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VOL. X. No. XVII.
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The Field.

A "Piece" about Weeds.

Mr Harris, author of "Walks and Talks" in the *American Agriculturist*, is the best hater of weeds with whom we have any acquaintance. He is always fighting them; with tongue, pen, hoe, plough, and scarifier. All who know him are well aware that weed killing is a hobby of his. But a stranger driving past his farm and holding a brief conversation with him, ignorant of his passion for weed-slaughter, suggested at parting that he should write on the importance of destroying these pests of the farm, for the special edification and benefit of sundry of his near neighbors. The duty is very cheerfully taken up and discharged as follows:

It amused me, however, to be told to "write a piece" for the *Agriculturist* on killing weeds. Nothing would please me better. I have weeds on the brain. I think about weeds, talk about weeds and dream about weeds. If I had to write a piece, I would certainly select weeds. If I had to preach a sermon, the text would probably be: "I went by the field of the slothful, and by the vineyard of the man void of understanding, and lo! it was all grown over with thorns, and nettles had covered the face thereof." I think the Squire would give up his pew, and the Deacon would suggest the next morning that "there was some dissatisfaction in the church, and that it was thought a change of climate would be good for me." Write a piece about weeds? What was the old gentleman thinking about? Does he want to buy my farm? Does he want this neighborhood to become too hot for me? The Deacon has already threatened to "write a piece" for the *Agriculturist*, pointing out the weak spots in my system of farming. The Deacon has been talking the matter over with some of the neighbors. Last fall I had two or three hundred bushels of mangels frozen in the ground. This is to be one of the charges. They forget that I saved three thousand bushels. Then I had half an acre of turnips frozen in the ground. But I saved four or five acres that would yield eight or nine hundred bushels per acre. The charge in brief is: "He knows how to raise good crops, but does not know how to take care of them." This is letting me off pretty easy. I could make out a better case. On the whole, I think I will follow the old gentleman's advice, and write a "piece" about weeds. The weather is very hot, and "composing" is hard work, but I will try my hand at a short "composition."

"A weed is a plant growing where you do not want it to grow. Thistles are not weeds when grown, as they are in France, to make perfume. The thistles growing in the Deacon's wheat are weeds. He does not want them there. If you have six plants of corn in a hill where you only want four, two of them are

weeds. A dead weed is not a weed. A growing weed pumps up water out of the ground. The weeds in an acre of the Deacon's clover pump up more water in a day than all his animals drink in a month. Weeds propagate faster than rats. I have got more rats than the Deacon, but the Deacon beats me on weeds. The boys shoot the rats. Yesterday they shot two and scared away a dozen. Next year they will come back again. The Deacon kills a hundred of his weeds and buries a thousand. Next spring they will come up by the million. You can't get rid of weeds unless you kill them. If you do not kill them, they will kill you. They are worse than foot-rot in sheep. They spread faster than caterpillars on currant bushes, or than the canker-worms on apple trees. Some of the orchards in this neighborhood look as though they had been sprinkled over with kerosene and set fire to. The worms have eaten off every leaf. Some farmers keep off the insects by putting tar-bands round the trunks of the trees in spring; some don't. They think it is no use fighting the worms. Some farmers think it is no use killing the weeds. It is natural for the soil to produce weeds. They say you can't kill them. The Deacon does not say weeds can't be killed, but he does not try to kill them. He hoes his corn. I don't hoe my corn. I hoe the weeds. I would kill the weeds if there was no corn. I am not sure that the Deacon would. The Deacon never summer-fallows. He never fallows. He never tries to make the weeds grow. He tries to smother them up for a few months. He does not kill the roots. He does not make the weed-seeds grow and then kill the young plants. The weeds on his farm are getting worse and worse. My farm used to be worse than his; now some of it is cleaner than his. I am fighting the weeds. He lets them grow, and is waiting for something to turn up. There are thousands of farmers doing the same thing. The weeds cost us more than all our State, national and local taxes; more than all our schools, churches and newspapers. They are more expensive than children's boots and ladies' bonnets. They are as bad as cigars and fast horses. The horse may break his neck, and you will get rid of him; but the weeds will stick tighter than a mortgage, and run up faster than compound interest or a grocery bill. They are like bad habits. You must not tamper with them. No half-way measures will answer. The only way to stop using tobacco is to stop. The only way to kill weeds is to kill them."

I hope the old gentleman will be pleased with my "composition." I hope when he visits this neighborhood again he will find fewer weeds. Lard worth \$150 per acre ought to produce something better than thistles, red-root, quack-grass and chess.

English Prize Farms.

The following account of the farms which competed for the Royal Agricultural Society's prize, is from the *Agricultural Gazette*, and will doubtless be read with much interest.

"Who is the best farmer? Is he the man who makes the most money by farming? That would be a short and easy way of determining agricultural merit. No doubt "all men,"—and that includes farm judges—"will speak well of thee if thou doest well unto thyself," but we hardly think that prosperity in an occupation in which so many risks are incurred is an unfauling test of excellence in agriculture. Shall we, then, choose the man who, having made more money than his neighbor, at the same

time has maintained his land in the best condition? This would hardly avoid the difficulty already intimated, but it takes in another class, who ought to be consulted before a decision is arrived at; and the owner as well as the tenant of the land being thus satisfied with its management, that cannot fail of being excellent. There are, however, others, as well as the tenant and the owner of the land, who ought to be content with an award of this kind. Certainly the quantity of food produced upon a given area, as well as the economy and simplicity—in short, the excellence—of the means by which it has been produced ought to be considered; and the man who has economically produced more food per annum than another over a series of years, on an equal area of land of similar natural character, cannot fail, we think, of being the better farmer of the two. Whether he has achieved good fortune or not, he has certainly deserved it.

"We doubt, however, if the judges appointed by the English Agricultural Society to inspect the farms competing for their 100 guineas cup would (this year, at any rate) have found any great assistance by laying down beforehand rules of criticism for the guidance of their decision, and we are sure that they have met with quite as much difficulty in determining the best of four as their predecessors had experienced in determining the best of four-and-twenty. It is generally easy enough to select the best three or four out of a large number of farms, and this year the four who have competed are, in fact, the few of nearly equal merit which, probably, would have been those selected for final comparison out of a much larger number. We speak from personal inspection of only three of them, however—the fourth, occupied by Mr. Charles Lambert, of "Sunk Island," highly commended, like the others, we have not seen. It is, we understand, in a stiffer country than that in which the other three are situated, where the practice long ago of growing repeated crops of corn—getting rid of their straw by the easy method of setting fire to it!—has resulted in not only impoverishment of the naturally fertile alluvium, but in an alteration of the very texture of the soil; which, lacking the annual admixture of dung, even if it were mere straw and water, has become not only poorer, but stiffer and more unkind. The value of farm manure, enriched by the liberal use of cake and meal in sheep and cattle feeding, has, of course, been long understood and realized in the Holderness district; but this fine fertile level, some 200 square miles in extent, is even yet more remarkable for its large corn produce than for any other feature of its agriculture.

"We cannot pretend, after a few hours upon the farms occupied by the Messrs. Peter Dunn of Pasture House; W. G. Walgate of West Hill; and G. England of Carlton—all near neighbors in the Holderness district—to any such knowledge of them as would enable us to review a decision carefully arrived at by the considerate and practical men who are this year responsible for the official award. It was certainly a very difficult thing to determine the relative professional excellence of these three gentlemen. They have been occupants of their respective farms for periods differing so much as 40 years and only four; and possibly in cases of equal excellence, a consideration of that kind ought to be allowed some weight; but we do not know that any such consideration was needed for their decision, which, indeed we do not pretend to criticize. Our readers will be better pleased to learn such of the facts on which the decision was necessarily based, as we could gather in a hasty morning visit.

Mr. Peter Dunn occupies about 300 acres, of which

36 are pasture. The pasture land is liberally managed and well farmed. Of 210 acres of plow land, 136 are this year in corn; the wheats—Spalding red, creeping wheat, and Rivett's—look remarkably well; the barley, too, is a most promising crop; there is as much as 25 acres of bare fallow; there are 27 acres of seeds; there are 25 acres of Swedes and mangold wurzel, straight drilled, full of plant and clean; and we nowhere saw fallow crops looking so well. The rotation is pretty much, we think, what Mr. Dunn may choose it to be—seeds, wheat, oats or barley, bare fallow, wheat, beans or peas, wheat, turnips, barley; this was the list we took down. There is a large expenditure in artificial manures and feeding stuffs. The stock includes a few dairy cows with their produce, and purchased cattle and sheep to graze the pastures and the seeds, and to feed the roots. Rent has risen from 20s. to 30s. in the neighborhood during Mr. Dunn's 40 years' experience. One of the chief features in this farm is its neatness, extending from the farm to both premises and home. A more charming garden, tidier premises, better roads, and more perfect fences, we have never seen. The fences are a wonder; the thorn everywhere a perfect equilateral triangle in section, with true sides and most perfect ridge lines, joining the one rectangularly with the other, with roof-like exactness, and coming close to the ground. The roads are first rate, and Mr. Dunn has charge of the parish roads also, many of which pass through his farm; they are in admirable condition, the wide grass margins bearing a heavy produce, thanks very much to his management, making by the hay crop which it yields a handsome contribution to the cost of maintenance.

Mr. W. G. Walgate, who has won the prize, holds about 450 acres, of which about 120 are grass land. Most of the land is tenacious soil, about 80 acres only being lighter turnip land. He follows a five years' rotation—turnips, spring corn, seeds grazed, wheat and oats, or peas or beans. He keeps a flock of 160 Leicester-Lin olus, winters them and their produce, buying as many more as his turnip crop permits or requires. He breeds and feeds a large number of pigs. He has a small herd, and rears their produce; buying graziers in addition for both winter and summer feeding. We saw a magnificent lot of 40 steers, already worth probably £30 apiece, in the grass fields; also a large flock of ewes and lambs on the seeds; capital crops of wheat and beans, some first rate fields of barley and oats, and a large area in turnips, the hoers busy among them—the field not looking, however, by any means so forward or so well as those at Pasture House. Mr. Walgate's farm is worked by twelve horses; the labor costs from 30s. to 32s. an acre, men receiving 18s a week in winter and on till harvest time, when much higher earnings, of course, were made. A number of the younger men board and lodge in the farmhouse, receiving from £10 to £30 per annum in addition. There are no cottages on the farm. All the manure made goes on the turnip crop, which receives some three sacks of bono dust, and 4 cwt of superphosphate per acre in addition. There is an immense consumption of cake and meal by cattle and sheep, so that the manure is of first rate quality. The steers at grass are receiving 6 lbs. of cake a day apiece just now, and if feeding off on turnips they receive a cake a day, and some 6 lbs. or 7 lbs. of meal in addition before they leave—worth then £35 to £40 apiece.

The wheats sown are white chaff and creeping red; 8 to 10 pecks per acre are sown, and drilled nine inches wide, enabling horse-hoeing but also receiving hand-hoeing. The seeds—a stone of white, 7 lbs. of red, 2 lbs. of trefoil, and a little rib-grass sown per acre—are not looking first rate, and some of them were being rather roughly and wastefully grazed. The buildings are altogether insufficient for the farm, but the tenant has the credit of having been himself at by far the greater portion of the cost of their erection. The farm is evidently under profitable management, and we nowhere saw such a capital stock of cattle in the fields. Mr. Walgate has been more than a quarter of a century the tenant of West Hill Farm, and it does great credit to his management.

Mr. George England occupies about 410 acres at Carleton adjoining West Hill, about 300 are arable. There is a capital farmhouse and very excellent homestead, with admirable accommodation for stock of all kinds. The farm is intersected by many roads, both cross country, parish roads, and farm roads, for the condition of which the tenant is responsible; and the excellence of these roads is quite one of the features of the farm. The five course rotation is adopted, seeds being sometimes kept down two years and broken up early for a sufficient fallow before wheat sowing, or wheat being sometimes followed by oats or peas, then turnips, &c. There are 134 acres of white corn, 25 acres of beans and peas, 57 acres of seeds, 60 acres of turnips, and 14 acres of bare fallow on the farm this year. The wheats are magnificent: the rough chaff, white promises a splendid yield; the creeping wheat looks well; some 8 or 10 acres of it had been ploughed up and re-sown with barley, which looked well. A large field of April wheat is promising satisfactorily. The oat crop (Tartarian) looked exceedingly well, barleys, too, are good. The turnip crop, in various stages of growth, is this year in a large field which is in some places of somewhat rough and patchy land, but they promise to be a good crop.

The land is worked by ten horses. The labor bill, including board of men in house, is about £500 a year; in addition to this sum 24 acres of land have been drained 3½ feet deep, at a cost of about £80 in labor, and 126 acres have been steam-cultivated at a cost of £140 in contract price and coals. The bill for cattle food and artificial manure exceeded £1,000 last year. Some 200 fat sheep and 40 to 50 fat beasts are sold annually, and there is a large stock of pigs and a very large stock of poultry.

Specially good wheat crops on the Carlton Farm, good buildings, and very good roads, and good young fences; rare herd of cattle at West Hill, with general good crops, and well-managed grass land, good turnips and general excellence of corn crops, with special excellence of fences at Pasture House, are the leading features of these three farms. They are all held by yearly tenants. Two of them are on Mr. Bethell's magnificent estate, one on that of St. Thomas' Hospital.

It is, we believe, very much to the credit of Mr. Spence, the agent on Mr. Bethell's property at Skarlahugh, that there has been any farm competition at all this year. It was with great reluctance that two of the tenants on this property yielded to his urgency on the subject.

He assures us that the farms are not in any special show order. The judges would have seen them in very much the same condition last year as they have seen them this. They are all certainly in very excellent hands, and the landowners in both cases may be proud of their tenantry.

Are Crows Useless?

It would be well for every farmer to endeavor to answer this question to his own satisfaction. We all know how provoking it is, in the spring time, when the corn and other grains are planted, and work drives hard, to see an army of crows encamped upon our fields rapidly destroying the newly planted crop, and we cannot wonder much if the farmer's temper does rise and impel him to shoulder the basket or rifle, and deal death to the marauders. Farmers are apt to regard crows as their natural enemies. What about cutworms and white grubs? Are not they the pests of the cornfields, and are not they the natural food of the crow? To be sure, his appetite prompts him also to taste your corn, and pull up the young wheat, and tear open the husks of the ears of corn. Should he not take a little toll as well as the miller? Destroy every crow, and your corn and wheat will not be taken in the kernel perhaps, but they will stand a chance of being cut down when they are two or three inches high, and force you to plant them over, when it will put your crop back at least two weeks for that season. Crows are undoubtedly useful birds in destroying the myriads of vermin which attack our crops; and so I feel inclined to speak a good word for them, although few of your readers may incline to do so when they are suffering from their depredations, and daily see them pulling up hill after hill of corn. I think that one might find a remedy in planting thickly—putting ten grains of corn or wheat where four are needed, and allowing Mr. and Mrs. Crow to dine on the other six, while they also devour the cut-worms, etc. But if war must be waged against them, commence it by setting a steel trap in a tuft of grass, and bait it with a blown egg-shell, or a bit of fresh meat. If you succeed in catching one crow, its cries will teach all the other crows that danger is there, and it is thought to be a safeguard for the whole field. Crows are, as we all know, exceedingly wary birds, and smell danger from afar; so if one dead crow is hung up in a field, it is the most effectual scarecrow that can be furnished. Poisoned corn will soon rid the farmer of the nuisance of crows. Yet I think it a very mean resort, and feel assured that he who undertakes it will have his crops blasted with cut-worms and other vermin, and will pray for a return of his black enemies.—Country Gentleman

Exporting the Land.

The country that neglects manufactures must export its raw products, in payment for the manufactures of other countries. The United States from 1821 to 1861 exported \$1,007,000,000 worth of provisions and breadstuffs; in other words, exported over \$1,000,000,000, worth of the strength of their land, \$1,000,000,000 worth of their capital—of their stock in trade. The result is read in a deterioration of soil so rapid, and over an extent of country so vast, that the history of the world affords not a parallel. In New York, where formerly thirty bushels of wheat per acre were produced, now only fourteen are realized. Ohio now yields less than twelve bushels of wheat per acre. The great grain-growing States of the remoter interior, as statistics assure us, and as their agricultural journals deplorably attest, are rapidly falling off in productiveness per acre. By consequence, the cultivator, finding his harvest failing, pushes on to occupy new land. Much territory, comparatively recently opened, has already become the scene of migration and partial abandonment. The deserted land almost ceases to have value. While farms are sold for less than the former cost of the barns or of the stone wall upon them. Meantime the land near the great manufacturing towns of foreign States, enriched with the fertile elements exported from our own, rises higher and higher in value, thousands of dollars being paid for single acres, raising its owners to affluence at once by abundant harvests and by increase of valuation.—Wool Bulletin.

Mushrooms in Pastures.

A correspondent of *Land and Water* writes; "Believing it possible to grow mushrooms in pastures I last year made some experiments which I think were successful. The course of reasoning which led to them is too long to detail now, but the *modus operandi* was as follows: Wishing to plant a pasture field near my house, I proceeded thus: I broke up mushroom spawn into pieces from the size of a filbert to that of a small walnut, and set a small boy to spawn the droppings of the cows and horses by making a hole with a potato dibber or small crowbar (called here a fold-pitcher) through the droppings and about one and a half inches into the mould beneath. A piece of spawn was dropped into this, and a vigorous stamp with the heel of the heavy boot completed the process. I used less than half a bushel of spawn and was, as I believe, largely repaid for my trouble and expense in mushrooms during the natural season. I began the same process again yesterday and hope to have more convincing proofs of the success of my plan this year. I think a crop may even be secured after May, but I should not expect that spawning could be carried on with much expectation of result after the middle of July. If my experiment had been made public I am in hopes that more exact operators than myself will work out the idea, till a crop of fine mushrooms may become as certain as turnips.

Clean Seed.

As a rule, those farmers who are the most careful in cleaning their seed grains, and the most thorough in their cultivation, have the fewest weeds to contend with; and such are the most fully compensated in the end for their pains. One of the most prolific sources of the spread of weeds is sowing directly from the threshing machine, for however well these machines clean the grain for market purposes—and the better classes of them do it admirably—still there is no power machine that will clean seed in so thorough a manner as to fit it for sowing. This, however, may be accomplished by careful cleaning by the more modern fans, having sieves adapted to the various sizes and shapes of seeds, and perfectly controlled by the blast given. With the use of these we have often secured a large advance over the ordinary market price, on account of the seed being perfectly clean. One of the most difficult seeds to separate from grain is cockle and chess, and to do so thoroughly, it is necessary to have proper sieves for separating these from the good grain, since the specific gravity of these seeds is very nearly that of barley, rye, and wheat. In the case of chess, the peculiar form of the seed—being long, like wheat and rye—renders it especially difficult of separation. But with the modern fans, but little difficulty will be experienced in their separation, and the value of the seed will be thereby much enhanced.—Exchange.

