

FARM AND FIELD.

FARMYARD MANURE

At a meeting of the Central New York Farmers' Club, Daniel Bachelor, Esq., read from a lecture of J. B. Lawes, of England, as follows:—

I propose to show you what is the composition of farmyard dung; to what ingredients its fertilizing properties are due; why it is a bulky manure—by which I mean that much larger quantities of it must be used to produce the same amount of crop as would be used in artificial manures; to what its lasting properties are due; how it is enriched by the consumption of purchased food, and the connection between the manures made on the farm and those which are distinguished as artificial. A farm of 400 acres, cultivated on the usual four-course rotation, would produce from the consumption of its food and litter a quantity of dung which, in the ordinary state of moisture, would weigh 840 tons, or if we deduct the moisture, 252 tons. Of this, 640 tons will be contributed by the straw; of the whole dry matter of the dung, nearly four-fifths is straw. That straw must form the bulk of any yard of manure, is evident from the fact that by far the largest part of all foods consumed is either fixed in the animal or passes off in respiration. Of the better sorts of food, not more than one-fourth or one-fifth finds its way to the manure pile. Of a ton of this manure the total dry matter is not more than six hundredweight, and of the selected constituents needful to plant life there is only eleven pounds of potash, eight of phosphoric acid, reckoned as phosphate of lime, and twelve of nitrogen, making, of the three, but thirty-one pounds. Dr. Voelcker shows us that by far the largest part of the ingredients of dung are in an

INSOLUBLE STATE

—that is to say, in a state in which plants cannot feed upon them until they have undergone further change. I mentioned that nearly four-fifths of barnyard manure consists of straw. The influence of straw as a manure cannot be left out, therefore, of our estimates. Of two half acres of permanent pasture at Rothamsted the same quantity of chemical salts was applied every year, one receiving in addition 2,000 pounds of finely cut wheat straw. It was not till eight years after the first application that the influence of the straw upon the crop became perceptible. Since that the effect has been continuous, and the increase of the hay due to the straw has been for the last ten years equal to 1,100 cwt. per annum. On another part of the same pasture farms, dung was applied for eight years in succession, a hay crop being removed each year. Since the last application of dung thirteen crops of hay have been taken, and it appears probable, as the last crop gave seven hundredweight of hay due to the unexhausted dung, that several years elapse before all further influence of the dung ceases. Mr. Lawes goes on to show that it seems likely that that man had a glimpse of the great truth who said the time would come when the farmer would take his manure out to his field in his coat pocket, and be in no danger, as the witty man replied, of bringing back his crop in his waistcoat pocket.

OUR CROPS,

he said, generally contain from ninety to ninety-five per cent. of organic matter—that is, carbon, hydrogen, nitrogen, and such elements, in that form, that is, that part of the crop, which, if you would burn it, would disappear into the atmosphere. When we increase a crop by means of a manure such as salt of ammonia or nitrate of soda, which contains no organic matter, do we merely enable the plant to take up that which had been

previously supplied in the yard manure? No. On a field of fourteen acres, which as a whole has received no dung for thirty six years, the yield of straw and grain has been larger on that part which has had the chemical salts than on that which has had an ample supply of dung. You see, therefore, that the evidence is very strong for organic matter being taken from the atmosphere. In fact, if I wish to grow the largest possible crop, say of grass, without any reference to the cost, I should carefully avoid applying any manure containing any organic matter. The use of

ORGANIC MATTER

in manures appears to be chiefly to make the land work better, and in absorbing and retaining moisture. So many are disposed to attach a mysterious value to the excrements of animals, and to think that some special properties are imparted to these in the transformation of food through the body of the animal, that I fear they will not readily accept the idea that the manuring properties of dung are confined to the chemical salts which it contains. It must be borne in mind that experimental fields receive no dung, nor does any animal enter them except the horses which cultivate them and carry off the crop. Unless, therefore, the plants can thrive on chemical salts, they could not be there.

