AGRICULTURAL

Farm Yard Manure.

A number of correspondents ask for information about the value, and best method of caring for farm-yard manure. This is a complete manure, i. e., it supplies all the essential elements of plant-food. It is important that the urine be preserved, as farm-yard manure without urine would be poor in nitrogen, and would also lose a considerable amount of potash. A hundred pounds of well-rotted farm-yard manure generally contains seventy-five pounds water, about one-half pound of nitrogen, less than one-half pound of potash, and less than one-half pound of phosphoric acid. From this it will be seen that this kind of manure will have to be applied in large quantities, hence the necessity of preserving every particle of plant food. There is no question that bad management will entirely, or nearly spoil the manure. Too many farmers throw out the accumulation back of the barn, where from continual washing a large per cent. of the value is lost, washed down the gutter. The action of the water wears down the solid matter as in the case of an ordinary bank, and presently the loosened particles are swept away from the mass and conveyed to the nearest stream. Even if no great loss of bulk occurs, the richer portions of the manure are lost, because the water washes out the most soluble matter as it passes through the heap. The advantage of a covered yard is thus seen at a glance. In covering a manure yard steps should be taken to secure the whole of the urine which is voided by the cattle as they stand in the stalls. When the urine and solid excrement with the litter are mixed together, fermentation proceeds on the most approved lines; but when there is insufficient moisture in the heap, as in the case when the drainage from the sheds is carried off the premises, fermentation proceeds too rapidly, and the manure is spoiled.

Several years ago Dr. Voelcker carried out a series of experiments upon the various methods of keeping farm-yard manures, and among the conclusions arrived at, to a correspondent, was this: Practically speaking, all the essentially valuable manuring constituents are preserved by keeping farm-yard manure under cover, and also that the worst method of making manure is to produce it by animals kept in open yards, since a large proportion of valuable fertilizing matter is wasted in a short time, and, after a lapse of twelve months, at least two-thirds of the substance of the manure is wasted, and about one-third, inferior in quality to an equal weight of fresh dung, is left behind. To turn to details, Dr. Voelcker placed 2,838 pounds of fresh mixed manure in a heap in November, and this when weighed at the end of the following April weighed 2,026 pounds, a shrinkage in weight of 28.6 per cent. In other words, 100 tons of such manure would be reduced to less than seventy-one and one-half tons. The heap was weighed again August 23, and contained 1,994 pounds; and again on November 15, when it weighed 1,974 pounds. As regards composition of the above, when first put up the manure contained 66.17 per cent. of water, or nearly two-thirds of its weight; after fermenting in an exposed heap for six months it still contained about the same percentage (65.95) of water. When kept in a heap until August the percentage of water (75.49) was much greater. Of four tons of such manure three tons are water. Of nitrogen, the most valuable ingredient of the manure, the fresh dung contained 0.64 per cent.; after ferementing six months it contained 0.89 per cent. Six months later it contained 0.65 per cent., or about the same as the fresh manure. Of mineral matter, or ash, this fresh farm-yard manure contained 5.59 per cent, of which 1.54 was soluble in water, and 4.05 insoluble. After fermenting for six months the manure contained 10.55 per cent. of ash, of which 2.86 was soluble, and 7.69 insoluble. Six months later the soluble ash had declined to 1.97 per cent. Taking the above figures as something to go upon, we will suppose that we put up a heap of manure, five tons (10,000 pounds) in the open on November 3; by the end of April this will be reduced to 7,138 pounds, of which 4,707 pounds are water. By August 23, the heap is reduced to 7,025 pounds, of which 5,304 pounds are water. Of total nitrogen in the heap, there are 64.3 pounds in the fresh manure, 63.9 pounds in April, and only 46.3 pounds in August. This is a great loss, and there is no compensating gain. At the same time Dr. Voelcker made the above experiment, he placed another heap of manure, under cover, in a shed. It was the same kind of manure, and was treated precisely as the other—the only difference being that one heap was exposed to the rain, and the other not. When put up, the heap weighed 3,258 pounds; at end of April it weighed 1,613 pounds, on August 23, 1,297 pounds, and on November 15, 1,235 pounds. Thus 100 tons of manure kept under cover for six months would be reduced to forty-nine and six-tenth tons. Whereas, when the same manure was fermented for the same length of time in the open air, the 100 tons were reduced to only seventy-one and four-tenths tons. This difference is due principally to the fact that the heap exposed contained more water, derived from rain and snow, than the heap kept under cover. As regards composition, we will for the sake of comparison, estimate what the change would be in a heap of five tons (10,000 pounds) of manure, when fermented under cover, precisely as we did with the heap fermented in the open air, exposed to the rain. When put up on November 3, the heap weighed 10,000 pounds, of which 6,617 pounds were water; on April 30 the weight was 4,960 pounds, containing 2,822 pounds water; on August 23, 4,000 pounds, of which 1,737 pounds were water; and on November 15, 3,790 pounds, containing 1,579 pounds of water, of total nitrogen in heap, there are 64.3 pounds in the fresh manure, 59 pounds in April, 50.8 pounds in August, and 57.2 pounds in November. This loss of nitrogen though not so considerable as in the exposed heap, would have been much less if the heap had been kept moderately moist by liquid from the stables, or by watering. As it was, the manure was too dry, and there was not enough water to retain the carbonate of ammonia.