Agricultural Implements.

The Threshing Machine.

Great as have been the strides in crop-cutting appliances during the past quarter of a century, they have not far surpassed those of their confederates whose facilities for their various specialties have been watched and improved by all the ingenuity of the age. The ancient "ox-treading" soon gave way before the innovations of the flail, and the latter, in turn, is now fast becoming a fossil of the past.

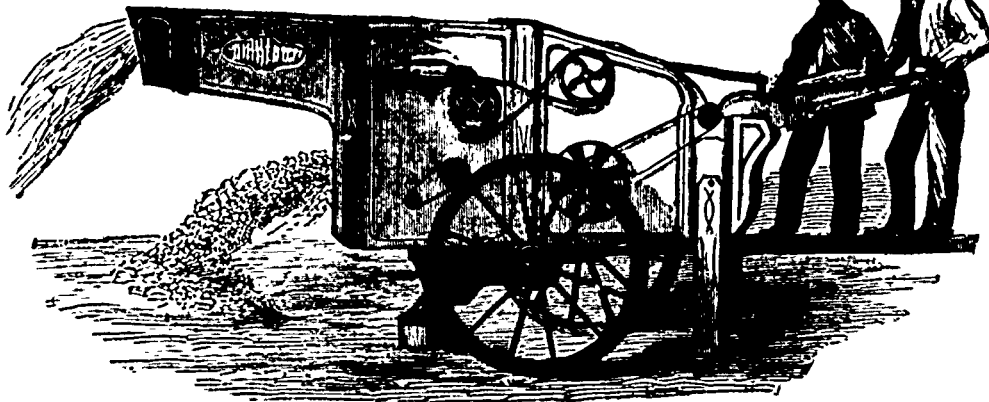
The two grand objects of mechanism, viz.: the saving of labor and speed of execution are wondrously combined in the modern Threshing Machine.

Actual experience has shown that an ordinary laborer, with a flail, can thresh and clean in a day 7 bushels of wheat, 18 of oats; 15 of barley; 8 of rye, or 20 of buck wheat.

As two men are usually employed together at the work—especially the cleaning with a fanning mill—the number of bushels in each case may be doubled. Now a threshing machine requires at the least two horses and 5 men; more commonly there are 4 or 6 horses and as many men, but assuming the 2 horses and 5 men—equal to 15 men with flails—such a force with one of the simplest and earliest forms of the thresher

and cleaner would in a day thresh and clean about 12 times as much in each case as the two men with flails. Of course, in the case of the later and

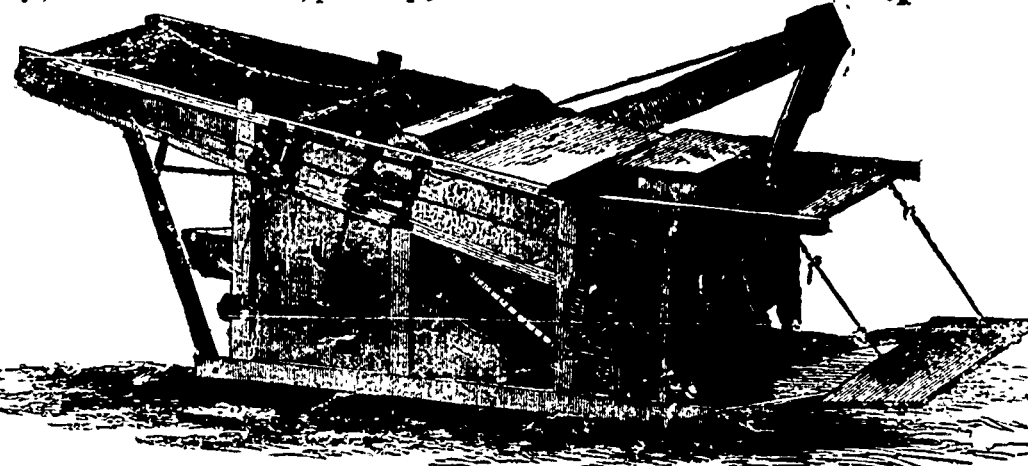
An excellent little machine for farm purposes, where no great outlay of money is possible or convenient, is illustrated by the accompanying cut. The machine is self-regulating, mounted on two wheels and can be moved with ease to any part of the barn floor. It takes up little more room than a fanning mill. It has no canvas belt, but is operated by a succession of crank shafts and slats, and is capable of



They have been very much improved of late years. They may now be made to run either with belt or gearing, the latter idea having been suggested by the number of accidents which were occasioned by the belting. They are driven usually by 8 horses, and are capable of threshing from 300 to 400 bushels per day. By means of an elevator also, the straw is carried to the top of the highest stack. This machine is also made to run by steam power, its capacity then being greater in every respect. It is claimed for its revolving grate that it surpasses all others in separating the grain from the straw. Another very valuable improvement in the "running apparatus" is the "patent safety coupling" which obviates the necessity of having the horse power in the most exact line with the machine. It will run equally well at a slight angle.

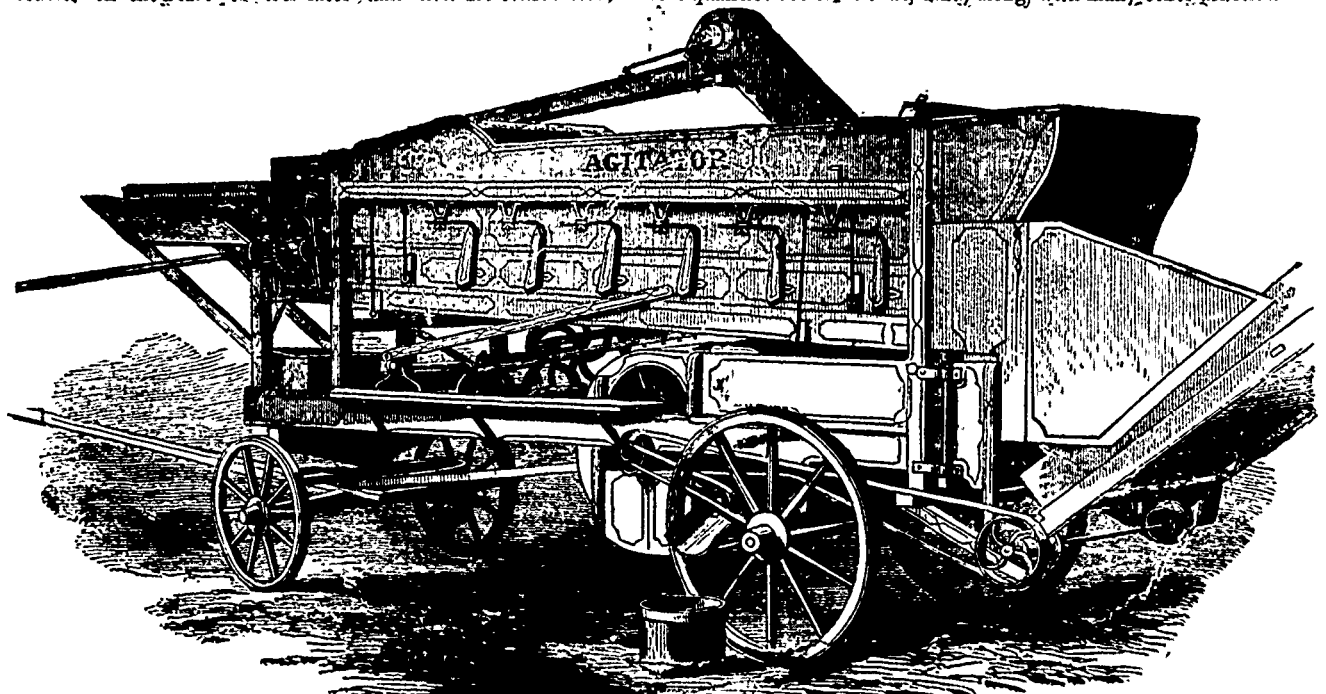
threshing from 200 to 300 bushels of ordinary wheat per day. The wearing parts are also of late, we notice, protected by sheet iron, and the shoe has no

One of the main objections to threshers, as a whole, used to be that more or less grain was always carried away with the straw, and were this point



side-shake. Pitts' Separator is, generally speaking, the model after which most threshers at the present time are constructed, and its qualities are so familiar

to everybody that a detailed description of them here would be superfluous. Once, we think it works most successfully. This machine is known throughout the country as the



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"Vibrator" or "Agitator," so called from the peculiarities of some of its structural movements. Its threshing facilities are certainly equal to those of any other, whilst its arrangements for shaking up the straw are unique.

The cylinder of the "Vibrator" has the teeth distributed equally over all the bars, causing it to run more steadily, to feed more regularly, and always maintain a perfect balance. The concave regulator consists of two concave ends with a disc running in each. A square iron rod, worked by a handle just at the feeder's hand, operates the discs, causing them to rise and fall as desirable, both ends rising or falling together, and thus the concave is always kept parallel with the cylinder. This rod may be worked readily whilst the machine is in motion.

But the main feature of the machine is the "Agitators" or "vibrators." Immediately on leaving the cylinder the straw is received on a long trough about six inches deep with a bottom of slats placed edge-wise, through which the grain falls. This trough is furnished with a succession of vibrating finger-bars with long projecting fingers or prongs in each. The trough, by means of a crank shaft, is moved vertically, and by another arrangement on the ends of the finger-bars, this vertical motion imparts to them a pitching motion, whereby every straw passing over them is tossed up. Having passed over one set of fingers, it (the straw) is immediately taken up and tossed again by a second, and so on to the sixth, when it is next to impossible that a kernel should be left in it.

The grain falls through the slatted bottom of the upper trough into a second one with a close, smooth, declining bottom, along which it is carried freely to the shoe. This second bottom has also a vertical motion, and is perforated with holes above the shoe for the regular delivery of the grain over the riddles.

The two sections move in opposite directions, one going forward as the other moves backward. They thus counterbalance each other so that no jar is caused to the machine. The shoe of the Vibrator is more capacious than in most other machines, and this increased room for blast and sieve obviates "poking" or "scrapping."

A "tightener pulley" operated by a lever at the feeder's side enables him to tighten the main belt stretching from the cylinder to the crank shaft and fan. The whole machine is decked over or enclosed, so that dust and chaff are confined exclusively to the rear end. When the job is done, therefore, there is no cleaning up around the machine to do, for it leaves no litterings to be cleaned, and finally, it is claimed for it that it is of lighter draught than one of equal capacity, built on any other principle.

When we consider that in the "Pitt" principle of threshers, the only stirring up which the passing straw receives between the cylinder and stacker, is dealt to it by the beater and picker roller, whereas in the one just described, the straw is systematically tossed from end to end of the machine, the difference is obvious.

Another favorable point in comparison is the very small amount of gearing required throughout the entire machine.

AS DULL AS A HOE.—Keep your hoe sharp. It needs filing or grinding as much as any other tool. There is neither pleasure nor sense in pounding away at the weeds with an old chunk of square iron that is all back and no edge. Keep it sharp so it will slide through the dirt and cut up the weeds and do its work without waste of strength or patience.

FRUIT DRIER.—A very simple and inexpensive contrivance for drying fruit has been invented by Rev. Mr. Miner of New York. It is made in this way: Take a box that will fit over a cooking-stove. Line it with tin, leaving at intervals flanges or supports for more shelves. Holes are left in the top of the box for the escape of moisture. One side of the box may be hung on hinges, and let down so as to put in the shelves of fruit. A large amount of fruit could with this invention be dried at very little cost. It will dry easily five bushels a day. It is to be used when cooking is not going on.

Rural Architecture.

Farmstead for a Holding of 100 Acres.

On next page we give a general plan and perspective view of a farmstead suitable for a holding of 100 acres, mixed husbandry. The plan is drawn to scale, so that the dimensions of the various buildings can easily be seen, the plans being on too small a scale to allow of the dimensions being figured thereon. The following table of references points out the locations of the various buildings, &c.:

1. The barn with root cellar, chaff house, steaming pans, &c., underneath.
2. Sheds for cattle.
3. Inclined plank roadways up to the level of barn floor.
4. Icehouse.
5. Bull house, with separate airing yard.
6. Horse-machine shed.
7. Implement shed.
8. Wells.
9. Separate house for sick cattle.
10. Calf house.
11. Calving house.
12. Cattle sheds.
13. Piggery.
14. Covered way for loaded waggons.
15. Milch cow house.
16. Forcing beds.
17. Kitchen garden.
18. House for rams.
19. Fattening stall house.
20. Sheep house.
21. Fodder and corn stores.
22. Workshop.
23. Cart and waggon shed with granary over.
24. Covered entrance.
25. Stable.
26. Loose box.
27. Corn store.
28. Harness room.
29. Poultry house and sheds.

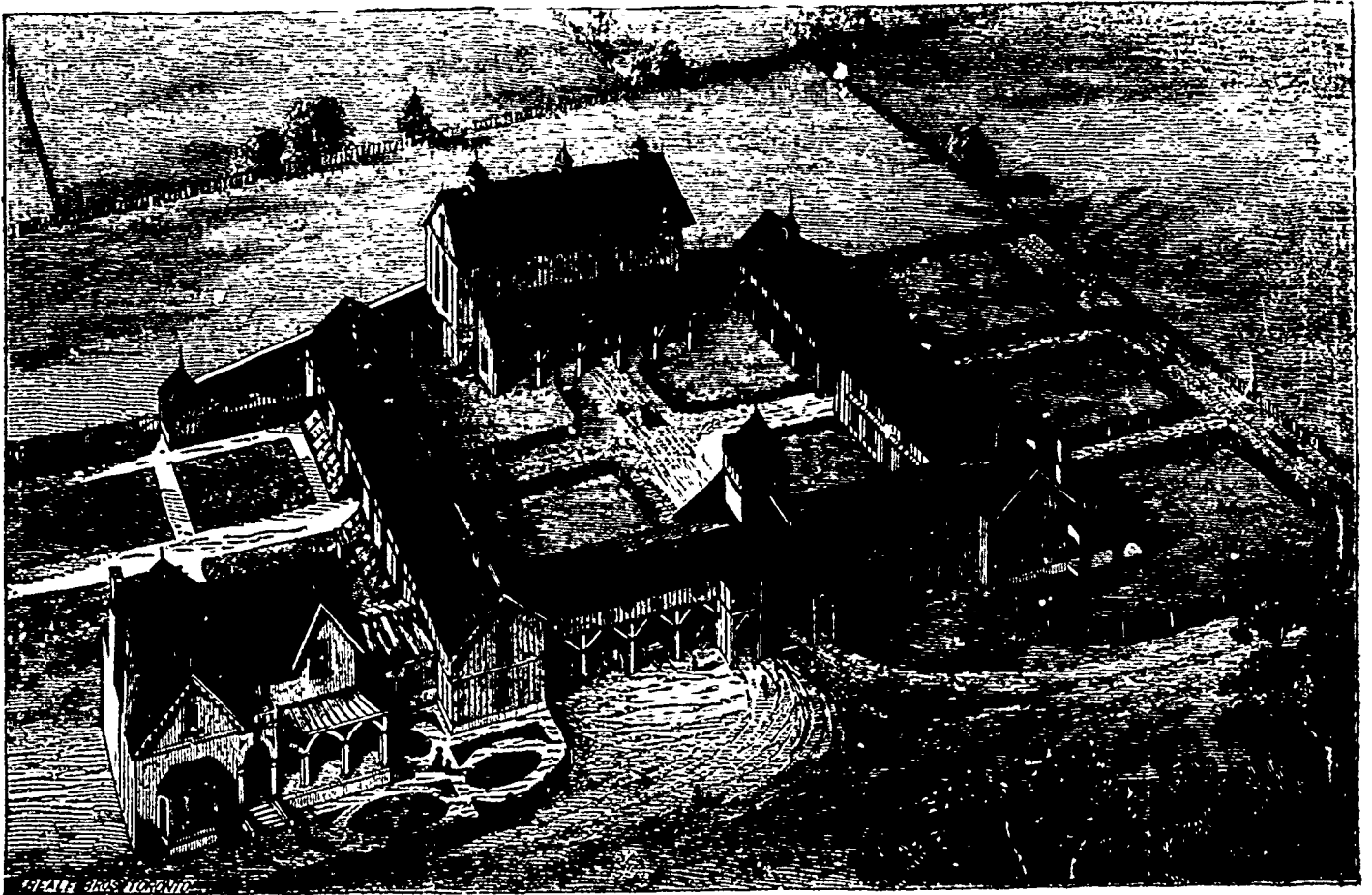
THE RESIDENCE CONTAINS AS FOLLOWS.

30. Kitchen.
31. Wood shed and dairy stairs.
32. Own room or office.
33. Sitting room.
34. Dining room with dairy and dairy scullery underneath.
35. Greenhouse.
36. Verandahs.
37. Flower garden.

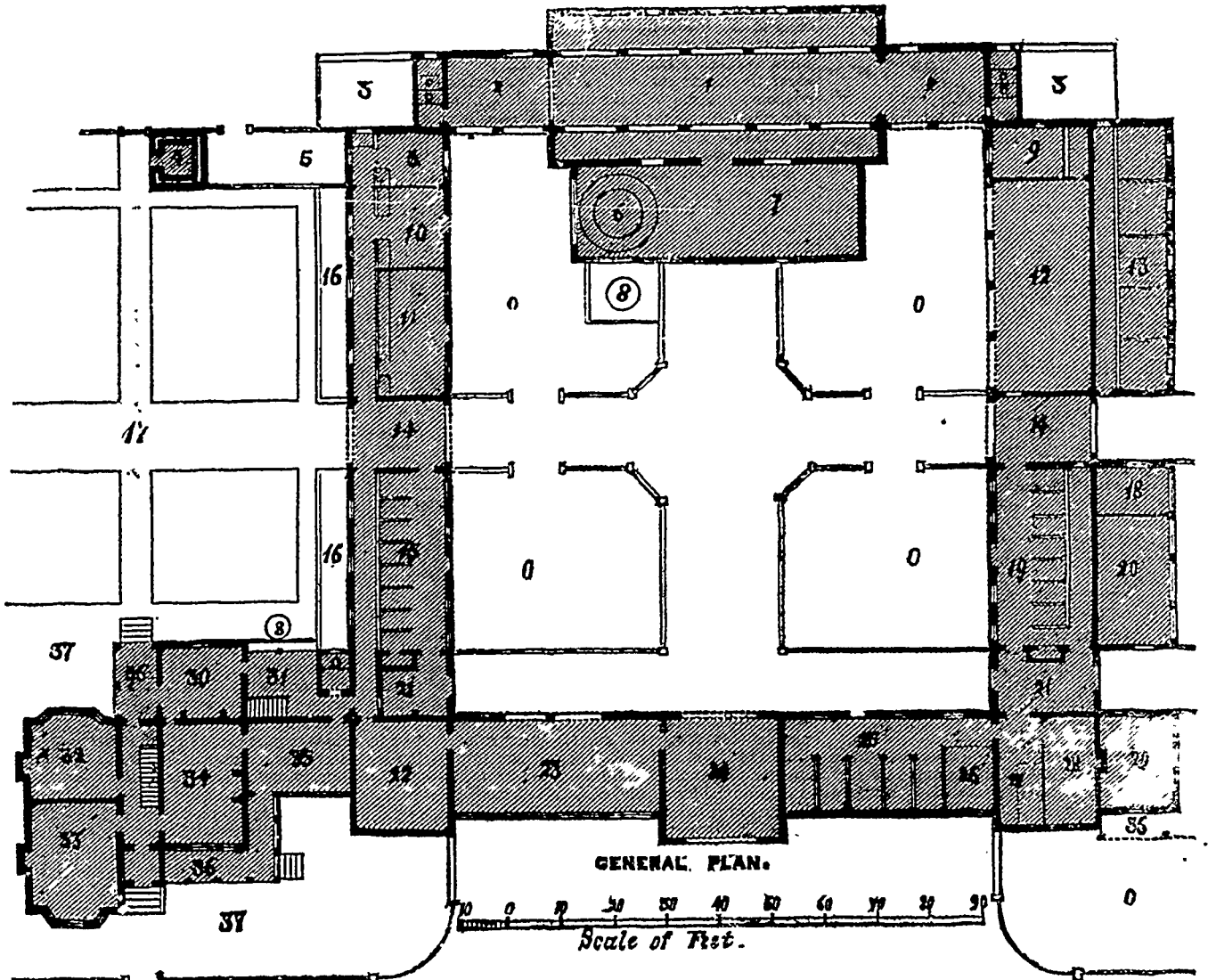
The various yards are marked O O. Up stairs the residence would contain four good bed-rooms and one dressing or bath room, and if required another bedroom could be placed over the kitchen.

