven hundred and fifty tons of bone powder to Saxony, where its value is no doubt, better understood than here. For twenty-five years past the exportation of phosphates from Bavaria has steadily increased, and the figures just given