A Winter's Special Study.

The progressive farmer plans for improvement in his business. Method is found to mark the plans of the successful man in every calling. The physician goes away to a course of lectures occasionally to brighten upon modern discoveries. He accomplishes most when his few weeks or few months are devoted to a special subject. So it is true of the farmer and breeder, that special application must be made to some one subject during his winter's reading and investigations by experiment, if he is to see results of substantial worth.

The measure of economy in feeding is one's knowledge, and the broad or narrow extent of that knowledge. By knowledge we do not mean that which has been learned from reading, altogether. It is true, however, that reading is always suggestive to a fertile mind, if not always instructive. Faulty statements discovered in one's reading and conversation may awaken the mind to unusually valuable discoveries. We would urge, therefore, that our bright friends among farmers and feeders, will find it to their advantage to read several books and different journals for the next six months, and that they be not wholly disgusted and thus driven to abandon reading because of occasional inaccuracies. When an impracticable suggestion is found, effort should arise to urge the mind to a new thought that shall be an invention of a better way.

Then it would be a good thing to write out this idea and send it to your favorite agricultural journal, to be incorporated into an editorial item that will go out to thousands of fellow farmers to lighten their labors, add, perhaps to burden their purses.

There are scores, and perhaps hundreds, of middle-aged farmers whose practical experience will enable them, the coming winter, to read regularly and critically the agricultural literature on feeding, and find by this exercise of their minds profit to themselves and the means of extending more light on a subject that is yet far from being mastered.

Those who learn the most, however, and who shall be able to make right use of their newly-acquired information, are they who shall devote at least two hours or two evenings each week, for six mouths, to reading (or conversation with intelligent men) on the subject of feeding farm animals. If one is fattening hogs or cattle it is the better policy to limit the reading of the two evenings to this scientific subject, and search far and wide for all the help available.

The feeding question involves the problems of oil meal as a valuable part in the ration of work animals, grinding, cooking, the use of warmed water in icy weather, cutting hay, straw and fodder, the proper mixture or ration of the grains, changes of provender and a dozen more items.

Success attends the efforts of the man who reads and thinks while he works with his limbs. Results are larger, too, if his heart is enlisted in the subject and in his animals. But one should reserve five nights of seven for the various other work of life. Feeding is not the sole saviour of the farm.

THE WORLD'S WHEAT CROP.

Good and Bad Reports From Different Countries.

In France the harvest has been completed under the most favorable conditions, and the Minister of Agriculture has now issued his estimate of the wheat crop, which greatly exceeds all previous expectations; the total yield is, in fact, put at 336,000,000 bushels or only 6,400,000 less than last year. France will require to import very little wheat this year.

In Austria-Hungary the wheat crop is finally described as a good average one, which means that it is little short of last year, but that rye is about 2,750,000 qrs.* less than last year.