It will be seen that this plan is so arranged that the rays of the sun would always be on one wall of the inner yards, as the front is supposed to face the south or nearly so; and thus by reflection a great amount of heat would be retained in the winter, thus saving fuel, since it may be clearly shown (in fact we have done so in a former number), that, to a certain extent, heat is fuel. This plan has been carefully arranged to combine convenience with economy. Thus we have planned long straight lines of roofing, not interfered with by expensive valleys or breaks. The residence is, however, of rather a superior character, and in fact the whole of the design has been made with that due regard to taste which we have always advocated, looking at the same time to convenience of arrangement as the main object. With this view we have placed all the dairy requisites close to the house, they consist of a milch cow house with seven stalls, a proper feeding passage, corn and fodder stores, and plenty of light and ventilation, with a separate airing yard. Close to this is the way to the dairy and dairy scullery, by a flight of stairs leading to basement. They would be provided with a pump to well, which would be so far under ground as to protect the water from freezing, being also situated immediately under the kitchen, a good supply of boiling water could be obtained with a very short length of pipe. The workshop is also placed close to the residence and adjoining the waggon shed, into which any implement requiring repairs could be brought and remain under cover until completed. The main entrance is by a lofty covered way, so planned that a waggon could deliver its load either to the granary over the waggon-shed or to the forage loft over the stable. We have also provided two other covered waggon ways into which a load of produce could be drawn in showery weather. The stable is placed away from the house, so that the noise of the horses tramping at night might not be a nuisance. The barn is planned with a raised floor to which access is given by a plank inclined way at each end; by which means a storey is provided underneath, which would be built of stone or brick with hollow walls to make it frost-proof. Here would be the chaff-cutter, root-cellar and steaming room. Outside the barn is a shed for the horse machine and implements. The water could be raised from the well by means of the horse machine, and pumped into a tank in the lower storey of the barn, which would be protected, by a double covering and sawdust between the same, from the frost. From this tank, underground pipes would be led to the various buildings. Over the entrance is placed a pigeon cote which would also serve for a bell-turret. The extremes of heat and cold, which are the characteristics of this climate, will always tax the resources of a builder to overcome them, and of course increase the expense

of the buildings; but, on the other hand, the buildings having to last and be in use for many years, if we can save even a small sum annually by this last outlay, it alters the loss into an ultimate gain, for if we protect animals from the cold we shall get interest for the necessary outlay by the diminished consumption of fuel, and if we protect them from the heat, we shall also gain by a decrease in the loss of animal fluids absorbed by the dry atmosphere. As these ends are met, we should propose to fill in between the rafters over all the buildings with straw closely packed, this will necessitate a layer of 4 in. rough boards nailed to the underside of rafters, which boards, however, could be of the commonest description, for not being exposed to the outer air they will not require to be well seasoned. On top of the rafters must be laid good inch boards as usual to receive the shingles. This will make a good roof for both winter and summer. Besides this a double wall is recommended. We should build the wall on the usual cedar posts with quarterings 6x3, and posts 6x6, covering them on the outside with the usual inch boards, which can be placed either horizontal or vertical; in the former case they would be feather-edged and lap over about one inch; in the latter case they will be butt-jointed and have a fillet 3x½ laid over the joint. In either case we recommend an inside lining of ½ boards, and that the space between the outer and inner linings be filled in with spent tanner's bark (if it can be procured), but if not, then straw can be used as recommended for the roof. It is true that this affords a harbor for rats and mice, but their entrance can be in great measure prevented by having a layer of broken glass all round about six inches thick. Then we have a good warm house in winter and a cool one in summer, provided we have plenty of the means of ventilation, in order to obtain which we think more openings should be made than is usual. We think it necessary to have an opening filled in with shutters to open or close at will round the whole of the back and front walls, and at least two feet wide immediately under the floor if there is a loft over or under the eaves if the building is of a single story. Then in hot still weather, the whole would be open night and day, and if wind prevailed the windward side could be closed. This expense would, we venture to say, be soon repaid by the improved health and consequent value of the stock. But, if possible, the walls should be of a more permanent material than wood. Provided that good sharp gravel is at hand, and cheap, the concrete system could be adopted with hollow walls, and if expense was not a great object they should be built of brick or stone, but we should always recommend a hollow wall in preference to a solid one. Of course, where the wall is filled in with straw or other similar material, we have a number of hollows instead of one, which is so far preferable. The wooden system of building is so well understood that it is not needful to go into any further details; but another part of the arrangements is so important that we purpose to give a specification for its effective performance. We allude to the drainage. Now we must bear in mind that as we do not want to fertilize the surface of the yards in which the cattle are stored, we must provide for the speedy carrying off of all rain that falls within their reach to proper storage places. We should, therefore, have each yard laid out to slope inwards on each side towards the centre with a fall of about one inch to the foot. Lay in the centre a two-inch plank cesspool two feet deep, from the top of which construct a nine inch plank drain leading with a fall of not less than one inch to the foot to the storage tanks which will be formed of two thicknesses of inch and a half planks well pitched inside and strongly nailed together and not less than six feet square and as deep as may be necessary, to have a layer of dry earth or straw not less than twelve inches deep below the inlet of drains. The drains to be covered with a two-inch moveable plank, and the sides of drains planked up to level of surface. The area of yards to be laid with a bed of concrete six inches thick and finished with Portland cement two inches thick. By these means the whole of the fertilizing properties of the manure which will accumulate amongst the litter in the yards will be preserved. Similar drains to be laid along each range of buildings (except implement and waggon sheds) and formed with proper fall to the reservoirs which will be placed under privies at the ends of the barn. Each reservoir to have a cart way provided to get easy access for removing the saturated earth or straw and to replace it with fresh. With regard to the cost of these buildings, they could be erected in the ordinary way (exclusive of the residence) in the neighborhood of Toronto for about \$6,000. The residence would cost about \$2,000 more. If the various improvements be adopted which we have suggested, the cost would be increased by about \$1,000. Of course, if the farm could furnish its own lumber these estimates would be reduced.



BUILDINGS FOR A FARM OF 100 ACRES.



Grasses and Forage Crops.

Novel Mode of Irrigating Grass Lands.

Irrigation, practised from time immemorial in Oriental countries, exposed to long summer droughts, may well attract attention here, in view of the fact that our climate has of late years developed a very droughty tendency. Many Canadian farms are naturally provided with means of irrigation, so that the process, were it a paying operation, would not be very expensive. How well artificial watering pays, may be seen in the agriculture of Utah, which is mainly dependent on this system. But the plan has been subjected to a novel and crucial test in England recently. The *Times* of Tuesday, Aug. 5, contains a report of what is styled, "The Stoke Park Irrigation System," by means of which artificial showers are produced. We reproduce the article in full, confident that it will be read with great interest, and hopeful that it may set many readers of it seriously thinking whether they cannot do something in the way of artificial watering. There are vast areas of grass land that might easily be trebled or quadrupled in their yield, by means of a water supply not far away, and capable of easy application. Says the *Times* :—

On Saturday a select party, including the Duke of Somerset, K. G., Lord Chesham, Sir Erskine Perry, Sir Henry Montgomery and son, Captain the Hon. Alexander Ruthven, Mr. Macfie, M. P., Horace Chaplin, Mr. James Adams, Mr. C. S. Cantrell, Mr. Henry Cantrell, Mr. Oxley, Mr. Phillips, Mr. Geo. Botham, Mr. John Algernon Clarke, Mr. J. Robb, &c., assembled at Stoke Park, near Slough, by invitation of Mr. Edward John Coleman, to inspect a novel system of management applied to pasture land. This embraces, first, an increased production of grass, and, secondly, an improved and more economical method of consumption.

Mr. Coleman has devoted some 40 acres of his park to a trial of the new irrigation with artificial showers, invented by Mr. Isaac Brown, of the British River Irrigation Company, India-buildings, Edinburgh. A 12 horse power steam engine, working a Tangye force pump, draws water from the ornamental lake, and waters the whole area with jets of "artificial rain" squirted from small perforations in lead pipes, which are laid down in parallel lines 16 yards apart. With a pressure of 60 lb. to 70 lb. per square inch, or a head of 120 or more feet, the engine maintains a shower upon a plot of about an acre and a half in extent, applying 10 tons of water in 15 minutes. And plot after plot is taken in rotation until the whole is thus irrigated, the work proceeding for the most part in the night, so as to avoid any ill effect upon the herbage from watering under a hot sun. Six acres, parted off for the present experiment, are watered every night. Mr. Coleman, requiring hay, has hitherto used the system chiefly for promoting the growth of hay crops, and thus the natural herbage has been injured for grazing purposes. Nevertheless, the appearance of the full green aftermath, from which an enormous bulk of hay 3 ft. high was taken in June, is surprising when compared with the adjacent ground now lying withered and bare on its dry, loamy soil. The 6 acres portion was dressed with 5 cwt. per acre of the patentee's artificial manure, and then watered; the grass, where only a fortnight old, being now a fine deep bullock pasture, and here is being conducted a remarkably novel experiment—designed to secure in sheep-grazing the economy found in the well-known Jersey system of tethering cows. Two hundred fatting sheep (tegs of the Leicester and Cheviot cross) are inclosed in a fold which reaches across the whole breadth of the field—namely, 300 yards, but with only seven yards' space between the two rows of hurdles, so that the area occupied by the sheep at one time is less than half an acre. Instead of confining the sheep to this plot until it is quite exhausted, and then shifting to another plot of high grass, as in ordinary folding, the new plan is to remove both rows of hurdles one yard forward at least four times per day. Thus the animals have always access to a strip of strong, fresh succulent herbage, they never foul their food, they walk and lie only

upon what they have already cropped short; they leave not a blade of grass, or a stem shooting up into seed as a "hent," and yet they have ample room for their natural ranging up and down in search of new mouthfuls or special grasses. To ease the labor that would otherwise attach to this rational process, Mr. Brown has constructed a hurdle in the form of a *chevaux de frise*, consisting of a horizontal central bar, with spells or bars at right angles, in cross section like the multiplication sign, each side of the square being 3 ft. across, and the hurdle 9 ft long. Made of Norway fir, these military-looking fences are light and yet very durable, particularly if crooked wood were used; and the process of shifting by rolling each hurdle one-fourth of a rotation, or on to its next face, is so easy and expeditious that the shepherd on Saturday turned by himself 100 hurdles, being a length of 300 yards, in seven minutes. Ordinarily, the labor would occupy about 20 minutes four times a day; and would therefore go into the time of the necessary attendant upon the fold. The sheep graze by putting their heads between the upright bars or spalls of the hurdles, and after ten days of the folding are evidently doing exceedingly well. Indeed, Lord Chesham, who is pre-eminent as a breeder and feeder of Shropshires, expressed his high approval of these hurdles as the very things most suitable for grazing sheep. The fold had advanced in ten days about 40 yards, leaving the grass uncropped and untrampled in the portion behind to grow up rapidly under the stimulus of the diurnal showers, in readiness for a repeated visit of the flock. The earliest eaten grass is already a fair sheep bite; and it is plain that it will be ready for re-folding long before the expiration of the 14 more days which are required to complete the first course. The present stock amounts to 33 fatting sheep per acre, and the land, under the daily showers, will not only carry them on, but would feed a considerably larger number. The height and luxuriance of the grass in the rear of the fold and now only ten days old, shows this, but it is affirmed that, with "growing weather," always at command by means of the steam pump, a growth of half an inch to one inch per day can be obtained, and that, with a proper attention to the watering, the six acres in Stoke Park are able to feed double the present number of sheep, or 66 per acre. This would be done with two folds, each traversing over half the ground every fortnight, and always having at the end of that time a fresh crop of grass of that age again to begin upon. At this rate the six acres would carry about 400 sheep for six months, from April to October; and the summer stocking for the whole 40 acres under the system would be no less than a flock of 2,600 tegs, shearlings, or other fatting sheep. Without the watering, manuring, and hurdling it would probably be overdone with 260.

The importance of the novel system here described is obvious. For, if we are to fatten sheep (and the present 200 are improving fast upon the succulent grass, without a taste of cake or corn) upon a tenth part of the area of grass land hitherto required, the supply of mutton may become wonderfully increased. And there is thus merit in the plan, and while requiring a concentration of large numbers of fatting sheep upon a small area, it leaves nine times as much grass land to be added to the area used for breeding flocks. The system, instead of demanding an increased supply of store sheep which can never be produced, provides a surplus of pasture upon which the additional stock of lambs may be raised. As to cost the estimate put before us reckons the rent at 30s. per acre; the manual labor, 5s. per acre; coal 10s. per acre; artificial manure, 120s. per acre; interest and maintenance upon permanent plant, machinery, and engine power, 40s. per acre; interest and maintenance upon hurdles, 20s. per acre, total, 111. 5s. per acre, for the season. The return is, the keep of 66 sheep for 28 weeks, which, at 6d. per head per week, would amount to 14s. per sheep, or 46l. 4s. per acre. Mr. Coleman's 200 head, only half as thick on the land, ought to be realizing 23l. per acre, or just double the total outlay, with the exception, of course, of the interest upon the cost price of the animals. Looked at another way, the sheep may reasonably be expected to make one pound weight of mutton per head every week for 28 weeks; and thus, at say 8d. per lb., will be 18s. 8d. per head for the season, giving at Mr. Coleman's rate of stocking 30l., or at the rate calculated upon in future, 60l. per acre.

The working and results up to this time certainly warrant extended trial of the shower-watering and hurdling system by some man of business, anxious to determine how much can be done with it. The meat consumers of the kingdom will wish the enterprise every success. Probably there are water-courses sufficient for the purpose in a majority of the pasture valleys of Britain, and in drier localities rainfall may be stored, as often proposed, by hydraulic engineers.

Value of Corn Fodder.

Dr. Nicholls, in the *Journal of Chemistry*, says:—The opinion we have always held upon the question of the value of green corn fodder for milch cows has been that when raised from broadcast sowing it is nearly worthless, but when sown in drills or in drills and cultivated, with access of air and sunlight, it is of high value. During the present season we have made some experiments to test the correctness of these views. Stalks were collected from a field where the seed was sown broadcast, and also stalks growing in drills upon the same field, and they were dried in a drying closet to expel the moisture. Both specimens were planted at the same time (the 6th of May), and it was found that the broadcast sowing contained ninety-two per cent. of water; those from drills, eighty-three per cent. of water. Thus it was shown that the difference of solid matter in the two was relatively as eight to seventeen per cent. The solid matter was composed of starch, gum, sugar, and woody fibres. There was an almost entire absence of sugar and gum in the stalks from the broadcast sowing, while the stalks that had grown under the influence of light and air held these nutrient principles in considerable quantities. The stalks were collected at the period of growth just before the ear begins to form, a period when farmers begin to cut the fodder for their cows.

Our experiments upon corn fodder have afforded us important information upon other points. We find that the stalks cut before they reach a certain stage of growth are deficient in nutrient matter, and therefore it is a waste to feed them too early. The corn plant, like all other vegetable structures, has but one object or aim in its growth, and that is to produce seed. It is engaged during its whole life in storing up large quantities of starch, which is to be used when the pressing occasion arrives, or the seed vessels mature, to form some subtle, mysterious changes, the rich nutrient principles which are found in seeds. As soon as this struggle is over, the corn plant, like all annuals, dies a natural death. It is not necessary for frost to strike it; it dies from simple exhaustion. The proper time to cut and feed cornstalks is during the four or five weeks succeeding inflorescence, or in other words, they should not be cut until the flower is fairly developed, and the ear commences to form; and any corn that is so planted that the ear cannot form and mature, is practically worthless as fodder. Farmers may learn from these facts that corn designed to be cut for fodder should be planted at two or three periods during the season; some fields quite early, others somewhat later, and still others as late as is safe. In this way, when the hot, dry months of July and August are reached, and the pastures fail, a supply of fodder is secured at a proper stage of growth to afford the largest amount of nutriment.

Horse Forage.

The evidence given before the Select Committee on Horses, which has just been published, is interesting in many points. We will take an early opportunity of going into the more important portions of the evidence, but may be permitted to refer here to some very practical advice to horse-owners which was given by Mr. Church, the General Manager and Secretary of the London General Omnibus Company. While under examination, Mr. Church stated that the Company which he superintends have altogether discarded oats as forage for horses. These animals are fed entirely on maize and chaff, each horse receiving as its daily ration about 17 lb. of the former and 10 lb. of the latter. The maize is just broken sufficiently to enable the horses to eat it without difficulty, and they thrive better on this fodder than they ever did upon oats. On the ground of economy also, maize is preferable to oats as forage, its price being much lower, and the saving effected being about 3s. or 4s. a qr. These facts, Mr. Church went on to observe, have long been known to many owners of horses, but gentlemen with private stables find great difficulty in substituting bruised maize and chaff for the old-fashioned forage of oats and trusses of hay. Coachmen and corndealers resolutely oppose the innovation, for the reason that it enables the owners of horses to exercise a control over supplies for their stables and prevent waste and fraud. Maize, we may add, is a very valuable flesh-forming substance, and has been recommended by veterinarians for many years past as food for horses, on the ground not only of its economy, but also from its great nourishing properties.—*The Farmer*.