SUMMARIZING

his whole lecture in its closing sentences, Mr. Lawes says: The following conclusions will sum up what I have placed before you:

1. That a superphosphate has given a considerable increase to each crop of a rotation, although used without any other manure, for a period of thirty years.
2. That in consequence of grain containing large quantities of nitrogen and phosphoric acid, and all quantities of potash, manures containing soluble nitrogen, as ammonia or nitric acid, are specially applicable to these crops.
3. That when crops containing large quantities of potash, such as roots, potatoes and hay, are sold off the farm, manures containing potash, such as purchased dung, appear to be more suitable.
4. That although potash, phosphoric acid and nitrogen are the chief manure ingredients in farmyard dung, the manure from artificial foods and in artificial manures, still the differences in form with which these substances are met greatly affect their value. The present method of analyzing manures does not properly recognize these distinctions, and the valuations founded upon these analyses are altogether false and erroneous.

SUCCESS OR FAILURE ON THE FARM.

Good farming is not by any means on the side of the majority yet, and even the best must prosper from slow gains. The unthrifty sort, on the other hand, fail, usually, from a succession of bad judgments and small losses. I can think of no business where an alert intelligence is so needful as in farming. For you must do a great many things not only well, but at just the right moment, to succeed with your crop.

A too early or too late planting, an untimely harvest, a neglect to cultivate perfectly, and a too easy toleration of weeds are only a few of the factors that make for failure or success. The truth is, the carrying of an important crop through, from the seed-sowing to the granary or cellar, requires a larger series of delicate and exact conditions to be accurately complied with than does any chemical process. You may do every part of the labour perfectly, yet fail in fertilization or in the selection of the soil. You may

raise, in fact, a good crop, and still fail because there is no market for it.

Perhaps the unthrifty farmer has raised a good crop, which is in demand; but he loses it because of poor fences and gates that have been left open for his own or his neighbours' stock to ravage it. He may put good hay in a stack, and yet have the stack so poorly made that the weather undoes all the benefits of his previous success. If he stores it in the barn, it may be fed out with such ill-judgment and slovenliness that great waste ensues; or he may keep his stock so poorly housed that no care in feeding will avail him. The ways of unthrift are innumerable, and find their opportunities for partial or perfect failure at all seasons of the year.

To know just what to raise, or what line to pursue in a given locality, is always more or less of a problem which the wisest must grapple with. It cannot be put into a perennial precept, but must be ascertained at different periods by actual experience, or by shrewd foresight and experiment. There are certain crops, such as hops, broom corn, tobacco and beans, which undergo great fluctuations in prices. One year one of these crops will be very profitable from the high price it commands, and another year you may raise it at a loss or to no profit. One cannot foretell with absolute certainty; but the farmer who experiments with them must at least have his eyes wide open. If the farmer, indeed, shuts his eyes at any time except when he goes to bed he can easily wake up to some important loss.

One of the small leaks—which is not so small, either, when the aggregate of damage from it is summed up—occurs from a lack of care of the tools and implements on the farm. The spade is left in the trench, the crow-bar and chains on the ground, the saw on the wooden horse, and the like. Some farmers leave their waggons and carts employed for farm use exposed to the weather the year round. It is not uncommon in riding through the country to see a horse-rake or mowing-machine standing outside in the fall in the very swath where it was used in July.

A quaint old gentleman in our town, who used to add to his small farming the successful manufacture of grain-cradles, said that when he travelled with his wares he always liked to pass the houses of those farmers who hung their scythes and cradles on some yard-door tree, for he was sure then that the merchants in that locality would have frequent need to purchase his goods. A farmer might possibly afford to lose one scythe or cradle a year in this way, but if he is guilty of this shiftlessness he will commit others too. Every farmer must depend, too, more or less on hired help, and one single fault of this character will prove more contagious to hired men and boys than a dozen of the sturdiest virtues.

It is the careful farmer whom Emerson has in mind when he says that "the farmer's office is precise and important. . . . He represents continuous hard labour, year in, year out, and small gains. He is a slow person, timed to nature, and not to city watches." He must not only "wait for his crops to grow," and have patience with "the delays of wind and sun," delays of the season, bad weather, etc., but he must employ endless resources of forethought and calculation, and never relax an unwearied care and vigil. It is just in proportion as he heeds these things that he meets with success or failure in his vocation.

—Joel Benton.

EFFECT OF UNDERDRAINS.

The thermometer, since the new year, has been down to within six or eight degrees of zero, but fortunately for wheat, a fall of snow the last of December and first of January protects the