In Roumania, according to the latest official report, the grain crops are not so abundant as was expected, but they are much larger than last year. Wheat, for instance, giving 8,250,000 qrs, against about 5,500,000 qrs last year.

From Bulgaria reports point to very large crops of wheat and barley.

The Italian wheat crop is now officially estimated at 13,000,000 qrs, against 14,750,000 qrs last year, so that, as the past season's imports have been about 2,500,000 qrs, Italy may be estimated to require over 4,000,000 qrs in the season just commenced.

From Spain the latest reports state that the crop as a whole is much below last year's, which was a very good one, reaching 13,000,000 qrs.

From Russia the crop reports are rather conflicting. The latest official report says that fine hot weather was good for the harvesting of the winter crops, but was unfavorable for spring crops, which ripened too quickly and will consequently yield a poorly developed grain. Oats and wheat especially suffered from this. The general crop outlook in South Russia is much deteriorated, report indicates therefore that the crops are much worse than last year, when nearly all the crops were far above an average.

From Australasia the latest crop reports are satisfactory, but in Argentina according to latest cables, the outlook is described as by no means brilliant for the wheat crop.

*Eight bushels makes one quarter.

The Wrong Instrument.

Irate Father—Here I've paid you, no telling how much money, to teach my daughter music, and she can't play any better than she did before. Whose fault is that?

Prof. Van Note—Ze fault of ze instrumen. I had von instrument in my shop vich she learn to play soon.

Irate Father—Huh! Is it like this?

Prof. Van Note—It looks like zis piano, but it goes mit a crank.

MR. AND MRS. BOWSER.

THE OLD MAN COMES HOME IN A BAD TEMPER.

A Hole in His Stocking Causes Much Unhappiness—Trouble With His Vest Makes Him Wizzy-Wazzy—Other Grievances Are Aired in an Unamiable Manner.

When Mr. Bowser let himself into the house with his latch-key, Mrs. Bowser was sitting in the back parlor. She knew by the way he banged the door shut and scuffed around the hall that something had happened, and nerved herself up to meet it. She gave him a wifely greeting, but he glared at her in return and growled.

"Never mind putting yourself out for me on this special occasion, Mrs. Bowser! After dinner I want to have a talk with you!"

"Has anything happened, dear?" she anxiously queried.

"You will be informed in due time. I suppose dinner is half an hour late, as usual?"

"Dinner has been ready for five minutes, dear. You have never had to wait over five minutes for dinner since we were married."

He scuffed into the dining-room and took his place at the table with the demeanor of a boy threatened with a licking, found fault with everything at the board, and left most of Mrs. Bowser's questions unanswered. Her policy was to smooth away the clouds, but he wouldn't have it. When they had finished the meal and returned to the family-room his pent-up feelings burst forth, with:

"Now, then, Mrs. Bowser, I want to know whether this house is run by the superintendent of some idiot asylum or by the woman I made my wife several years ago to take care of my home?"

"Why, what is wrong?" she gasped.

"Everything is wrong!" he shouted as he plumped down on the lounge and bobbed up again. "If I should try to run a hen-roost on your system of managing this house every blamed hen would be dead within a fortnight! There's no real system—no management—no nothing, and I tell you I don't propose to put up with such a muss any longer!"

"Please tell me what particular thing you find fault with," said Mrs. Bowser, as she realized that he had had a bad day at the office and wanted to get square by pitching into her.

"What particular thing? Millions of particular things!" he almost yelled as he wheeled around on her. "Mrs. Bowser, I wear socks!"

"Yes, I know."

"I hadn't reached the office when my right heel began to hurt, and I have been a martyr all day. What was the reason? Holes in my sock—great, big yawning holes which any other wife would have discovered and mended! What are you smiling about?"

"Mr. Bowser, we overslept ourselves. You hurried down and got a bite of breakfast and was gone before I got up. Instead of having holes in your sock you managed to pull one of my stockings over your foot. That's what has hurt your heel all day."

"I deny it! I deny it in toto! I may have my failings, but I am not an idiot! Put on one of your stockings! Don't try to crawl out if it that way, Mrs. Bowser! I'll soon show you that I know what I'm talking about!"