Horticulture.

EDITOR—D. W. BEADLE, CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

THE ORCHARD.

Fruit in Nova Scotia.

Being almost surrounded by the ocean, our climate is much more like that of England than yours of western New York. It is warmer in winter, but, alas, cooler in summer—good for the tourists, but bad for the peaches and melons. The thermometer seldom falls to zero in winter, or rises to 90° in summer.—We have little trouble with fruit trees or vines being water-killed, our difficulty lies in another direction; our average summer temperature is too low to ripen the tender varieties of fruit. The grape vine will grow here finely without winter protection, but I have never known it to ripen its fruit in the open air in this country (Yarmouth.) In some parts of the Province it does better. I think with proper treatment, however, we may be able to induce it to ripen, and we shall want you to tell us how to do it in *The Recorder*.

In the matter of soil, we have little to complain of. There is great variety, from barrens to some of the most fertile intervals in the world. The common soil is a strong loam, well adapted to agricultural purposes. The moist climate and good soil make this an admirable grazing country. An intelligent farmer of this neighborhood estimates that he gets one lb. of butter from every 10 quarts of milk from his herd of cows, and from the milk of his best cows he gets one lb. for every eight quarts. I think this would be considered good even in New York.

Many varieties of apples do very well here. The Red Astrachan, Duchess of Oldenburg, Gravenstein, Robson Pippin, Northern Spy, Nonpareil, Vandevere, Wagener and Tallman Sweet, all do well. The yield is fair and the quality remarkably good. Nova Scotia apples took the first prize at the world's fair in London. There are some local varieties which are excellent in quality and productiveness. The Baldwin does not seem to do well, but perhaps it has not had a fair trial. The horser and codling moth, I believe, are unknown here. Good apples usually bring \$4.00 in the market.

The pear has not been sufficiently tried yet. I have known some specimens of the dwarf pear to do well. The Vicar of Winkfield and Flemish Beauty succeed well here.

Plums and cherries of various kinds will grow and bear, but have not been fairly tried.

The only two varieties of strawberries which have been tried in this place are the Agriculturist and Wilson's Albany. The former failed, the latter succeeded. But it will never become popular—it is too sour. It is far excelled in flavor by the common wild strawberry which is to be had in abundance at from five to eight cents per pound. It is also some days later than the wild ones, but on account of its fine appearance and size it sells at from 15 to 30 cents per quart in this market. But what a caricature on the true strawberry flavor it is. There must be many seedlings among the wild ones, but there appears to be little variety. There is a white kind commonly called the English strawberry which is a fine berry. It always parts from the hull in packing.

Raspberries follow, and are to be had in any quantity from the pastures and clearings, but little notice of them is taken. They are much infested with insects, and, I must confess, insects are, in general, pretty good judges of fruit. The flavor is not bad after a person takes the trouble to get at it, but I don't think I should fancy a dish of torpedoes if they were steeped in nectar. Some white ones are occasionally found.

Next comes blueberries and huckleberries. They grow best on rocky, barren land, which has been burned over. Large quantities are gathered by the French Acadians, and are sold at four or five cents per quart. Some varieties of them are as white as milk.

Blackberries ripen soon after raspberries, and continue till the frost cuts them off late in the fall. There are three or four distinct varieties, some of them much larger and sweeter than others. We never cultivate them, but depend for our supply on the fence corners and new clearings, and edges of the forest. They sell in the market at about five cents per pound.—*Cor. to Recorder, Carlton, N. S.*

Gathering of Ripo Fruit.

Josiah Hoopes, who is good authority on every subject connected with fruit gathering, says:—

"In regard to the gathering of ripo fruits of different kinds, no fruit should be taken from the tree or plant during a damp time, and especially when the dew is plentiful in early morning. Never be so hurried as to find cause for the excuse, I had no time to hand-pick my fruit, and, consequently, was forced to shake them off; for such is very poor policy. Fruit so gathered will almost inevitably decay from the effects of bruises. Each specimen should be taken from the tree one by one, handled as if they were so many eggs. The slightest bruise or even abrasion of the skin is the sure fore-runner of a dark spot, which will eventually change into some form of rot. The spores of seed of fungi are always ready to assist in the work of dissolution, and the slightest scratch gives them a foothold for their destructive work. Scarcely any variety of the largest fruits color or ripen so well if left perfect themselves on the tree, and especially is this true in respect to pears. Summer varieties, as they approach maturity, loosen their hold somewhat on the limb, and by gently raising the fruit they will easily detach themselves at the proper period. This is an excellent test, and may always be relied on. To color up fruit nicely, all that is necessary will be to spread a blanket on the floor of a cool room, and then thinly and evenly place the fruit on the floor. A second blanket must be spread over them, and in a short time the effect of the treat will be apparent in the most golden-colored Bartlets, and rich, ruddy-looking Seckels imaginable. Pears perfected in this manner rarely have the meanness of their naturally ripened companions; nor do they prematurely decay at the core as when left on the tree. Peaches are too frequently gathered before attaining full size, and when this is the case we need not expect full flavor. They must obtain this requisite before gathering; although it is not necessary to delay picking until very mellow. As a general rule, all fruits are gathered too early; and, as high color is not a sign of maturity, many experienced fruit growers are frequently misled. Never pick strawberries because they are red, nor blackberries solely on account of their dark appearance. Each should remain on the plant for some time thereafter. The Albany seedling strawberry changes to a deep crimson hue, and gains continually in size after its first coloring process. It is then soft and excellent eating. And so with blackberries in like manner, many complaining of their extreme tartness when the fault was in gathering imperfect fruit. The Lawton or New Rochelle variety, in particular, is delicious eating, if allowed to remain on the plant until soft, when the slightest touch will sever its hold. Strawberries picked with the calyx (or hull) adhering, will always carry better, and be less liable to decay than if carelessly pulled off without this appendage. The foregoing remarks in relation to the proper time for gathering fruits are equally applicable to the grape. These generally color long before they mature; and thus many a novice in fruit culture frequently forms an unjust opinion of his varieties simply from testing unripe specimens. Grapes should always be severed from the vine with strong scissors or trimming shears, and never twisted or broken off."

"The nice appearance of fruits of all kinds, in their boxes or baskets, in the markets, will always command a better price, than when slovenly 'done up'."

PARIS GREEN FOR VINES.—It is not generally known that Paris Green mixed in the proportion of one part by measure to twenty-five parts of flour, will kill the striped bug from off cucumbers, squashes, musk-melons and other vines except water-melons, the leaves of which latter are sometimes spotted if the mixture be used strongly. It may be dusted on from a gauze bag or dredging-box. Usually too much of the powder is cast on: the slightest possible quantity evenly distributed is sufficient, and it should be applied in the morning while the dew lies on the plants.—*Western Rural*.

THE FUNCTION OF GUMS IN PLANTS.—From experiments made with pyrogallic acid, Struve concludes that gums perform a function in plants analogous to that of blood in animals. Pyrogallic acid in contact with alkalis oxydizes rapidly, becoming a dark brown color; with other substances, such as gum arabic and blood, the oxydation is slow, a yellow color is produced, and long needle-like crystals form, which are insoluble in water. The least trace of this yellow substance produces an intense blue with ammonia or the other caustic alkalis. The exact composition of this curious substance has not yet been ascertained.—*Prince Edward Islander*.

THE FLOWER GARDEN.

Geraniums.

Tricolor and Golden Bionce.

Having tried numerous varieties of Tricolor Geraniums in every conceivable situation, I am forced to the conclusion that for Flower garden decoration in this "Canada of ours," the varieties at present in cultivation are utterly worthless. With me they will neither grow nor retain their leaf-markings. When planted out in the full blaze of the sun, the grand total of a summer's growth will amount to two, or at most, three joints. When bedded in the shade more growth is made, but in either case the glorious coloring of the foliage—which constitute their chief beauty—is entirely absent. I am therefore compelled to discard them altogether for outdoor work at present. I say at present, because I believe we shall yet have—and that ere long—varieties which will make a fair amount of growth, and at the same time fully develop their rich colored variegation under the almost vertical rays of our scorching sun. That this is much to be desired all will readily admit who have witnessed the effect produced in "Old Country" gardens by gorgeous masses of Mrs. Pollock when bedded alone, or in some combination with blue or purple. For effect—either close by, or at a distance—a mass of this (our oldest Tricolor) margined by a broad belt of the old Purple King Verbena appeared to my eye unsurpassed.

It is some consolation, however, to know that as pot-plants, we are able to have them at a time when we can perhaps better appreciate them. From October, when they begin to assume their beautiful tints and delicate pencillings, all through our long and dreary winter until the hot days of June again arrive, we have them in all their glory, challenging our attention, whether we meet them in the fern house window or the princely conservatory. As pot-plants their culture is extremely simple. Thrifty young plants can readily be obtained from any of our nurserymen or florists in the Spring, at a small cost. These should be encouraged to grow as much as possible during the summer months, by repotting them into larger pots, as the ones they occupy get filled with roots, and standing them in a position where they will not receive the direct rays of the sun; those who are fortunate enough to possess a glass structure of any kind, will find it better to let them remain in-doors in some shady corner where there is a good current of air. If it is necessary to place them out of doors, they should be placed on coal ashes, to prevent worms entering the pots, and should heavy rains at any time ensue, it would be advisable to place the pots on their side, as owing to the delicate nature of the roots they are peculiarly susceptible to stagnant moisture, for this reason care should be taken to ensure thorough drainage by placing a few pieces of broken potsherds in the bottom of the pot when potting. It has often struck me that more plants are lost through over-potting, viz.: placing in too large pots—than by all the other ills to which they are subject put together. This applies to all hot plants generally, but with more force to the one now under notice. It would therefore be much safer and better for amateurs to have their plants in pots a size too small than in ones a size too large. Like other Scarlet Geraniums, the Tricolor delights in a light friable soil, but unlike the others, they are greatly benefited by the addition of a quantity of well decomposed manure to the soil; indeed, either this or an occasional watering with weak liquid manure is indispensable to the full development of their rich colors. Keeping the flowers closely pinched off, has also the effect of materially improving the foliage.

In watering, care must be taken to do so rather sparingly. I do not mean by this, a small drizzle of water sufficient to moisten the soil about an inch below the surface, (another fruitful source of much mischief) what I do mean is not to water until the soil in the pot is quite dry, and when this is found to be so, give them a soaking of rain water which will saturate every particle of soil thoroughly.

In propagating, those who have a frame with a little bottom heat will have no difficulty in getting soft young shoots to emit roots in the Spring, or well

ripened shoots will root readily, in a shady place in the open air, towards the end of August.

The following six varieties are amongst the best—Lucy Greive, Louisa Smith, Sir Robert Napier, Charming Bride, Beauty of Guestwick and Italia Unita. The three last are silvers. Amongst the goldens, I consider Louisa Smith the best. Those desiring a larger collection can obtain a score of different varieties from any leading florist.

For bedding purposes I have had much better success with the Golden Bronze. They grow pretty freely, and retain their color, more or less, according to the variety, when the bedding-out system is employed on a large scale, they are really invaluable for contrast.

The seedling, "Pride of Mount Hope," sent out last year by Lillwanger & Barry, is so far superior to anything I have yet met for outdoor work, that in future I shall employ it largely and exclusively. With me it is a perfect gem, and is really all that was claimed for it when being sent out, which is saying a great deal. It is in the hottest and driest weather that it assumes its rich coloring. And as the plants are of a very neat dwarf habit, they are admirably adapted to edging beds of blue and purple Verbenas, dwarf blue Larkspurs, &c. A large bed of it which I saw on the other side of the line, had a wide margin of *Attermanthera Magnifica*, and although there was no contrast, yet it had a very pleasing effect, owing to the harmonizing of the colors. As pot plants they are of no value whatever, as when grown in the house they have little to distinguish them from an ordinary zonal.

CANADIENSE.

Hot Water for Cactus.

"So you are really going to do it," I exclaimed, as she came in with the tea-kettle. "I should think you would be afraid. I know you'll kill them, and it's too bad, after having them so long. Let me see, it must be ten years since you started the slips."

"Yes, almost eleven, and I'm tired of seeing them around. I've threatened these three years to throw them out, and now I'll give them just one more trial.—If it kills them, I don't care," and the steaming kettle, seemed to sing the words after her, in a spiteful way—"I don't care! I don't care!"

It was all about two inoffensive plants, standing in pots, on the window shelf. They were species of the cactus, one a Snake Cactus and the other a beautiful drooping plant, that somebody had said bore beautiful large pink flowers; but Aunt Ruth did not know.—Neither of the plants had ever blossomed, and after these many years she had resolved to give them up as not worth the room they occupied.

"I've tried everything but this," Aunt Ruth went on, still holding the kettle, with the spout resting on the sitting-room stove. "I've let them get as dry as ashes in the winter, never putting on a drop of water from Fall to Spring, I've changed and changed them to smaller pots, till I'm tired of it, and not a flower have I had for my pains, I'll try this last thing, and if that don't do—" She finished the sentence by taking the tea-kettle to the window and pouring the smoking contents in the pots. A neighbor had been in an hour before, and said she knew of a cactus that flowered immediately after being treated in this way. Let the earth get perfectly dry, then pour on boiling water, and the plants will throw out buds in a few days.

We watched our scalded friends, to see them wilt down, but we were disappointed in our expectations. After a good many days we discovered—what do you think? Little red dots all over the Snake Cactus, and round buds occasionally scattered over the leaves of the other. And now—Well, I have only one more thing to say.—You should see the glory with which our little shelf is filled!—F. A. B., in *Rural New Yorker*.

A Room Fit for a Queen.

A single Petunia in a hanging basket suspended in front of the window, some of the long stems falling over the sides, and some tied up straight, but all covered with purple and white variegated blossoms. A Madonia vine covering nearly all the wall on one side, but festooned over the door, and an English Ivy on the other side. In one corner a "Wandering Jew," and in the other, hanging pots of cocoa-nut shell or goblet tops suspended in crotchet work of bright worsted—the whole costing less than fifty cents. Such was the make-up in the decorative line of a ladies' sitting-room as recently described by the editor of the *Mauc Farmer*.

Rose Slugs.

A. C. Flagg gives, in the *Floral Cabinet*, the result of an experiment with salt as a remedy for the rose slug:—

"I see by the *Cabinet* for April, that there is a subscriber in Westminster, Md., who wishes to know what will prevent the rose slug. I think it is the duty of all those who have had any experience with this troublesome pest, to make known a remedy if they have one. I saw an account in a paper about three years ago of the success of the Shakers at New Lebanon, N. Y., in raising fine foliage and flowers. This the brother in charge attributed to the free use of salt as a top dressing for the soil of the beds. The salt kills rose insects of every kind, and also improves the health and vigor of the plants. I had been unable previous to seeing this account to have a single perfect flower, and as I thought that salt could do no worse than slugs did, I would try it. So to about half-a-dozen bushes I used a quart of rock salt, worked into the dirt about three or four inches from the body of the bushes. This was done as soon as I could work the ground in the spring. I had some nice roses, and my bushes grew nearly a foot higher than they ever had before. The next spring I did not work in the salt until the bushes had begun to leave out. This did not prove as successful as the year before, so I think in order to prevent the ravages of the slug, you must work in the salt."

NOTE BY ED. C. F.—There is only one way in which salt applied after this method can diminish the number of rose slugs, and that is by coming in contact with the insect in the pupa state, in sufficient quantity and strength to kill it, a thing, to our mind, not very likely to occur. White hellbore in water sprinkled upon the Rose bushes is sure death to the slug.

Pruning Roses.

As soon as the frost is out of the ground in spring, and hard freezing weather is past, I commence to prune my roses. I suppose that every one who has noticed the varying habits of roses knows that different species or classes require different treatment with the pruning knife. All kinds of summer or June roses, as they are usually termed, such as Damask, Prairie, Moss and French, should have the old canes occasionally removed, that is, those that have produced flowers one, two or three years. Also, all weak, slender branches and canes may be removed, allowing only sufficient to give the plant a good form. The largest and most perfect flowers are usually produced upon the strongest one-year-old canes, and these may be shortened with benefit. Hybrid Perpetuals should also have their canes shortened, and the weak, feeble branches cut away, and as a rule, the weaker the shoot the more severely it should be pruned. Six to twelve inches long enough for side branches on Hybrid Perpetuals grown as tree or half standards. With the Tea-scented, Noisettes and Bourbons, there is little danger of pruning too severely, because it is the young shoots that produce the flowers, and the more vigorous these start and grow, the more abundant will be the blooms. There is little use to leave a quantity of long, slender shoots upon a plant, expecting that they will produce as many or perfect flowers as a few strong ones. After monthly roses have produced their first crops of flowers in summer, a second may be hastened by cutting back the blooming shoots.—*Rural New Yorker*.

Roses at Berlin, Ont.

I had a very fine display of Roses mostly of the older varieties, some of which are not to be despised, neither to be beaten by many of later introduction. I succeed remarkably well with the Manetti stock for standards—some of which were budded 10 years ago. In the fall I bend them as close to the ground as possible and fastened with hooked pegs, then cover with litter. The Pillar Roses I treat in the same manner and very seldom lose any by injury from frost. As soon as the ground is open in spring they are put in an erect position and tied to stakes. The cultivation of the Rose in this country is a little more troublesome than in Europe, but I have never seen the roses there so abundant in bloom, and when the season happens to be cool and moist as the past was, the colors are more brilliant, so that we can have full compensation for our extra labor and attention.

Of course, we cannot grow outside the Bourbon and Teas, but almost the whole of the Hybrid Perpetual and some of the finest Hybrid Bourbons can be grown with perfect success, if only sufficiently protected during the winter.—R. S.

THE FRUIT GARDEN.

Raspberries in 1873.

We take the following remarks concerning several of the varieties of Raspberries in cultivation from the *Am. Rural Home*.

Kirkland.—This variety of red raspberries, although quite hardy and early, is too small to command the highest price, and not productive enough to be profitable. We shall drop it.

Purple Cane.—This hybrid between the red and black species, although hardy, productive, and of good flavor, is too soft to be placed in market in a passable condition. We shall let it slide.

Philadelphia.—We are hesitating about this variety. It is less hardy with us than the Clark, but more productive. Its fruit is inferior in size and flavor, unpopular in color, and so soft as to be very unsatisfactory to handle. It is selling in Rochester this year for but little more than three-fourths the price of Clark or Franconia. We can not commend it very highly.

Hudson River Antwerp.—The quality of this variety is unimpeachable. But as a market sort it is less firm, and less productive than Franconia, and will sell no higher; and as a family variety it is hardly before the Clark, and lacks its hardiness. We would not plant many Hudson River Antwerps. The only varieties of the pure red raspberry—*Rubus Idæus*—that we would plant extensively are Franconia and Clark.

