

gave an analysis of dung and urine, made by Dr. Nichols of Haverhill, Mass., and urged the importance of adding a considerable proportion of phosphoric acid to both of them, in order to utilize the large contents of nitrogen, seemingly greatly in excess in both solids and liquids. As to the nitrogen in dung, even from highly fed stock, I think it doubtful if it is in so large excess practically, as the analysis would lead one to suppose. The longest testings that have been made by experimenters indicate that rarely more than one-third and never more than one-half of this dung-nitrogen is ever returned to the cultivator in his crops. Inattention to this fact is probably the cause of Mr. Stevenart's rather careless criticism of our friend Bucephalus. But the facts, as collected and set forth in Prof. Storer's invaluable new work on "Agricuture" (lately issued by Charles Scribner's Sons, N. Y.) would indicate that Dr. Nichols's analysis was incorrect in a way which, far from exaggerating, greatly understated the incomplete character of urine as a manure. On p. 489 of Vol. 1, Prof. Storer gives a series of urine analyses by Stoeckhardt, showing that there is almost no phosphoric acid in the urine of the sheep and swine, and absolutely none in that of the horse and cows which was analyzed. It is plain, therefore, that in order to get the value there is in urine as plant-food, a large quantity of phosphoric acid must be applied with it to the crop. As to the *quality* of the nitrogen in urine, however, it is far better than that contained in dung, and if properly handled, much the greater part of it can be made to contribute to the growth of the crop. As Prof. Storer well says (p. 490, Vol. 1.), "The nitrogen in mere dung is of very inferior quality to that in urine, since most of it is insoluble and in a condition unassimilable by plants. It is contained chiefly in the undigested, not to say indigestible portions of food, which have been expelled by the animal as useless for its purposes, while the nitrogen in urine is all in solution, and in a condition fit to be immediately taken up by plants."

It seems to me that the wisest way to utilize the liquid manure is to have it absorbed by litter, and the whole excrement, liquid and solid, along with the absorbents, dropped together into a water-tight cellar. The experience of Ed. A. Barnard, esq., director of Agriculture for the province of Quebec, at his finely managed experimental farm near Three-Rivers, Que., is that when but a reasonable quantity of absorbents, such as can be easily supplied on farms growing a fair variety of crops, is used, the manure in such a cellar while too wet to ferment, is not found in the spring to be wet enough to dip, or be difficult to handle; yet the litter is quite well decomposed, so as to afford no obstruction to its proper and even distribution by Kemp's manure-spreader. (1)

Now it seems evident that, if in connection with any suitable absorbents—straw, sawdust, dry muck or loam—a proper proportion of some phosphatic preparation (say, a plain superphosphate, fine-ground bone, or South Carolina floats) were mixed with the manure daily as made, the resulting dressing would prove to be more perfectly proportioned and combined, and consequently far more economical than it could be made in any other practical way. Certain it is that urine alone, while a powerful "forcing manure," is too strong in nitrogen and too weak in phosphoric acid to give any kind of satisfactory results in the hands of ordinary farmers, destitute of scientific training.

#### SOILING CROPS

I REGARD soiling as valuable as an adjunct to pasturage and consider it the most economical way of feeding stock, and espe-

(1) But, Dr. Hoskins forgets that Mr. Barnard expressly states that in his stables no litter at all is used. A. R. J. F.

cially milch cows. If these can have a small night pasture and be stabled in a cool building during the day, and have an abundant supply of green food, they will do much better than when in the best pasture, exposed to heat and flies. I am unable to give definite figures in regard to how many cows can be kept upon an acre, or just how much it costs, never having used the soiling system exclusively, but I will say, emphatically, that it pays. The chief points of advantage are, the increased number of cows that can be kept; the fact that one can nearly control a steady supply of green forage, whereas pastures so often dry up, almost hopelessly destroying their usefulness for a season. Of course, the amount of labor required, is increased, but not in proportion to the increase in products.

I would recommend the following succession as a good one; 1, early-sown fall rye; 2, Orchard Grass, 3, clover; 4, peas and oats, 5, corn; 6, Hungarian Grass or millet. These are given in the order in which they may be cut. Rye can be cut in the early part of May. Before June 1, Orchard Grass is fit for the scythe. (1) Then come clover, peas and corn in regular order. On the ground from which the rye is cut, fodder corn may be planted. From the oat and pea ground a crop of Hungarian Grass or millet may be cut, thus giving two crops in the same season from each piece of land.

I would not recommend sowing fodder corn broadcast, nor cutting it early. Plant in drills three and a half feet apart, and cultivate thoroughly. Don't plant too thickly.

The natural function of the corn plant is to produce corn, and if deprived of this function by crowding, it fails to itself the most valuable constituents of the plant, viz., starch and sugar. For this reason I do not recommend late planting, although I have seen a good growth of stalks from corn planted as late as July 1st; but to my mind they were not very rich food—mostly water.

The above is one succession. It may be varied, or some may find an entirely better one, but I think this will be found good and practicable, to say the least.

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(1) Of course, these crops will be from ten to fifteen days later here. A. R. J. F.

#### NON-OFFICIAL PART.

##### Percheron horses at Toronto Fair.

Savage and Farnum of Island Home Stock Farm, Grosse Isle, Wayne Co., Mich., importers and breeders of Percheron horses, have entered thirty seven head of registered Percheron stallions and mares. These thirty-seven are the choicest of their entire stud and will no doubt be an attractive card at the coming Exhibition. This is the largest entry of horses ever made in Canada by a single firm, and the largest number ever made in the United States or Canada except at one fair, and there, out of fifty-two exhibitors, Savage & Farnum showed one tenth of all the horses that were entered, and were awarded twenty-two per cent of all the prizes. Admirers of this famous breed of horses, and those who contemplate purchasing, should not fail to inspect this large number.

Both Mr. Savage and Mr. Barnum will be at the fair with their horses during the Exhibition, and will have comfortable quarters fitted up in which to meet and entertain their friends. They will be glad to make the acquaintance of visitors to the fair with whom they have been corresponding.