He sat down and unlaced his shoe and kicked it five feet away. Then he pulled up the leg of his trousers, and there was his foot in Mrs. Bowser's stocking, or about half-way in it.

"Didn't I tell you so!" she exclaimed. "I found your sock and missed my stocking when I got up to dress."

"Mrs. Bowser," he said as he pulled the stocking off and got up and limped about, "what do you think of a wife who'll send her husband out among men with such a handkerchief as this? Gaze on it! Is that a handkerchief or a table napkin? Imagine my feelings as I pulled it out on a crowded car to wipe off my chin. When table-napkins are placed among my handkerchiefs haven't I a right to complain of the way this house is run?"

"It was never placed there!" she spiritedly replied. "It was your napkin at breakfast. You left your handkerchief on the table and put the napkin in your pocket. Anything else?"

"Anything else! I should say there was! If you were the right sort of wife wouldn't you have noticed that one of the buttons was off this vest and been prompt to repair damages? Did you notice it? No! You were too busy with some love-sick novel!"

"There is no button off your vest," she quietly replied after a brief inspection. "In your hurry you buttoned your vest wrong. See? The top button is in the second buttonhole. No wonder you felt wizzy-wazzy!"

Mr. Bowser was stuck, but it wouldn't do to give in, and waving his arms around he cried out:

"Not only socks with holes in and missing vest-buttons, Mrs. Bowser, but a dozen times on the street to-day I noticed people looking at me and grinning! It was only as I took the car to come home that I discovered the reason. Look here, will you—look at my shirt bosom! That's your wifely interest—that's your system of management!"

"Yes, I see," she said as he opened his vest with a jerk which ripped two buttons off. Mr. Bowser, you wear shirts which button behind the neck?"

"And does that excuse your negligence!"

"There's no negligence about it. When you put your shirt on this morning you got in hind-side before. There is no shirt-bosom there—it's all on your back!"

"Never, Mrs. Bowser—never! You simply and serenely got up in the night and maliciously yanked the bosom out of my shirt to spite me, and I have gone around all day with my under-shirt exposed to view! Is it any wonder that as I was feeling in my coat-tail pocket for a missing pencil I should find a handful of glass? Perhaps you'll tell me I put it there for a cushion to sit down on!"

"You put it there, of course!" she calmly replied. "You put a bottle in your pocket last night and went over to the drugstore after some arnica. I was up-stairs when you came back and never thought of it. Let me smell. Yes, of course, that's arnica. You probably sat down on the bottle when you took the car this morning. I should have thought you would have felt the smash. Anything else, Mr. Bowser.

There was. Mr. Bowser had been laid out as flat as a pancake on every complaint, but he had a shot in reserve. After scuffing twice around the room with his foot still unshod he halted before her and said:

"Mrs. Bowser, some husbands, under the provocation I have had, and having fully established the criminal negligence of the wife, would have simply walked off and been heard of no more. I am not that kind of a man, however. I feel pity for you. To-morrow my lawyer——"

"Will see my lawyer," she said as he paused.

"Exactly, and the two will probably come to some fair understanding regarding the divorce and alimony. During the remainder of the evening——"

"You will be busy in the library looking over legal papers? I understand, and if anybody calls you are not to be interrupted?"

"Just so, woman!" replied Mr. Bowser as he picked up his shoe and stalked out of the room with his back-bone as stiff as a crow-bar.

COLD STORAGE.

An Opening in Canada for the Successful Prosecution of this Line of Business.

If any estimate can be formed from experience in Australia and New Zealand, the cold-storage business in Canada should be a decided success. Recent fluctuations in prices have convinced our farmers of the absolute necessity of diversified lines of produce. The wheat crop, although it must always be of prime importance, must be supplemented with the extensive adoption of general farming, and this will necessitate proper facilities for the transportation of perishable goods. It may be that our cold, bracing winters have tended to divert the attention of business men from this line of enterprise, and to leave us far behind the more distant southern colonies in the matter of reaching the market with the more perishable lines of farm produce. But the Canadian climate and the tendency to produce such lines for the European market make a demand for this important adjunct of foreign shipment. The success of New Zealand farmers in supplying butter and fresh meat to the British market is due in a great measure to the perfection of the cold-storage system. These perishable lines of goods are brought at once to the cold-storage stations, and are kept till the small refrigerator vessels make their rounds and gather them at

THE POINT OF SHIPMENT.