Franconia.—On a good, strong loam, with thorough culture, covering the canes in winter, and staking them in summer, we are satisfied that this variety will return greater profit to the producer, in the vicinity of Rochester, than any other. Its canes are not entirely hardy (although some of our neighbors leave them unprotected in winter and realize good crops), are vigorous and very productive. The fruit is large, conical, firm, bright red, handsome, somewhat acid, good. It being the firmest of its class, the fruit does not settle in the boxes, and in consequence is much more saleable than the softer varieties. We hope to give some reports when the season is past, showing its profitability.

Clark.—This, although an American seedling, is believed to be of foreign parentage. It is more vigorous and hardy than the Franconia, but less firm and productive. It is of rather better quality.

Yellow Raspberries.

The color of yellow raspberries is not in their favor for market. Those kinds related to the finest reds, as Brackley's Orange, will not compete with the reds in market, although the one named is, in our opinion, superior to all others in flavor; and the yellow-caps will not compete with the black-caps.

Drinkley's Orange.—Is a luxuriant grower, and, under favorable circumstances, quite productive. Should be covered in winter, and staked in summer. Fruit large, conical, soft, light yellow, best. Would not raise it for market, but would give it a place in the family garden.

Golden-Cap.—Canes yellow, vigorous, hardy; productive. Fruit a golden yellow, hemispherical, like black-caps, sweet, sometimes a little bitter. Would raise but few for variety in family garden.

Thornless Golden-Cap.—Less thorns than the last, and perhaps a trifle more productive. Fruit similar in appearance, a little larger, a little unpleasant, if overripe. Will not pay as well for market as the black-caps.

Black-Caps.

The great raspberry for the masses—the one they can afford to buy in quantities to eat out of hand—to eat upon the table with cream and sugar—to eat in pies and puddings and shortcakes, and to can for use when fresh ones are impossible, is the Black-Cap. The fact that large quantities can be grown on fair farming land, without a great outlay of labor, undoubtedly contributes to their general use, but aside from their cheapness they are favorites with the people. We see no good reason for more than three or four varieties of this species. We think that it is pretty generally decided that the Mammoth Cluster is the best late variety—although a few claim that the Seneca contests its right to chiefship—and when the public comes to decide which is the best of the earlier varieties, we can reduce our list considerably.

Davidson's Thornless.—We have fruited this sort some four or five years, and consider it a good and productive early variety—the earliest, and a pleasant kind to work among. The Ontario may be as early, and more productive, but we cannot speak of it from our own experience.

Burns.—This is a Kansas seedling which we have fruited for three years, but which is generally unknown. We have found it more hardy, vigorous, and productive than Doolittle, and should plant it in preference.

Manmoth Cluster. This covers more than three-fourths of our trade devoted to the black raspberry. It would be well to plant it in preference to any other black-berries, and are now able to satisfy the demand upon us for the berries. We will say further that a majority of consumers would prefer them for daily table use to the red raspberries.

And now a word as to the prospect of the raspberry as a paying crop to cultivate. We think in this section the demand for the fruit is fully up to, if not a little ahead of the supply, and if only a gradual and judicious extension is made from year to year, the business will be remunerative. It is not a business that properly belongs to the farmer—the man of large acres—but rather to the gardener, with few acres, near town or city, where cheap help can be secured, and large quantities of manure, and markets are easily accessible.

Our own experience with the Clark does not corroborate the statement that it is more hardy than the Philadelphia. On the other hand we have found it to be much less hardy than Philadelphia. This season we had a splendid crop of fruit from the Philadelphia, but our canes of the Clark were so injured that we did not have more than half a crop. We believe that the Philadelphia is the most hardy and the most productive berry of its class yet brought out.

New Gooseberries.

A correspondent of the *Fruit Recorder* has raised a new gooseberry, and indulges concerning it in the following milk-maid's phantasy—

"I send you a small ham of the Champion Gooseberry. This variety is a seedling from the English Crown Bob and Houghton's seedling crossed. I have 53 bushes four years old, from which I have gathered and sold this season, 76 gallons of fine, large berries, at an average of 60 cents per gallon. Next season I calculate they will average two gallons to the plant. Suppose I sell for fifty cents per gallon—they will net me \$1 to the plant. It takes 1,750 plants to the acre, five feet apart. If you know of a gooseberry that will beat this, please let me know of it, or if any of your readers have one, or know of one that will yield more than this, I would like to get a few plants of it."

The Editor says of the fruit that he received that it was too green to tell anything as to flavor. Judging by the single specimen, it is certainly a remarkably prolific sort. The size, however, does not average but a trifle larger than the Houghton. Now we already have the Downing gooseberry, which is a size larger than the Houghton, and of fully as good flavor, and unless we can have something that is a decided advance on Houghton and Downing we had better do without the Champion altogether. We want a gooseberry yielding larger fruit and of better flavor, yet equally as productive and free from mildew as the Downing. Pray don't inflict anything less upon us.

When to Hoe-out Strawberry Beds.

"What's all that gang of hands doing on that new-set strawberry bed?"

"Hoing them out."

"Hoing them out? why, I don't see any weeds to hoe."

"Perhaps not, and we don't mean you shall sooner than we can possibly help. You see our berry season is fast coming on, and we don't want too much hoeing on our hands then. So we take time by the forelock. If you will look closely, you will see plenty of little, fine weeds starting, and by going through them now, with fork and digger, and scratching the ground over, these are killed, and the hard crust that has formed about the plants, loosens up. You will notice how fast the men walk over them now—wait two weeks from this time before hoeing them, and you would see the men down on their knees, moving like snails. In our long experience in strawberry culture we have found nothing so necessary, and that pays so well, as early hoeing of new-set beds."—*Fruit Recorder*.

How to Obtain Very Early Strawberries.

By the way, that little experiment of our's 'last spring, has proved a success for obtaining a few berries for our table use, three or four days in advance of our other plants. We prepared two cheap "cold frames," by making a frame with eight inch boards, slanting edgewise. Bed six feet wide, and about twenty feet long. Plant Metcalf, Nicanor and Wilson; set only six inches apart in the rows, and rows one foot apart, all runners kept off. Bed in a protected place on a south decline, which, with the protection of a board frame, has given us fruit this year, three or four days in advance of our earliest old plantation, where we have always picked the first fruit. We shall keep these same vines standing, cutting off all runners, and from being old plants another spring, shall gain two or three days in earliness, in comparison to out-door plantations. Our advice to our readers is, to fill 50 to 100 small fruit baskets or boxes, or earthen pots, with rich earth, and place in your strawberry plantation, training over them the runners, and "catch" the first plants that set. Those transferred to such a bed, will give you early fruit next season, especially if the frames are covered in cold, stormy weather in the spring, with sash. In fact, we are convinced that strawberries can be grown thus near many markets, very successfully, and at remunerative rates.—*Fruit Recorder*.

When to Make Cuttings.

There is nothing like getting out cuttings early. There are two plantations—containing fully one hundred thousand currant and gooseberry cuttings, and fully nine-tenths are growing. However, it is not all early setting, but by preparing the cuttings last fall, and trenching them in, so that all of them got well calloused over.

It is almost useless—time thrown away, to set cuttings late, and from late spring cuttings. Last spring we had a quantity of grape cuttings brought to us late, by a friend, and we did not succeed in growing one in ten—not enough to pay for our labor—let alone what we allowed him for the cuttings.—*Fruit Recorder*.

CHEAP PROTECTION FOR VINES.—Take an old cheese box, take out the bottom, remove the hoop from the cover, and get some mosquito netting and place over the box, and the hoop will hold the netting in its place.

THE KITTATINNEY BLACKBERRY.—A fruit-gardener in Illinois says: "Were I going to set out blackberries, I should prefer the Kittatinney to any variety I have yet seen, for hardiness, flavor and productiveness, and for a market berry, I believe it has no equal. A. M. Purdy, of Palmyra, N. Y., an extensive grower of small fruits for market, says he has tried from ten to twelve sorts and has yet to find one that gives better satisfaction than the Kittatinney, all things considered."

THE VEGETABLE GARDEN.

An Easy Way to Raise Early Cucumbers.

Cucumbers for early use may be forced in hot-beds. For this purpose the beds need not be started until the middle of March, for when the young vines are above ground they will require an abundance of air daily, which cannot always be given, if started earlier in the season, on account of cold weather. There have been many attempts made among commercial gardeners around New York, who have vegetable forcing houses, to start cucumbers as early as January, in these houses; but every such attempt has, so far, proved unsuccessful. But when the forcing beds are started as late as the middle of March, it is quite as easy to raise a crop of cucumbers as it is a lot of egg or tomato plants. To save trouble in watering the beds, more soil may be used than is needed for raising plants. When the bed is ready for planting; two "hills" may be planted under each sash, putting six seeds in each hill of the "White Spine," one of the best varieties either for forcing or garden culture. When the young plants are an inch or two above ground they should be thinned out, leaving only three in one and two vines in the other, or two in each, in case the plants are strong. At this stage of growth the important point is to give air freely every day, without checking the growth until the second week in April. Straw mats should be put over the sashes at night to protect against frost. When the vines begin to "run," pinching off the end of each at

the third joint will encourage a more stocky growth, and if pinched a second time at the fifth joint the vine will not only be stronger, but the cucumber will be borne nearer the hill. Whenever the surface soil in the bed becomes dry, then tepid water should be given in quantity enough to moisten the soil, but not enough to saturate the bed. These few general directions, if followed, will put one on the right path to raise cucumbers under glass. Those who enjoy cucumbers and cannot afford the time or expense of forcing them, can by a little trouble, have cucumbers fit for table use at least a month earlier in the garden than when grown in the ordinary way. For this purpose a single sash and frame, with or without bottom heat, in which to sow the seed will be all-sufficient. Shallow drills one inch deep should be made, and the seed of the Early Spine, sowed thinly, and then covered, pressing the soil down firmly over the seed. This may be done the last week in March and by the time the weather is settled and the ground warm enough in the open ground to plant cucumbers, the plants in the frame will be two or three inches high, with the first leaf well developed. These young plants may then be lifted without disturbing the roots and transplanted into the open ground without checking their growth in the least. By following this simple plan there is no danger to be apprehended from the striped bug, for the plants are already so enough advanced to be proof against such attacks. In the space of a single sash, 3x6, enough of plants can be started in this way to plant 75 hills—twice the number usually planted for family use at any one time.—P. T. Quinn, Essex County, N. J., in *Tribune*.

Celery.

Our manner of treating the celery crop of late years is very much simplified. Instead of sowing the seed in a hot-bed or cold frame, as formerly, it is sown in the open ground as soon as it is fit to work in April, and kept carefully clear of weeds until the time of planting in June and July. The tops are shorn off once or twice before planting, so as to insure "stocky" plants, which suffer less on being transplanted.

After the ground has been nicely prepared, lines are struck out on the level surface, three feet apart and the plants set six inches apart in rows. If the weather is dry at the time of planting, great care should be taken that the roots are properly "firmed." Our custom is, to turn back on the row, and press by the side of each plant gently with the foot. This compacts the soil, and partially excludes the air from the root until new rootlets are formed, which will usually be in forty-eight hours, after which all danger is over. This practice of pressing the soil closely around the roots is essential in planting of all kinds, and millions of plants are annually destroyed by its omission. After the planting of the Celery is completed, nothing further is to be done for six or seven weeks, except running through between the rows with the cultivator or hoe, and freeing the plants of weeds until they get strong enough to crowd them down. This will bring us to about the middle of August, by which time we have usually that moist and cold atmosphere essential to the growth of celery. Then we begin the "carthing up," necessary for blanching and whitening that which is wanted for use during the months of September, October and November. The first operation is that of "hand-ling," as we term it, that is, after the soil has been drawn up against the plant with the hoe, it is further drawn close around each plant by the hand, firm enough to keep the leaves in an upright position, and prevent them from spreading. This being done, more soil is drawn against the row (either by the plow or hoe, as circumstances require), so as to keep the plant in this upright position. The blanching process must, however, be finished by the spade, which is done by digging the soil from between the rows, and banking it up clear to the top on each side of the row of celery. Three feet is ample distance between the dwarf varieties, but when larger sorts are used, the width of the rows must be at least four and a half or five feet.—*Henderson's Catalogue*.

ONION MAGGOT.—An onion-grower, of considerable experience, says that he destroys the onion maggot in the following manner:—As soon as the maggots are discovered at work, remove the soil from the sides of the bulbs, by making a shallow trench with the corner of a hoe; then pour into this trench soap-suds made by dissolving two or three gallons of soft soap in a barrel of water, previously adding one pound of copperas in the soap.—*Rural New Yorker*.

Correspondence.

Disease Amongst Horses in Goderich.

We have lately had a communication from Mr. J. F. Duncan, Veterinary Surgeon, Goderich, in regard to a fatal disease which has again appeared amongst the horses belonging to an establishment in Goderich. We have no doubt but it is the result of some local influence, acting as a blood poison, and producing the very alarming results which characterize the disease. Possibly the same causes are operating now which were suspected as the exciting causes two years ago.

Birds and Balsams.

(To the Editor of the CANADA FARMER.)

FRIEND FARMER.—If you have no objection I will trouble you with a few thoughts on two different subjects mentioned in your very instructive periodical. First with regard to the "Bird question." I think I have mentioned before that I have been very successful in the matter of plantations on a small scale. The result is that I have lots of birds. I may say all the year round, for the little Tom Tits can be heard in winter among the evergreens, and last winter gossbawks, and jays, and a grey bird, about the size of a robin, whose name I don't know, paid visits all through winter. In summer, at early morning, there is a full chorus of cherry songsters, and one and another, by himself, through almost the whole of the day. But, sir, here is the rub, I can't keep a strawberry or cherry, and even the green peas were shelled out this summer in a wholesale manner by the blackbirds (grackles). Then the red currants suffered severely, so that it comes to be a question whether you are to preserve the birds or the small fruit. I don't think, after a good deal of experience, you can have both, but I would like your opinion on the matter. For myself I prefer the birds and so patiently let the cherries and strawberries go, although I do grudge the green peas and the red currants. I caught one of the blackbirds in a rat-trap and hung him up as a warning, but the rogues got over their fright in a few days and came back and made another raid on the peas under the very shadow of a fierce-looking scare crow to boot. The most valuable fruits I know are rhubarb and black currants, for no animal seem to injure them, and with a very little trouble they yield large and wholesome crops.

The other subject I would allude to is the cultivation of balsams, double ones, of course. I presume, I noticed an article in your last number on this subject, but the requirements mentioned in it are so numerous, it is enough to frighten one from trying to grow them. Well, sir, the first and main item is to get good seed, I got "Smith's Prize Balsam," and they are very beautiful this season, and have been as good many times before. I take no extra trouble. I sow the seeds in a small hot-bed about the last week of April, and plant them out in the open border close to a picket fence as soon as they are about six inches high. If the weather is dry I protect them with shingles, and water them till they have fairly recovered the shock of transplanting. I never use anything but rolled manure and the house ashes in my garden, except for cabbage, cauliflower, &c., and even then I give the horse dung a heating on the ground before spreading; and I just heat my balsams like other flowers, keep the ground loose and clean. I may say, however, my garden is a light loam over a coarse sort of gravel bottom. I never had any trouble with balsams except from old "Jack Frost" and those villainous cockchafers that eat off the roots underground, and one season I experimented with them. I lifted out two firm plants, in bloom, which showed, by their drooping state, that the enemy was there, found and killed the villains, and then replanted the balsams, and with a little watering and protecting from the sun for a day or two they both came round. When I want to have them late I plant one or two in soap or candle boxes, and they will last till the end of October. My balsams, this year, are from two to three feet high and about two feet in diameter across the main branches, and the flowers as large as small roses. Six or eight blossoms taken and put in a soup plate or a large saucer with a little water or wet moss make a beautiful ornament in a room and have a delicate sweet smell also.

Yours faithfully,

Fergus, 21st August, 1873.

BELVIDE.

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The Canada Farmer.

TORONTO, CANADA, SEPTEMBER 15, 1873.

Book-Farming.

Notwithstanding the wide circulation of agricultural publications, considerable prejudice exists against what is known as book-farming. There are in the world not a few strange and unfounded prejudices, and there are others which have some foundation. The prejudice against book-farming, is of the latter sort. It is not wholly without cause. Many writers on agriculture have dealt largely in mere theory, if not in fanciful speculation. They have suggested untried methods, and spoken confidently of un-made experiments. Just as many a patented model fails to work through some unforeseen difficulty, so multitudes of farming-made-easy expedients have proved, on trial to be utterly useless. Moreover, allowance needs to be made for diversities of climate and circumstances. What succeeds in one latitude, and one set of circumstances, may fail in another locality, and amidst a different state of things. Mere theoretical writers are prone to overlook these facts, and unthinking readers are equally prone to take no account of them. Want of success in a course of action suitable enough elsewhere, has led to a host of outlandish published statements and printed advices. More knowledge, reflection and common sense would have prevented unsuitable directions being either given or followed, and would have prevented, also, the consequent prejudice against book-farming.

Again, many men, who never did a hand's turn of farm-work, or indeed of any hard manual toil in their lives,—professional and business men, tired of town and city life, and envious of the country, have bought farms, and with much flourish of trumpets, have undertaken to work them scientifically, so as to eclipse their old-fashioned neighbors. They have long dreamt of

"A little farm well tilled
A little barn well filled,"

and have supposed it was the easiest thing imaginable to turn the vision into reality. Their idea has been that anybody who is "posted" in agricultural facts and principles, can be a successful farmer. And so they have read up very greedily all the papers and books treating of rural affairs, they could lay hands on. The result is, a great mass of crude notions, and an immense deal of conceit. A hard trial of the rough and tumble of life on a farm, suffices to prove

that in this as in many other matters, "tis distance lends enchantment to the view." The theories don't work, the methods are unsuccessful, the magnificent crops fail to come to time, the exemplary farming is not apparent. What is wrong? Why this. There is total ignorance of the practical department of agriculture. Farming is a business, that requires to be learnt like any other. No man becomes a merchant simply by reading commercial treatises, or a lawyer simply by reading law books, or a physician simply by reading medical books. There must be actual work in the counting-house or shop, in the courts, and in the hospitals. Equally necessary is familiarity with the actual work of the farm. So when the theoretical farmer and the practical farmer are brought side by side in competition, the practical man is pretty certain to come out winner. And, ten to one, the result will be, prejudice against the book-farming.

An enumeration of the causes of the prejudice under consideration would be incomplete without mention of an inferior and superficial class of rural publications which has done much to create and foster it. Of course any one who chooses can start a so-called agricultural paper. But it cannot live without public support, and that support is not always discriminating and wise. It is no libel to say that there are journals not calculated to enlighten the farming community, or to elevate the standard of our agriculture. A perusal of these has occasioned, at least, some of the prejudice against book-farming.

