

staple products of the country, in given circumstances, by a course of experiments for many years; and no subject deserves more to be investigated on experimental farms than this; because it is too costly for others, on account of the loss which they suffer in the unmanured half of the field. How the product of the field increases with the increase of manure, and a proportional rotation of crops we have shown in vol. i, p. 180. But as the statements there made are drawn from universal experience and reason, they may be attacked until reference be had to the particular experiments which lie at the ground of them. Every experiment which may be made respecting this neglected subject is, therefore, of the highest importance, and deserves to be carefully collected; and in this point of view I hold, as very deserving of notice, what GOSPARIN says, concerning the relative value of manure, in his *Memoir on the Culture of the Olive in the South of France*. 'The average product of seven years of a garden of olives of 1,600 young trees which were not manured was 651 lbs. of oil. (One tree gave only 0.40 lb.) A similar number of the same trees, which in three years had collectively 840 cwt. of manure, gave yearly 1,497 lbs. of oil. (For 0.93 lb.) One cwt. of manure, therefore, produced three lbs. of oil. The manure was horse dung. The product of the larger trees was raised by manure in the same proportion. Trees thirty years old not manured for a number of years gave $3\frac{1}{2}$ lbs. of oil; while those which had yearly 168 lbs. of manure, on a mean average, bore 814 lbs. of oil. One hundred weight of manure increased the product of oil about 2.91 lbs. A person yearly manured his olives, and succeeded in obtaining, as the mean product of fifteen-year-old trees, $4\frac{1}{2}$ lbs. of oil. Trees situated near the house, which had yearly two cwt. of manure, produced ten pounds of oil each.'

"NICOLAI, in his *Principles for the Administration of Estates*, assumes, probably after BECKENDORF, that there will be produced from one head of cattle, ten two-spanned loads of manure in a year. From one stall-fed horse, fifteen loads as above. From a grass-fed horse, $7\frac{1}{2}$ loads. From 100 head of sheep, 100 loads. By careful littering, swine are reckoned at twice as much as cattle.

"According to KARBE, sixty-five cows in summer on a pasture, being kept over night in stalls, will manure forty-four yokes ($62\frac{1}{2}$ acres).

"According to LEOPOLD, four cows kept in stables and properly littered, yield fifty loads of manure, of which six will answer for an acre.

"In a very learned and able treatise, found in the

Annals of Netherland Agriculture, the proportion of manure of different animals is stated to be as follows:

1 head of cattle.....	180
1 " horse	170
1 " sheep	10
1 " swine	18

"VEIT says, vol. i. p. 365:—'The value of stall manure is determined by the value of the production effected by it. The quantity of production depends on—1st, the natural capacity of the soil; 2d, on the choice, preparation and employment of the manure; 3d, on the choice of plants which are cultivated in one period of manuring; 4th, on the system of culture, especially the rotation of crops, and the treatment and use of the soil.'

NOTE BY THE EDITOR.—It is not the fault of the able German writers on agriculture that it is so difficult to ascertain the true value of manure. The problem to be solved is exceedingly complex. In one series of experiments the same mixture of liquid and solid excrements differed five-fold in its effects when applied to clayey soil in good condition, and to dry, sandy soil in bad condition; and pulverized human excrement, as well as all other materials of manure in the form of powder, displayed a dissimilar greater effect if they cover the ground and are shaded by the plants manured, than when employed in a smaller mass and on an unshaded surface. In a word, the most trust-worthy experiments prove that one may lose two-thirds of the strength and virtue of his manure after it is hauled into the field, by solar evaporation, and partly, perhaps, by its salts being washed away over the surface of the ground.—SCHWERTZ remarks, "that it is incredible how the Belgians with so little manure can manure so much land." This success he attributes to their skill in classifying the fertilizing power of different kinds of manure, and adjusting it to the exact condition of the land, and the precise wants of the plants to be grown. SCHWERTZ adds, "such facts ought to make us ashamed, and wake us up to a zealous imitation."

Belgium contains a denser population than any other nation in Europe; and yet, for the area under cultivation, no other country exports so much of the products of husbandry. These are striking facts, and indicate great advancement in agriculture.

How to make the most of any given quantity of manure, is a matter of great interest to a thoughtful farmer. The Belgians calculate the urine of each cow as worth two pounds, or about ten dollars a year. At this rate, the six and a half million cows now in the United States, might yield liquid manure