They are then transferred to the refrigerator liners and carried to Britain. By this system the carcasses of mutton are frozen immediately after being dressed, and are kept in that condition till delivered in England. Butter, also, is kept at a temperature below the freezing point from the time it leaves the dairy till it is delivered to the consumers, and is consequently fresh and sweet when offered for sale in England. There is without doubt an opening in Canada for the successful prosecution of this line of business. Of course it requires the care, energy and attention which private interest and enterprise alone can give.

The willingness already shown by men of business experience to embark in the cold-storage business as a private speculation is the strongest evidence that it will supply a needy function and be consequently profitable. The course which business will adopt after the establishment of cold-storage stations and refrigerator vessels cannot yet be predicted. It is not probable that the farmer will ever deal directly with his customers in Britain, although that has been suggested as a possibility. He may prefer a definite price from a dealer on the delivery of his produce rather than an uncertain return from shipments abroad. The cheese factories have shown, however, that farmers can successfully adopt the

CO-OPERATIVE PRINCIPLE

in the disposal of their goods, and it is impossible to predict how far this same principle may be adopted in shipments through the medium of a cold-storage system. The embargo on Canadian live cattle in British ports has made an opening for, or rather a necessity for, the freezing of beef for shipment. It is probable that this embargo will last for some time, as it has more friends in the present than in the retired Ministry. While it lasts it may be found more profitable to ship frozen carcasses than live animals. The inquirement of immediate slaughter at the port of entry is injurious in many ways. The cattle lose in weight during the voyage and cannot be restored to the best condition. The exposure of the voyage followed by immediate slaughter is said to have an injurious effect on the flavor of the beef, and there are also difficulties in the way of advantageous marketing owing to the strictness of the regulations. Men of experience in the cattle trade have expressed the view that these restrictions will make the shipment of frozen meat more profitable than live cattle shipments. Like all other business innovations, the establishment of a cold-storage system will open up many opportunities and establish new enterprises which cannot now be anticipated. It will supply an important link in Canadian commerce.

A Great Snowstorm.

A correspondent draws attention to the fact that Chambers in his "Book of Days" gives a few particulars of an awful snowstorm that fell out over Scotland exactly a century ago last January. Into some of the hollows of the hills of that 1795 "blizzard" the snow drifted to the depth of 100 feet. On the authority of James Hogg, the "Book of Days" has it further that no fewer than seventeen shepherds perished in the southern district of Scotland alone, while about thirty more had to be carried home in an insensible condition, and were brought round with the greatest difficulty.

UNEXPLORED TERRITORY.

Canada Has Room Enough for the Population of Europe.

There are more than one million and a quarter square miles of unexplored lands in Canada, according to the opinion of Dr. Dawson, Director of the Geological Survey. The entire area of the Dominion is computed at 3,470,257 square miles, consequently one-third of this country has yet been untravelled by the explorer. Exclusive of the inhospitable detached Arctic portions, 954,000 square miles is, for all practical purposes, entirely unknown. Dr. Dawson has made a careful estimate of the unexplored area, beginning at the extreme northwest of the Dominion. The first of these areas is between the eastern boundary of Alaska, the Porcupine River and the Arctic coast, and consists of 9,500 square miles, or somewhat smaller in extent than Belgium, and lying entirely within the arctic circle. The next area is west of the Lewes and Yukon Rivers and extends to the boundary of Alaska. Until last year there were 32,000 square miles in this area unexplored, but a part of this was travelled last summer. A third area of 27,000 square miles lies between the Lewes, Pelly and Stikine Rivers, being nearly as

LARGE AS SCOTLAND.