But after all that can be said in its excuse, this prejudice, like most others, is very unreasoning and very unreasonable. Granted that any quantity of barren and possibly fanciful theories have been put in point,—that any number of lily-handed farmers have failed,—or that any particular journal is not worth reading,—does it follow that it will not pay any man whose vocation is agriculture, to be a diligent student of publications devoted to the exposition of those principles which underlie his calling? A servile assent to any and everybody's say-so, is unworthy a thoughtful, sensible person. Theories are to be sifted, and suggestions tested. Is it not well to have schemes and methods put down in black and white, so that they may be subjected to proof? As to the failures of men who enter on untried undertakings confident of success; what is more common than such things in all the walks of life? And in regard to worthless publications that issue from the press, if people cannot have the sense to "prove all things and hold fast that which is good," they make but poor use of their reason, and must either go without reading altogether, or suffer imposition.

There are multitudes of intelligent, skilful, and successful farmers, whom the most rabid opponents of book-farming have no objection to talk with, and by word of mouth obtain the rich and ripe results of their observation and experience. We fail to see why these results are not just as valuable and useful when conveyed to the eye by means of the printed page, as when conveyed to the ear by the living voice. To gather up these things, and give them permanence and wide publicity by publishing them, is the object of agricultural publications. We do not contend that alone they are sufficient to make thrifty and prosperous farmers. But their utility, when made good use of by practical people, does not, it seems to us, admit of question.

Agricultural books and papers also provoke discussion, give opportunity for comparing notes on doubtful points, wake up thought, excite interest, and greatly promote the spread of useful knowledge. No diligent, discriminating reader of them will hesitate to say that they are worth ten times their cost to the farming community.

We would direct attention to the advertisement of Joseph Sharman, Esq., of Stratford, in another column. The "Thresher," manufactured by Mr. Sharman, is fully described in our Implement Department, page 315.

Bow Park Sale.

Owing to Mr. F. W. Stone's sale having been fixed for Wednesday, the 15th October, the sale at Bow Park will not come off until the day following, Thursday, October 16th.

Great Sale of Short-Horns.

Just as we go to press, we are in receipt of a telegraphic despatch concerning Mr. Campbell's Short-horn sale, which appears under the head of Agricultural Intelligence. The prices paid, extravagant as they may appear at first, are justified by the intrinsic value of the animals, and the immense demand for the best blood from all parts of the world. On these points, we shall have more to say in our next.

Col. Taylor's Sale.

At the last moment before publication, we learn from our London exchanges, that the sale of Short-horns which took place yesterday on the farm of Col. J. B. Taylor, attracted quite a number of noted breeders, and passed off, we believe, very satisfactorily. Twenty-two head of cattle were disposed of; among the number, the "22d Duke of Andra," which was purchased by Mr. J. Gibson, of Minneapolis, Minn., for \$2,000. The "3rd Duke of Springwood" was got by Mr. F. Stone, of Guelph, for \$270. All the others sold at good figures. The sale was conducted by Mr. John Page, auctioneer, of New York.

The Implement Trade in Illinois.

Farming is not satisfactorily remunerative in Illinois and the adjacent States of the Northwest. One reason for this is the exorbitant freight tariffs charged by the railroads. Another is the high price of implements. Naturally enough, the farmers are combining their energies to improve the existing state of things. Among other measures adopted, they are making arrangements to buy their implements from the manufacturers without the intervention of agents. In most cases, the manufacturers demur to this, and will not sell their wares except through such agents. We get a glimpse of the posture of matters as between the farmers and implement-makers, from the following preamble and resolutions adopted by the Humboldt Farmer's Club, at a meeting held August 7:—

WHEREAS, At a previous meeting of this Club, one of the members was authorized to go to Decatur, Ill., for the purpose of buying a number of wheat-drills for the members of this Club; and drills are manufactured at Decatur, Ill., and known as the Illinois Press Drill; and

WHEREAS, The agent for this Club did go to Decatur for the purpose of buying drills, to pay cash on delivery; but the manufacturers refused to sell him their drills, referring him to their agents in this county; and

WHEREAS, Said drills are furnished to the manufacturer's agents in this county at \$85.50 cash, and their agents ask farmers to pay them \$120.—thus the agents pocketing \$30 of the farmer's money; therefore,

Resolved, That as the manufacturers of the Illinois Press Drills prefer to sell to their agents in preference to farmers, therefore we prefer letting the agents wear their drills out.

Resolved, That the members of this Club will not buy drills of the manufacturer's agents, and we ask the attention of all Farmers' Clubs to this matter throughout the State.

Resolved, That one of the objects of this Association is to encourage home manufactures, and, if the above resolution is strictly adhered to, it will better enable us to encourage them by purchasing more drills and other farm implements, with the same money.

Abolition of Prizes at Fairs.

The great Industrial Exposition which is to come off in Chicago next month, is to have the novel feature of awarding no premiums. It will simply give the public an opportunity to see and judge for themselves. On this point, the Chicago *Tribune* says:

"The absence of the usual competitive feature of similar expositions, no prizes being offered, will contribute to the legitimate success of the October fair. There will be but one common aim among all exhibitors, to display their articles to the best advantage, and to impress upon the public the real progress that is making in the arts, sciences, manufactures, and industries of the country. There will be no petty jealousies, distracting rivalries, or scandalous favoritism. Probably the most valuable and instructive museum in all Europe at the present time is the Albert Memorial Institute, in London, which is a permanent exposition of the manufactures and arts, each business being complete in itself, and conducted before the eyes of the visitor in all its departments without competition, but with the same detail and regularity as in the large manufactures. It is probable that the Chicago fair this fall will lead to the establishment of a permanent exposition, and it is on this account particularly fortunate that the somewhat meaningless, and sometimes unfair, system of medals and prizes has not been adopted."

If there is, as we cannot help thinking, sound philosophy and good common sense about these views, the success of the forthcoming exposition, in the metropolis of the northwest, may bring about a great revolution in the exhibition system.

Stock Arrived.

Mr. John L. Gibb, of Sunnybraes, Compton, Province of Quebec, writes the *Country Gentleman* under date of Aug. 18, 1873:—

"I am happy to state that I received by the last trip of the *Herbman* to Quebec, in first rate condition, and without a scratch, the four valuable animals I purchased when in Scotland last spring—namely, the Short-horn cow Flower Girl, by Victorius (25378), dam British Girl, by British Hope (21324), bred by Mr. Howe, Huntingdon, England, deep in Booth blood; the Ayrshire cow Clarinda, of great beauty and winner of several prizes, bred by Mr. James Fleming, Knockdon, Maybole; the second prized two-year old Clydesdale filly at Ayr Spring Show, Lady Clyde, bred by Mr. W. Caldwell, Ardrossan, Scotland, a bright bay of great substance and perfection of form; and the most promising Clydesdale stallion Premier, fifteen months old, winner of second prize at Ayr, this spring, got by the most famous Clydesdale horse in Scotland, Prince of Wales, who was bred by Mr. Fleming, Maybole, Scotland, and sold to Mr. Drew at the high price of fifteen hundred pounds sterling. It is my intention to continue importing Clydesdale mares for the purpose of breeding, and keeping the old-fashioned blood quite pure. They will be exhibited at the Provincial Show at Montreal in September. The Short-horn Flower Girl has, since her arrival, dropped a fine heifer calf by Prince of the Realm (22627); both mother and calf are doing well."

Substitute for a Roller.

A correspondent of the *Country Gentleman* writes that Journal an account of a device for breaking lumps and smoothing the surfaces of fields which he thinks preferable to the rollers usually employed for these purposes. The "drag" as he terms it, is a sort of combination of a sled and a stone boat, the front and back ends being turned up like a sled, and the bottom being of flat board like a stone-boat. The affair is described and commended as follows:

"I make the side pieces or frame of 2-inch plank, eight inches wide, and turned up at the ends, and nail the bottom board on with heavy spikes. I use 1½ inch lumber for the bottom, and it does not matter how wide or how narrow it is. I put a seat on it and ride, as my weight helps to crush the clods. By having the ends slightly turned up, it runs easier, and does better work. I always haul all small stone off the field on my drag."

"Any farmer who can use an axe, a saw, a hammer and auger, can make one, and after he has once used one he would not farm without it. They run lighter than a roller, and *grind* the clods and lumps to powder, while a roller very often only *presses* them into the ground. And they level the ground better than a roller can do, after going over the field with a drag, it looks as if it had been gone over with a smoothing iron, and it never packs the ground."

Agricultural Intelligence.

Fall Shows.

- Guelph Central—Sept. 16th to 19th.
- Provincial—In London, Sept. 21st to 27th.
- Eramosa—At Rockwood, on Tuesday, Sept. 30th.
- Blenheim—At Plattsville, Oct. 3.
- South Brant—At Paris, Oct. 9th and 10th.
- Burford, Oct. 9th.
- Wilnot—At New Hamburg, Oct. 7.
- Blandford—At Bright, Sept. 19th.
- Sphiasburg—On the 18th October.
- Victoria South Riding—At Lindsay, on Wednesday and Thursday, October 1st and 2nd.
- Grenville—Prescott, Sept. 23, 24 and 25.
- Edwardburgh, October, 8 and 9.
- Ogdensburg, N. Y., 1st, 2nd and 3rd Oct.
- Dundas County—Morrisburg, Sept. 17, 18.
- Mountain Township—Inkermann, Sept. 23.
- Matilda—Dixon's Corners, Sept. 24, 25, 26.
- Winchester—Chesterville Sept. 25.
- North Waterloo—In Waterloo Village Sept. 30th and Oct. 1st.
- Hamilton Central—Sept. 30th, and Oct. 1st and 2nd.
- Esquimaux—At Georgetown, Wednesday, Oct. 1st.
- North Wellington—At Arthur, Oct. 1st and 2nd.
- South Riding of Bruce—Teeswater, on the 1st and 2nd October.
- Puslinch—At Aberfoyle, on Friday, Oct. 3rd.
- South Brant—In Brantford, Oct. 7th and 8th.
- West Garafraxa—At Douglas, Wednesday, Oct. 8th.
- Erin—At Erin Village, Thursday, Oct. 9th.
- South Waterloo—At Ayr, Oct. 14th and 15th.
- East Riding of York and Township of Markham—At Markham village on the 2nd and 3rd of Oct.
- Malneton—At Masonville, on the 14th of Oct.
- Trafalgar—At Palermo on Friday and Saturday, 3rd and 4th October.
- Carlwell—Mono Mills on Thursday and Friday, the 2nd and 3rd of October.
- County of Norfolk—At Simcoe on Wednesday and Thursday, the 8th and 9th of October.
- West Riding of Peterboro'—On Thursday and Friday, the 16th and 17th of October.
- Cobourg Horticultural Society—At Victoria Hall, on Friday, September 19th.
- Niagara—At Niagara, Friday and Saturday, Oct. 3rd and 4th.
- County Lincoln—At St. Catharines, on Tuesday and Wednesday, Oct. 7th and 8th.
- Pelham—At Fenwick, Tuesday, Sept. 30.
- Gainsboro' Township—At St. Anns on Wednesday, October 1st.
- County Welland—At Welland, on Thursday and Friday, Oct. 2nd and 3rd.
- Humberstone—At Stonobridge, on Wednesday, Oct. 8th.
- Louth Township—At Jordan, on Friday, October 10th.
- Crowland—On Friday, 10th October, at Town Hall.
- County of Monck—At Wellandport, on Friday and Saturday, the 10th and 11th of October.
- Bertie—At Ridgeway, on Saturday, Oct. 11th.
- Thorold—At Allanburgh, on Saturday, Oct. 11th.
- Stamford Township—At Drummondville, on Tuesday, Oct. 14th.
- Clinton Township—At Beamsville, on Tuesday and Wednesday, 14th and 15th of October.
- Frontenac Agricultural Society—At Kingston, on Wednesday, Oct. 8th.
- Lennox—On October 14th and 15th, at Napanee.
- Central Agricultural Fair—At Ottawa, on 30th September.
- Kingston Electoral Division Society—On Wednesday, Sept. 17th.
- South Leeds and Grenville Exhibition—At Gananoque, on Thursday and Friday, Oct. 2nd and 3rd.
- Addington Agricultural Exhibition—At Newburgh, on Thursday, 9th Oct.

Camden Township Show—At Centreville, on Saturday, Oct. 11th.

Luther—At Luther Village, on Monday, September 29th.

Minto—At Harriston, on Tuesday, the 17th of Oct.

Last Garafraxa, at Marsville, on the 16th of Oct.

Halton County—At Milton, Thursday and Friday, Oct. 9th and 10th.

Trafalgar—At Palermo, Friday and Saturday, Oct. 3rd and 4th.

Nova Scotia—It is announced that there will be a Provincial Agricultural Exhibition in Halifax in the first week of October, 1873.

New Brunswick—On Tuesday, 7th, Wednesday 8th, Thursday, 9th, and Friday, 10th of October, the Provincial Exhibition of the Board of Agriculture is to be held at Fredericton

Royal Agricultural Society of Ireland.

The annual meeting of the Royal Agricultural Society of Ireland was held during the week at Waterford. Compared with 1857, when the association last visited Waterford, the entries shew a great falling off in the principal departments of the exhibition as the following statistics indicate.

Table with 2 columns: 1857, 1873. Rows: Short-horns, Other breeds, Sheep, Swine, Horses.

The Highland and Agricultural Society.

It may be worth while to notice the way in which this very interesting show was made up. There were 406 head of cattle entered; 297 horses (of which 221 were agricultural); 278 entries of sheep, and 62 of pigs: making 1043 entries in all, without the poultry. At the English Royal, there were 1145 entries; of which 308 were cattle, 281 horses, 365 sheep, and 191 pigs. But the proportion of agricultural horses, at Stirling, was far greater than that at any great show we ever attended; illustrating the genuine farming character of the show.

Kentucky Short-horn Sales.

The Home Journal gives the following list of animals that at the recent sales brought prices not less than \$1,500. 13th Duke of Airdrie 5525, by Royal Oxford 5157, a pure Duke, \$1,525 Imp Forest Napier 11983, by Imp. Gen. Napier, dam Forest Queen \$2,800. Geneva Lad, by 10th Duke of Thorndale, a Mazurka bull, \$1,550. Imp Lady Pawlett, by Fitz Kellerby, a Booth cow, \$3,150. Mazurka Belle, by 2d Duke of Geneva, dam Mazurka 12th, \$3,300. Mazurka Belle 2d, by Geneva Lad, dam Mazurka Belle, \$2,050. Wiley Duchess, by 13th Duke of Airdrie, dam Duchess Paulina, a Miss Wiley heifer, \$1,900. Imp. Forest Queen, by Prince Christian, dam Florence, \$2,000. 23d Duchess of Goodness, by 14th Duke of Thorndale, dam 10th Duchess of Goodness, \$2,950. Louan 19th (and calf), by Duke of Airdrie 2743, dam Louan 7th, \$1,500. 1st Duchess Louan, by 14th Duke of Airdrie, dam Louan 19th, \$2,150. 4th Duchess Louan, by 14th Duke of Thorndale, dam Louan 2nd, \$1,600. 5th Duchess Louan, by 14th Duke of Thorndale, dam Louan 19th \$3,575. Bride 13th, by Airdrie, dam Bride 3d, \$1,600. 9th Duke of Goodness, by 14th Duke of Thorndale, dam 4th Duchess of Goodness, \$4,500.

First Sale of Short-horns in Kansas.

The Chicago Tribune reports the first great sale of thoroughbred Short horn cattle as having been held at Kingsville, Shawnee Co., Aug. 20, by Andrew Wilson, "the Kansas Cattle King." An immense crowd was in attendance, including many prominent stock men from Illinois and Missouri. Col. Judy of Talula, Ill., acted as auctioneer. The sale was a great success, aggregating about \$20,000 for forty-one animals, and showing that the people of Kansas are awake to the importance of raising fine stock. Some of the choicest animals were bought for the Kansas State Agricultural College.

SALE OF BLOOD STOCK We understand that our townsman, Mr. George Purvis, has sold to Mr. Holden, of Belleville, twelve of his most promising Ayrshires at a high figure, to be delivered after the Armory Exhibition. The following are the animals sold.—Nelly 1st, Nelly 2nd, Daisy, Primrose, Mignonette, Jennetta, Dolly, Nora, Nancy, Hawthorne, Wildrose, and Hollyhock. Review.

The papers contain the following dispatch, under date of August 12th. "The celebrated trotting stallion Sentinel was found dead in his stable in Fayette county, Kentucky, this morning. He had made a record of 2:28, and was the sire of several noted trotters. Sentinel was owned by Edwin Thorne, of New York, who had refused \$30,000 for him."

For the handsome sum of \$3575, Mr. Wm. S. Marr, Uppermill, Tarves, Aberdeen, has just sold to Mr. Armstrong, for shipment to Canada, seven pure short-horned animals of his own breeding, mostly after Herd of Englishman. The consignment includes the second prize yearling bull at Stirling, the second prize two year-old heifer at the same place, and the third prize yearling heifer—in all one bull, three two year old, and three yearling heifers.—Farmer.

HEREFORDSHIRE.—At this show there was a much better show of horses and ponies than usual. The pigs numbered just 14. The money offered in prizes amounted to \$1,985. The dinner, to which only 46 sat down and those comprising a scanty number of tenant farmers, was held at the Green Dragon Hotel, the Rev. Sir G. Cornwall, Bart., in the chair.—Bell's Weekly Messenger.

WORCESTER HIRE. The Worcestershire Society held its annual exhibition at Evesham this year. It was expected that the president, the Duc d'Aumale, would be present on the opening day, but urgent affairs kept the French nobleman away. There was a slight increase in the number of entries in the cattle and sheep department of the exhibition, as compared with that of last year; but the show of implements and machinery, though of excellent quality, was materially smaller.—Farmer.

The Shropshire Sheep Breeders' 41st great annual sale and show took place at Shrewsbury on Thursday and Friday last under very favorable circumstances, and the attendance of first-class buyers was enormous. 280 grand Shropshire rams and 1750 breeding ewes were sold by auction by Mr. W. G. Preece, the well-known auctioneer, high prices being the rule as usual with Shropshires. We are informed by a well-known judge that there never was a finer show of sheep in the United Kingdom.—Bell's Weekly Messenger.

SALE OF MAJOR STAPYLTON'S AND CAPTAIN TENNANT'S SHORT-HORNS.—The sale was made up of fifty-two pure bred Short-horns, thirteen of which were the property of Captain Tennant, of Scarcroft Lodge, Leeds, and which averaged £51 1s. 9d. The remainder were announced as belonging to Major Stapylton, and comprised the larger portion of his herd. Among these were some well descended animals from the herds of Lord Penrhyn, Messrs. Powly, Fawkes, Lency, Stratton, and Wilson, upon which bulls of the fashionable Bates blood had been put; several of the lots being of Col. Gunter's celebrated sire, Third Duke Wharfedale (21619), Lord Wetherby (24477), and Third Duke of Flanders (23750), bred by Mr. Bromet, but no extra prices were realized.

SUMMARY table with columns: 50 Animals, Fat stock and Pigs, Average, Total. Values: \$219, \$10950, \$87, \$11937.

—Mark Lane Express.

SALE OF THE NEW YORK MILLS HERD OF SHORT-HORNS.—UTICA, Sept. 10.—The entire herd of Short-horned cattle owned by Samuel Campbell, of the New York Mills, was sold at auction to-day. Buyers were present from England, Canada, and all parts of the United States. One hundred and fifteen cattle were disposed of, the total receipts being about \$380,000. The highest one was \$40,600, thus was bid by Mr. P. Davis, of Gloucester, England. \$35,000, \$25,000, and \$20,000 were bid for single cows; one seven months' calf sold for \$27,000, and another for \$10,000. This sale is probably the largest on record.

A correspondent of the Staffordshire Sentinel calls the attention of farmers to a remarkable field of oats in front of Stoke workhouse. He says:—"The oats are almost uniformly from 5 feet 10 inches to 6 feet in height, with splendid head in proportion, and all presenting a most healthy appearance." On inquiring into particulars, the soil being rather a poor one, he found the result to be attributed to the use of an artificial manure manufactured with peat charcoal through which sewage had been filtered.

SALE OF MR. SHIELDON'S SHORT-HORNS.—The fifth biennial sale of short-horns at Brailes took place last week, when Mr. Sheldon was honored with the presence of a numerous company. The sale was an excellent one, and has only been topped this season, by those of Lord Penrhyn and Mr. Cheney. Subjoined is a list of the prices realized:—

SUMMARY table with columns: 25 Cows averaged, 15 Bulls, 40 Average, \$330, \$8250, \$32, \$4950, \$331, \$13240.

—Farmer.

MICH. OF OBD.—The sheep market was held on Wednesday. The show of sheep was much under the corresponding market of last year. A general complaint is expressed that the change which took place in 1868 has proved anything but beneficial to all concerned. The show of stock yesterday was under that of last year and consisted principally of Cheviots, with a sprinkling of half-breds and greys. There was an entire absence of southern dealers, and it was said that this was principally occasioned by the Stirling Show. It will give an idea of the effect the change we have referred to from before till after the Falkirk market that formerly instead of 500, now there are only an average of 500 brought forward.—N. B. Agriculturist.

LAMMAS FAIR.—This, which was at one time the largest lamb fair in the south of Scotland, but now only a ghost of what it was, took place at the base of the Eildon Hills to day. Owing to the sales taking place the day previous, both at St. Louis and Melrose, where close on 30,000 lambs were sold, the show to-day was much below previous years, and it was computed that the number would be about 15,000 or 16,000 head, where on previous years we have witnessed from 50,000 to 60,000. The top price last year was \$11 87, this year it was \$11, obtained for a lot from Whitmuirhaugh, Kelso. In most cases the price asked was above the figures got at the sales, and buyers were not inclined to give it, the consequence being that a number of lots left the market unsold.—N. B. Agriculturist.

YORKSHIRE.—The meeting of the Royal at Hull of course deprived the Yorkshire Society of a great deal of its undoubtedly excellent and abundant attractions. With \$7,575 as the total amount of the premiums, however, there could hardly fail to be a hearty response from Yorkshire breeders, but the close proximity of the Show to the Royal and its clashing with the Highland, necessarily caused some falling off in the Harrogate entries compared with those at Malton last year, as will be seen from the following statistics:—

Table with 2 columns: 1873, 1872. Rows: Cattle, Sheep, Pigs, Horses.

The principal falling off, therefore, occurs in the horse entries, but these, as was anticipated by most people who were at Hull, considerably exceeded in numbers the display at the Royal, while the quality was far superior to that of the latter exhibition. There was some falling off in the implements exhibits this year as compared with the Malton entry, which is attributable greatly to the concurrence of the Highland and Agricultural Society's Exhibition.—The Farmer.

The Dairy.

EDITOR—L. B. ARNOLD, OF ROCHESTER, N. Y., SECRETARY THE AMERICAN DAIRYMEN'S ASSOCIATION.

Spontaneous Coagulation of Milk without Souring.

It has happened every now and then in cheese factory practice, that milk has been found to coagulate without the presence of any sensible acidity. Well authenticated cases of this kind have occasionally appeared in the agricultural papers, and they have also been mentioned by dairymen at their meetings for public discussion. Their occurrence has been the occasion of surprise, and a good deal of wonder as to the cause of such a phenomenon, but no light has been shed upon the subject further than to find that there is always something the matter with the milk so affected.

During all the hot weather of the present season, cases of this kind have been of frequent occurrence in the milk with which the city of Rochester is supplied. The city is furnished by numerous small dealers who bring milk in their waggons once a day, their farms being from three to five miles distant. Some of the dealers report no trouble from any unusual thickening, while others say their milk sometimes curdles before they can get it to their customers without being sour to the taste, and that when it is delivered apparently sound, customers now and then complain that it loppers while sweet. From our own observations of the keeping qualities of milk brought to the city, and from inquiries made of those who use it, it appears that the peculiarity complained of is much more extensive than even the milkmen themselves have supposed; and that milk in which souring does not appear much sooner than is usual, often becomes thick upon an unusually slight development of acidity. One milkman states his experience substantially as follows: He lives three miles from the city, and delivers milk only in the morning; his night's milk is strained into his carrying cans which are placed in tubs of water where they stand all night with the covers partly open; the morning's milk is also cooled in the same way, but of course is not kept long enough to cool so thoroughly as the night's milk. He states further that he furnishes a considerable number of families with pure morning's milk for the use of infant children. The milk for each family is put in a separate can suited to its amount, the cans for this purpose varying from one quart to six. These little cans are also set in tubs of cold water and cooled with the rest of the morning's milk.

The premature thickening always arises with the morning's milk, and oftener with the small cans than with the larger ones. With the night's milk there is no trouble. It keeps longer than the morning's milk, and is therefore dealt out last. His experience is similar to that of many others, and represents a considerable share of the milk brought to the west half of the city.

We have been applied to by milkmen and others for an explanation of this peculiarity in the behaviour of milk, and as our answer will refer to facts and circumstances that will apply to the dairy interest elsewhere as well as here, we give it a place in the FARMER.

The causes which bring about these seemingly strange results are neither new nor very materially different from those which produce ordinary coagulation.

Milk is composed of water, casein or cheese matter, albumen, sugar and certain mineral matters, all joined in a chemical union. Butter is an outsider so far as this chemical partnership is concerned, for it is only mechanically mixed, or suspended in this liquid combination. The casein is what becomes curd when it separates from the other members of the partnership. It is attached to the rest of its companions by a very feeble affinity and becomes detached from them easily. A slight change in the mineral matter by the action of an acid, or in the sugar by the action of yeast, is sufficient to break off its connection with the com-

ponent, when it becomes a solid instead of a liquid, and appears as we see curd in cheese-making and in loppered milk. A shock of electricity may, by changing the elective affinity of some one of the elements, produce the same result.

When milk is left standing exposed to the air, two varieties of yeast are active in producing the coagulum. There is, as has been before explained, in milk when it comes from the cow, a very small quantity of yeast, similar to that in rennet. This multiplies rapidly, and would, in time, become sufficient to curdle the milk alone. Besides this, there is the lactic yeast, that is concerned in the souring, which falls into it abundantly from the air, that would also produce the same effect, if it acted alone. But the two act together and produce a coagulum sooner than either would acting by itself. The lactic yeast produces the greater effect, but that the curdling of the milk is helped along and hastened by the aid of the former, may be known by scalding the new milk, when the yeast, born with the milk, will be killed, and the coagulation will come from the souring alone, and about one-third more time will be required to effect it. The influence of the ferment in new milk varies according to the treatment of the milk, and the health of the cow from which it is taken.

If new milk is covered up so as to prevent the odor from escaping, it will very much facilitate the increase of the rennet yeast. Agitation also helps it along. The health of the cow varies the quantity to start with. Any disease which produces a febrile condition in the animal will increase the coagulating agent in her milk in proportion to the amount of fever. The feverishness produced by eating too much or improper food; by drinking stagnant water; by worrying with dogs; or by exposure to a hot sun, will so increase the rennet yeast as to make the milk coagulate upon the first approach of acidity, or even before, when without this extraordinary amount, a deeper souring would need to be developed before curdling would result. These are general principles that relate to the action of milk everywhere, and are worthy of the careful attention of all concerned in any way in the production or handling of milk. They cover the cause of the premature thickening of the Rochester milk.

Samples of milk from different dealers have been examined as thoroughly as we could do it, without the aid of a suitable microscope. Its keeping qualities are unequal. When warmed to 90 or 100 degrees, it will sometimes coagulate on arrival at six or seven o'clock in the morning, and sometimes not. When tested for acidity it is found to be either neutral or alkaline, never acid. It has been found neutral after coagulation. It will sometimes keep till next day apparently unchanged and sometimes thickens at different hours of the day varying from 10 a. m. to next morning when not warmed. It does not sour sooner than other milk, but curdles upon the first approach of acidity and sometimes before. Good milk will keep from 6 to 12 hours after responding to an acid test without coagulating. Several samples have been analyzed. It was found all the way from pure milk to 50 per cent. water. It is the pure milk that is most liable to thicken. Every analysis has showed a lack of sugar and an excess of albuminoids. The last one made August, 18th, will represent its average condition. Compare it with the average of sound milk and note the difference in sugar and casein:—

	Affected Milk.	Av. of Sound Milk.
Water	88.50	87.00
Butter	2.25	4.25
Casein and Albumen	6.50	3.50
Sugar	2.00	4.50
Ash	.75	.75

So much casein and albumen and so little sugar indicates a feverish condition in the cows from which it was taken. Chemists have uniformly found, whenever they have noted the fact, that the milk of diseased cows is unusually rich in albuminoids and poor in sugar. The proprietor of the herd which furnished the above sample reports his cows all in perfect health, so far as he can discover. Without exception, they all eat heartily and are yielding a bountiful flow. They have done well all through the spring and summer. Not a case of sickness or sign of ailing has occurred.

"How are your cows fed?" we asked.
 "They have a short pasture of clover and timothy, they are fed bran wet with water, and sowed corn." All good wholesome food.
 "Is there plenty of shade trees in your pasture?"
 "Yes." "Do you drive your cows with dogs?"
 "No. They are neither hurried nor worried."
 "Are they conveniently and plentifully supplied with good water?"
 "I have three large tanks of rain-water under my barn that supplies them at the yard, and a pond hole furnishes them plenty when in the pasture."

"How long have they been drinking from the pond-hole?"

"Ever since I came upon the farm three years ago."

"Has your milk been affected before this season?"

"No."

"Are your cows the only ones that drink from pond-holes?"

"No; the hole in my pasture is crossed by the line fence of my farm and the cows of my neighbor drink from the same pond."

"Does he have any trouble with his milk?"

"He says not."

"Do any other milk-men water their cows in this way?"

"Very few of the dairymen near Rochester have any running water. The most of them supply their herds from rain-water or pond holes, and have been in the habit of doing so in years past; and no such trouble, that I am aware of, has happened before the present season."

These answers were doubtless given in accordance with our milk-man's information and belief, but we happen to know that the behavior of milk from the pond hole farms is no different in the hands of the citizens this season from what it has been before. Milk dealers seem to know very little of the behavior of their milk after it leaves their hands.

We have not seen the farm of the man interrogated, but we have seen these "pond holes" in other neighborhoods within the county. They are made by excavating a large hole in the earth in some low place where water will settle into them. The sides are made sloping so that cows can easily get down to the water to drink. In hot days they love to wade into the water and stand there to protect their legs from the flies. Of course the water gets full of filth, and becomes green and putrid, and full of inasmatic matter that would make any person sick to drink it. How any one with common sense, could for a moment, suppose that such water would make good milk and promote healthfulness in his cows, is not easy to imagine. It may be better than no water in a case of an extreme emergency, but it is certainly unfit for the use of anything but frogs or alligators.

The body of the cow is a pretty good filter, but it cannot take out all the putrefactive ferments from such water. There will be enough passing through into the milk to start a typhoid or chill fever, a cholera morbus or cholera infantum, or such other diseases as that kind of water is liable to produce. We have, upon a former occasion, published the proof that some of it goes into the blood and makes the cows feverish, and also into the milk, where it can be seen growing and multiplying like leaven, and filling the milk with its disgusting presence, and occasioning the phenomena peculiar to the milk we have examined. That in the present case some of the putrefactive ferment from the stagnant water goes into the milk and causes the premature thickening is evidenced by the fact that the cream that rises upon any and all of this "pond hole" milk, whether it thickens prematurely or not, has a half rosy appearance, and a very offensive odor and flavor. It smells and tastes very much like the "pond hole" water itself. Whatever ferments are carried into milk are first and most prominently developed in the cream. By scalding the milk when it can be done without curdling, the cause of all the difficulty is killed, and the milk will keep as well as any other, and the offensiveness which before appeared in the cream will be entirely obviated.

These facts are proof enough as to where the cause of premature curdling and offensive flavor comes from. But why should the morning's milk be more affected than the night's milk that is some ten hours older? Because the latter was thoroughly cooled and the odor given an opportunity to escape. The morning's milk starts off somewhat warm, with nearly all the odor shut in it, two circumstances, as we have before explained, that stimulates the growth of coagulating agents in milk. They are a sufficient reason for its thickening sooner than the cold night's milk, the greater amount of odor confined in it being the principal cause.

The small cans holding only a quart or two, were more thoroughly cooled, but they cooled too quickly. The animal odor instead of passing off was condensed and retained in the milk with all else that was vile. The cream that rose on the milk they contained was more offensive than on that from the larger cans, and their contents thickened sooner because, from their small size, they soonest assumed the temperature of the air, though the coolest when placed in the wagon. The apparent spontaneous curdling of milk without becoming sour is thus plainly accounted for. It is nothing that need to excite surprise. Indeed, under the circumstances, it ought to be expected. It should be more a matter of regret than of wonder, for it indicates disease in the animal producing it. The causes which have produced it in the Rochester

milk have their analogy in the tainted milk of the cheese factories. While in the former case the cows have been made feverish from "pond hole" water, in the latter it may have been stagnant water, or some one of the many other causes that produce feverishness in dairy cows in hot weather. The cream that rises on tainted milk is always bad smelling and bad flavored. It is sometimes about as offensive as that from the samples we have been noticing. It also coagulates prematurely, and occasionally without becoming sour. The cream from neither is in reality fit for use—certainly not fit to be made into butter that is expected to be used as a delicious luxury. The butter from such milk will not keep; and that made from it will be short lived. In both cases, the faulty condition of the milk and cream is greatly aggravated by carrying with all its offensive odors shut in it.

This investigation affords also a useful lesson in regard to the apparent health of cows. The milk-men have felt confident that their cows were in excellent health and that their milk must be perfect. But all the circumstances connected with their milk point to defective health as well as bad milk. It is no certain evidence of perfect health that a cow eats regularly and gives a good flow of milk. Disease may be lurking behind such circumstances and working great harm. The surroundings of the animal should always be looked after, and healthful conditions secured. Fleshy and healthy people are often diseased. If the cows of our milk-men could talk, they would doubtless complain of numerous aches and a teating sickness.

New Devices for Making and Packing Butter.

It is said that the Patent Office records show that more than 5,000 different patents have been taken out for churns, and yet our inventors go on, bringing out something new in this line from year to year. Of the recent inventions, Whipple's rectangular churn deserves mention from the peculiar manner in which it is hung. It is simply a cubical box, and hangs suspended on gudgeons from the two diagonal corners of the cube. As the box is revolved, the cream constantly falls from corner to corner, thus giving a more diversified agitation than when in the box churn as ordinarily arranged. It is more easily operated than the ordinary revolving box churn, and the butter forms in coarse grains; its operation in this respect being superior for a first-class product. The ease with which the churn is operated, the uniform manner in which the milk or cream is agitated in all parts, together with the convenience of the machine for being cleaned, all make it preferable to any revolving box or barrel churn we have seen.

The McComb churn is also a box churn in form, in which two dashers operate. The dashers work alternately up and down, being suspended from an iron crank above the churn and resting on supports rising at each end of the box. The crank is accelerated in its motion by gearing, and as it revolves the dashers are operated up and down. The new feature of this machine is the manner in which the dashers are made to operate. We did not see it tested in churning cream or milk, but presume the character of butter it would produce is similar to that where the old dash churn is used.

A new device for butter packages has also been brought out. It consists of a cylinder of glass, stone, or galvanized iron, with wooden heads grooved so as to receive the ends of the cylinder. Then there are four or five iron rods which go through the headings outside the cylinder with nut and screw, by which the heads may be drawn together, thus making the packages water-tight. The inventor claims that the packages can be made very cheaply, and may be used for other purposes than butter after they have been sent to market and served once as butter packages. The device does not strike us favorably and we do not believe galvanized sheet iron will make a good material to be used for butter packages.—*Rural New Yorker*.

BUTTER SALE.—On Monday morning last Messrs J. Watt & Co., of Mount Forest, sold a quantity of butter for shipment per T. G. & B. Railway. The lot comprized 141 packages, in the aggregate weighing 18,234 lbs.—*Mercury*.

The Berlin *Telegraph* says arrangements are about completed for the holding of a butter market in Berlin in the early part of October, at which a large number of handsome prizes will be awarded. Steps will be taken to secure the attendance of dealers from a distance.

Breeder and Grazier.

How shall we Winter our Stock?

The hay crop throughout this season, as also elsewhere, is light. As the old crop is well cleared out, prices will undoubtedly run high. What is more, the hay crop just harvested suffers materially in quality. The old growth in it is ripe and dead, and worth little more than straw. The new growth is quite tender and suffered some in the curing. With the continuation of the present rapid growth of meadows cut early, there will be a good, or at least fair second crop. This should receive all the attention possible, as this will be a superior growth in point of quality, aftermath (or second crop) having more nutriment than the first cutting; and, as there is no old hay in it, it should be harvested, if possible, in the best manner. Here is the farmer's advantage. He has another advantage, the coarse fodder now growing. By cutting grain early, the stalks get green and the berry just in the dough, tied in small, rather loose bundles, and put in stooks capped by a sheet, not too snug, letting the air circulate through somewhat, by taking this course an excellent feed can be obtained. Such straw will be of pale green color, and if run through a straw cutter will be equal at least to ordinary good hay, and we know those who prefer it to such hay. The grain (the berry) also obtained in this way will be better, both for seed and for other use. Of still greater benefit is the corn crop as to quality, we mean the stalks as a fodder. There is more nutrition than in the straw of the grains. This also is dependent for its value upon the manner of securing it. The true way, practiced by our best farmers and dairymen here, is to cut when yet green, the ear just glazed, and set in stooks. This, if the fall is favorable, will sufficiently dry it so as to put in bulk somewhat loosely, or so as to give some ventilation. Otherwise with a moist fall, the stalks should be distributed, else fermentation will be sure to work mischief. Distributed so, this should be the principal feed at first. But when cured so as to be kept with safety, corn stalks may be fed any time during the winter or in the spring.