Between the Pelly and Mackenzie Rivers is another large area of 100,000 square miles, or about twice the size of England. It includes nearly six hundred miles in length of the main Rocky Mountain range. An area of 50,000 square miles is found between Great Bear Lake and the Arctic coast, being nearly all to the north of the arctic circle. Nearly as large as Portugal is another area between Great Bear Lake, the Mackenzie River and the western part of Great Slave Lake, in all 35,000 square miles. Lying between Stikine and Laird Rivers to the north and the Skeena and Peace Rivers to the south is an area of 81,000 square miles, which except being recently penetrated by a field party, is quite unexplored. Another area of 30,000 square miles, south-east of Athabasca Lake, is an area of which little is known, except that it has been crossed by a field party en route to Fort Churchill. East of the Coppermine River and west of Bathurst Inlet lies 7,500 miles of unexplored land, which may be compared to half the size of Switzerland. Eastward from this is an area of 31,000 square miles, or about equal to Ireland, lying between the Arctic coast and Back's River. Much larger than Great Britain and Ireland, and embracing 178,000 square miles is an area bounded by Back's River, Great Slave Lake, Athabasca Lake, Hatchet and Reindeer Lakes, Churchill River and the west coast of Hudson Bay. This country includes

THE BARREN GROUND

of the continent. It will be remembered that Mr. J. B. Tyrrell recently struck through these barren grounds on his trip to Fort Churchill, on the Churchill River, but could only make a preliminary exploration of the country. On the south coast of Hudson Bay, between the Severn and Attawapishkat Rivers, is another of 22,000 square miles, or larger than Nova Scotia. Lying between Trout Lake, Lac Seul and the Albany River are 15,000 square miles of unexplored land, or about half the size of Scotland. To the south and east of James Bay and nearer to large centres of population than any region which still remains unexplored is an area of 35,000 square miles, which may be compared to the area of Portugal. The most easterly area is the greatest of all. It comprises almost the entire interior of the Labrador Peninsula or Northeast Territory, in all 289,000 square miles; more than equal to twice the area of Great Britain and Ireland, with an added area to that of Newfoundland.

A True Bear Story.

Stranger—I presume you have seen a good many bears in your time.

Hunter—'Bout a thousand.

Stranger—I wish you would tell me a bear story—a true one, of course, every detail exactly as it happened.

Hunter—Eh? Want a true bear story? Wall, I swan All right, I'll give yeh one; but sho! you won't care for it. Back in the sixties, about sixty-nine, I think, or mebby it was seventy, I was walkin' along, not thinkin' of anything in particular, except Josh Peabody's chances of election—Josh and me were great friends—when all of a sudden, just as I'd crossed a log over a stream, and sat down on the further end of the log for a little rest, I felt a jar, and, looking up, there at the other end of the log, with one paw on it, was the biggest, ugliest-lookin' bear you ever see. I had my gun but it was empty, and I hadn't as much as a bird-shot to load with—just going home you know. My hunting-knife had got lost somehow that same day, and all I had was an old fashioned pocket knife, a good deal the worse for wear. Well, I looked at that critter, and he looked at me for 'bout two minutes, when I sort o' sidled off the log and crept along up stream about twenty feet, meantime openin' the old Barlow knife. I couldn't get any further on account of a high bank, a thicket of laurels, and the jagged roots of a big tree that was blown over. Well, there I stood, and there that critter stood, me eyin' him and him eyin' me, fer full ten minutes, when all of a sudden——Mighty good cigar this is.

Stranger—Yes, yes; go on.

Hunter—Oh! yes. All of a sudden that bear crossed over the log and walked away,

Roses Five Thousand Years Old.

Flinders Petrie, the archaeologist, while excavating among some ancient Egyptian tombs, found a wreath of roses which had been bound into a garland and buried with the dead thousands of years ago. M. Crepin, the botanist and microscopist, made a careful examination of this queer find and prepared a paper on it, which he read before the Royal Society at Belgium. From this paper it appears that in places where the flowers were matted together they still retain their color as well as a very faint odor. The species to which they belong is now extinct, but a rose resembling them in several particulars is still grown in Egypt and Abyssinia.

One of the oldest trees in England is a chestnut tree at Forworth, near Bristol. It measures fifty feet in circumference, and is supposed to be a thousand years old.