It is the quality of fodder that gives it its value. Dead ripe hay is of little worth. So with straw, corn stalks, &c. And to feed largely of grain to make up, as every reflecting farmer knows, is not the way to realize the greatest profits. In general it is accompanied by loss. It is clear that we are to see that the cheapest feed, hay, straw and corn stalks, be secured in a manner to realize the greatest benefit, which is in securing it when the largest amount of nutriment is in it and available, and that is when secured in a green state, cured and harvested without harm. It has been sufficiently shown by the reports of the farmers' clubs, agricultural journals, &c. that hay cut early and well cured will carry stock through the winter without grain. We know that clover hay alone will do this, and do it well. Some prefer timothy or other hay mixed with it. By securing straw and corn stalks as above recommended, but little meal need be fed in addition. Corn meal can now be obtained cheap, so that there is no excuse for keeping our stock expensively. Not a few farmers in this section are saving, in good condition, their coarse fodder and selling their hay. This has been so for several years, and the number that practice it is enlarging. The land is not suffering by being thus "denuded," as the aftergrowth is permitted to remain, thus forming pabulum and protection, and as nearly all the growth comes from the atmosphere, it will be clear that there is no loss but gain. Hence the improvement of the land which always accompanies dairying or grazing. Still there must be a limit to selling hay; the price will do this when the supply supersedes the demand.—*Utica Herald*.

The Shah of Persia, according to the following story, has the true Oriental preference for fat women. Being shown some very adipose cows at the Home Farm at Windsor, he asked how they were fed. Being told that they were brought into this plump condition by a diet of oil cake, he interest was at once excited, and he said to his interpreter: "Ask if oil cake is good for wives."

Care of Short-horn Calves.

To maintain the Short-Horns in their present high state of improvement, the calves must have the proper care and attention. If once stunted they rarely fully recover. Hunger affects the vital organs very much and disease. If kept very poor for a length of time, they form bad shapes, from which they do not recover.

If, on the other hand, they are kept exceedingly fat, they will be damaged from obesity. This state, also, in its effects, is much like disease, the vital organs cannot act freely from pressure, the lungs act obstructedly, and the calf is unable to move. The blood in its passage to the lungs, from the pressure upon these organs from obesity, is imperfectly vitalized, and the groundwork of disease is laid, which will sooner or later manifest itself, and not infrequently in the genital organs, or others more vital still.

If a cow gives much milk, probably one half is as much as the calf should have. It is a great advantage to the calf to be taught to eat early. If a little meal, shelled corn or oats be kept by them they will soon learn to eat. If they are spring calves feed them regularly until the following spring, when they will have attained a fine growth and be ready to take grass finely. Fall calves will soon learn to eat, and should be fed good hay, shelled corn, and sheltered, and they may be turned to grass the following spring. If a calf gets as much milk as it can suck, it will learn to eat greatly, and will not winter so well, and will be outstripped in its growth by one who had less milk and that was taught to eat early; and if permitted to run with the cow, will be apt to be wild, which will not infrequently show itself through life.

Twenty years ago many of the English farmers raised their calves by hand—milk at first, soon mixed with flaxseed tea, and other food added as they became a little older. This is a most excellent mode, and, all things considered, probably as fine cattle can be raised in this manner as any other. This plan secures great quietness in all after life, which is quite important, and they are apt to winter well.—*A. C. Stevenson*.

Dogging Stock.

Farmers, one and all, don't have a vicious, barking dog around your steers! A case has been under the writer's notice, all this year, of a man who prided himself on his ability to manage his swine and stock with two curs that were not worth the powder to shoot them with.

What was the consequence? The cows all had dead pigs. The cows, in some instances, aborted their calves, or became so unmanageable as to be obliged to have their legs tied at milking time. If ever a horse gets loose, it remains so until tired down, the whole thing making every one on the farm grow cross and sour-tempered, the men swearing and the women pouting.

Remember, the cow and horse are quiet, contented animals, but get shy and vicious if any mangy mongrel is allowed to dog them in home, and dog them away and here and there. Show an intelligent man another man's cows and he will very soon show you the man's temper.—*Western Rural*.

Oxford Downs for Crossing.

Oxford Downs have for some years been rising in public repute, and are much used throughout the Midland and South-western counties of England. They are of hardy constitution, can be run somewhat thicker than the pure Cotswolds or Leicesters; their dark faces and legs, and good proportion of lean meat, recommend them especially when the mutton trade happens to be flat. In size they do not much differ from Cotswolds, Lincolns, or the best Border Leicesters. They have fleeces as heavy as any long-woolled sort. In ordinary Oxford flocks hundreds of fleeces, including sheep of various descriptions, average 9 to 10 lbs each. There are of course great differences in the suitability of sheep to different situations; but there is no reason why Oxford rams should not in your locality leave you hardly and profitable rent-paying lambs. Oxford Down rams are sent during the next few weeks to Oxford, Ebury, Witney, Reading, and other fairs where they are disposed of mostly by auction. Some of the breeders also sell many of their sheep at home privately or by auction. At such sales useful sheep for crossing may be had at from 12 to 15 guineas, but the smarter lots reach four or five times that figure.

Sheep-Raising in Russia.

Except in the cold and marshy northern districts, Russia is well adapted for sheep. The total number in that country (including Poland) is reckoned to be 44, 170,000, of which 11,655,000 are of the fine-wooled (Merino) breed, the rest of ordinary kinds. The most remarkable native breed is that of the Romanow sheep, peculiar to the Government of Jarislav, which is celebrated for its glossy, dark grey fleece—used only for furs—and for its great prolificness. It is said, however, like the black Bokhara sheep, to lose the above qualities when removed from its native district. There has been an increase in the number of sheep reared in Russia, notably the Merino; but the rapid development of this branch of farming has been considerably checked by the competition of the Australian and South American wools. The yearly wool production of Russia has been calculated roughly to be from 103,000,000 pounds to 126,000,000 pounds, of which about two-thirds are worked up in the country. Such, however, is the imitative nature of the Russian, that when once a fair start is given to any particular industry, a great expansion may at any moment take place. As an example of the prodigious rapidity with which an employment spreads when once taken up by the natives, it may be mentioned that in 1820, in a village of Kazan, a few families began to make fishing-nets; twenty years later the entire district was devoted to the occupation, and it would have been easy to buy in it, at any time, 260,000 roubles' worth of such nets. Again, in a village of Kaluga, an individual took to rearing canaries, in a few years 12,000 canaries were annually sold from the district. —*Exchange*

The Profit of Devons.

Ward Parker, Esq., sends the *Mirror and Farm* a statement of the profits realized, in 1872, from five Devons—four cows and one three year old heifer. He commenced March 1st, 1872, with one cow to make butter; the next cow came in March 4th; the other two came in the first week in April; the heifer came in the 1st of May. The butter sold from the five amounted to \$396; premiums at fairs on the five cows, \$31; three calves sold for \$170; two calves on hand, reckoned, at the same as was offered last October, \$130; total amount, \$750. The same cows also furnished all the milk, cream and butter used in the family during the year.

This is the income of the five up to the time they went dry. The same cows all calved last spring, after going three months. The calves were fed with skim milk of the cows. The butter, milk and cream used in the family, he estimates, would more than three times balance the hay and other feed used for the five calves.

This certainly is a good showing. It may be proper to deduct from this \$750 of revenue the \$31 received as premiums at fairs, because that is some thing which may or may not be realized hereafter, and because we would not advocate the keeping of cattle which would not give a fair return without fair premiums. Still, there is \$696 left, and we believe that amply sufficient to compensate any one, and gives a fresh illustration of the advantage of keeping thorough-bred stock.

SHEEP KILLING. Quite a number of sheep have recently been destroyed by dogs in Downie and South Easthope.

HOG CHOLERA.—When once the hog cholera is in your herd, give at the rate of 1 oz. of carbolic acid to 25 hogs, well dissolved and mixed with swill, and repeat every two days. Be sure and remove every affected hog at once. —*Farmers' Journal.*

PROLIFIC EWES.—We learn from *Land and Water* that an instance of the extraordinary fecundity of the Dorset breed of sheep has just been afforded in Cambridgeshire. Last year Mr. Moyes, landlord of the Bull Hotel, at Cambridge, selected for breeding nineteen Dorset ewes which he had imported direct from their native county. In the months of September and October these ewes gave birth to no less than thirty-two lambs. In due time they were again put up, and this spring have produced forty-three lambs more, or in all seventy-five lambs since September last. The lambs and their dams may be seen on Mr. Moyes' farm on the Madingly road, near Cambridge, and have had numerous visitors. The sire was bred on Mr. Moyes' farm. One (the same) ewe on each occasion dropped three lambs.

Veterinary Department.

Shoulder Joint Disease in Horses.

This large joint is liable to be injured in various ways, but lameness in this region is not so common in the horse as many people suppose. It is the favorite seat of lameness with itinerant practitioners and knowing groomers; if they cannot clearly observe the nature of the horse's lameness it is at once referred to the shoulder.

Blaine in his excellent works remarks, that "Farriers and persons about horses are apt to attribute every lameness they do not exactly understand, and whose seat is not self-evident to an affection of the shoulder." We have seen many poor animals sadly tortured with various severe remedies applied to the shoulder, when they were confirmed cripples from navicular, or some other disease of the foot.

Occasionally, however, well marked cases of shoulder joint lameness are met with, and the part most generally affected is the flexor braclin muscle. This injury may proceed from an animal coming forcibly in contact with any hard substance, or from slipping; and in young horses, it is sometimes caused when breaking in to harness; as in circling a great strain is thrown upon the joint. This is a common cause of shoulder lameness amongst artillery horses. In shoulder lameness, the symptoms are generally very well marked. The horse necessarily experiences a difficulty in extending the leg, and bringing forward the limb; he drags the toe; pressure upon the parts, or the sudden extension or flexion of the joint will cause him to evince pain; whilst in some cases there is visible swelling. When standing he usually flexes the limb, but does not point the foot as in navicular disease. When walked, he brings the leg forward with a rotatory motion, and if trotted he falters greatly, and the lameness is increased if he is made to go fast over soft or uneven ground. In severe cases of shoulder lameness, the cartilages of the joint and even the bone becomes diseased, rendering the animal perfectly unfit for ordinary work. In treating disease in the region of the shoulder, it is of the greatest importance that the patient should have rest, and be kept perfectly quiet; and in some cases, it may be found necessary to place him in slings, as the effort of lying down and rising materially increases the irritation, and retards the healing process. In nearly all cases, it is advisable to keep the patient either in a roomy stall or box, in preference to turning him out to pasture. In recent cases the irritation may be greatly relieved by the use of hot fomentations or cold applications, either of which to be of much service must be continuously applied for an hour or two at a time. Blisters, setons and other powerful counter-irritants are required in more severe cases.

Sweeney—Shoulder Slip.

The muscles situated on the outer part of the scapula or blade bone are frequently injured or sprained, and lose the power of assimilating material necessary for their growth and development, and as a consequence they waste, or atrophy, leaving a hollow or depression which extends from the upper to the lower part of the shoulder. This condition of the shoulder is usually designated sweeney. Atrophy of these muscles may occur to a slight extent from other causes than direct injury to the part as in cases of lameness in the foot or lower part of the limb; when of long standing, the muscles waste from faulty action—and this condition of these prominent muscles is very apt to mislead as to the true seat of the lameness.

Shoulder-slip is most common in young horses, and more especially when they are in a plethoric or gross condition from a want of sufficient exercise, and awkwardness when first put to work. It may also result from galloping or jumping, or from being cast in the stall. Shortly after the injury occurs there is generally a slight enlargement of the muscles affected

which soon disappears, and is followed by absorption which goes on rapidly until the bone can be distinctly felt. There is a stiffness and impaired action which varies according to the severity of the injury, and the muscles implicated. In very severe cases, the prominence on the head of the humerus can be plainly seen and at every step the horse takes the joint appears to bulge outwards, which peculiar motion arises from the natural action of the muscles on the inside of the joint; in milder cases the action of the limb is very little impaired.

Although the patient may not be very lame, in the treatment of this injury, the horse should have complete rest for several weeks. A mild stimulating liniment may be applied for some time, followed by a blister. Moderate counter-irritation appears to hasten the reproduction of the muscular fibre. After the muscles have somewhat recovered their natural tone, their development is greatly expedited by a generous diet, gentle exercise and friction to the parts, as in good hand-rubbing.

Many severe, and we may say barbarous, remedies are applied in cases of sweeney, as burning the whole parts with a hot iron, or applying powerful caustics thus creating unnecessary suffering and permanently blemishing the animal. Such a course of treatment is altogether uncalled for, as the reproduction of the muscular fibres cannot be hastened by any such violent measures.

When the muscles are greatly atrophied it requires from three to five months for the shoulder to regain its normal condition.

The Infectious Character of Pleuro-Pneumonia.

The following extract from the evidence of Mr. C. S. Read, M. P., regarding pleuro-pneumonia in the county of Norfolk, Eng., before the Select Committee on Diseases in Animals shows how infectious and fatal is this disease:—"With regard to pleuro-pneumonia, the cases in 1871 numbered 389, and in 1872 they were 1580. He was certain that the 28 days of isolation had no effect, as it was not sufficiently long. He would give an instance, furnished by Mr. Smith, the Norwich inspector. There were 40 oxen, purchased on November 2, and all kept by themselves. The first outbreak of disease occurred on December 10, the next on February 4, after an interval of 56 days, and the third on May 21, the interval here being 106 days. The farm had been twice relieved from the Act in the interim, so that the owner could take his beasts and sell them where he liked. I should make the period of isolation three months. I will show how fatal the disease has been in Norfolk. In 1871, out of 389 cases, 216 were killed, 86 died, and 87 recovered; while in 1872 there were 968 killed, 280 died, and 286 recovered. We have had severe attacks of pleuro-pneumonia in former years. The fact is, that we import nineteen out of every twenty cattle we graze, and if there is any disease about we are sure to get it. I do not mean by the word 'import' that these are foreign cattle. The importations are chiefly from Ireland. We have very few from Scotland. At the Lady-day Quarter Sessions this year the chief constable and the chairman of the committee both reported that the Act did not seem to have the slightest effect with regard to pleuro-pneumonia. Witness went on to say that he thought Norfolk ought to be the last county to apply for powers to slaughter pleuro-pneumonia out. If all the other counties did it they would be happy to do it, but considering that Norfolk imported so largely in proportion to what was bred in the county, there was always the danger of the disease being given to other counties. There was a live stock insurance society in Norfolk, and the returns showed that the losses from pleuro-pneumonia in 1863 and 1865 averaged 20 per cent.; but in 1866, when the cattle plague orders were in force, the loss fell to 1 per cent. In 1867 the losses rose to 8 per cent., in 1863 and 1869 they averaged 22 per cent., and last year they rose to 31 per cent. of the number of animals that die of disease."—*N. B. A.*

Mango.

At this season of the year dogs, horses, and cattle, are subject to a parasite to the skin, which causes severe itching and loss of hair. It is the well known complaint, mange, which is similar to the formerly well known itch. A cure is to rub the affected parts with an ointment made of one pint of fish-oil, six ounces of flowers of sulphur, and six ounces of spirits of turpentine. As it is contagious, or communicated by touch or contact in any way, the stable fittings, walls, and door frames, should be washed with lime-wash in which carbolic acid has been dissolved, at the rate of four ounces to the pailful.—*American Agriculturist.*

Poultry Yard.

White Cochins.

White fowls of any breed require a good grass-run, else the purity of their plumage soon becomes soiled, and their general appearance deteriorated; hence the number of persons who keep white fowls must of necessity be limited. It is a singular fact that the white Cochin Cock rarely equals the Bull in style and carriage, whilst the hen not unfrequently surpasses all the other varieties of this breed in the major points. The plumage may simply be described as the purest white all over; there are, however, different shades of white and breeding, to color may be substituted for breeding to feather, as in other varieties. In choosing breeding stock, it is necessary to select none but those of the purest white, more especially such birds as have retained their white plumage after the first moult. Many otherwise excellent specimens, moult yellow on the back; as breeding stock, such birds should be rejected if possible. Moulting yellow on the back is more peculiar to the cock than the hen, although on close inspection a difference in shade of color will be observed in her also. To be successful exhibition fowls, their purity of white must be one of the prominent characteristics of the breeding stock. Another peculiarity attending white Cochins is their proneness to vulture hock if at all heavily feathered, and it is owing to this tendency that so many bare legged white Cochins are to be seen. Good breeders mate heavily hock-feathered cocks with nearly bare-legged hens, thus securing in a large number of cases perfect hocks. We know that this course was adopted by Colonel Hassard when in Canada, and has a strong advocate in Mr. Wright, of London, England—the latter however suggests trimming with shears the feathers off the hock of the cock before mating, in order to avoid any effect on the imagination of the hen. It may not be out of place here to remark that much diversity of opinion exists on what really constitutes a "vulture hock." We well remember nearly two years ago after the purchase by Colonel Hassard of all Mr. Zurhost's stock of White Cochins, one of our Canadian dealers secured a portion of this stock from the Colonel, amongst which was a splendid old cock very heavily feathered on the shanks. The Canadian dealer in turn sold to an American breeder, who pronounced the cock on his arrival vulture-hocked, and soundly berated the dealer for his deception. True to nature's impulse, the dealer turned on the Colonel and soundly abused him for selling him a cock vulture-hocked. At this treatment, the Colonel naturally felt indignant—the truth being the cock was not vulture-hocked, but only very heavily feathered. Both Canadian dealer and American breeder were clearly wrong, the latter through ignorance of what a vulture-hock really is; the former guided only by the price he received for his stock and the desire to please his customers, for we will not do him the injustice to say that he really entertained any knowledge of the point in dispute. On another occasion we shall enter more fully into this subject, giving the views of eminent breeders and writers on the "vulture-hock"—and what it is that constitutes one. We will now give a short description of White Cochins:—The comb of the cock should be straight, not too large, firm on the head, springing from the nostrils, and going from front to back almost in a semicircle, evenly serrated and finished with a plain round piece. Extending so as nearly to touch the neck, yet rounded and nicely tucked in to finish on the crown. Bill strong, yellow and well curved. Deaf ears largo and quite red. Wattles long, very red and pendulous. Eye, good sharp red, birds with greyish eyes are subject to go blind, and this color is said to be an indication of a weak constitution, and in breeding stock to be avoid-

ed. Hackle rich and full, falling well over on the back. Back short and rising to the saddle hocks, which should be straight falling and glossy, covering the tips of his wings. Wings short and tightly clipped up. Tail should be free from hard stiff feathers, with nice soft rolling plumes, giving it a rounded appearance, and making him look almost tailless. Legs short and well feathered down to the toes, feather curling nicely around the hock, avoid flesh colored or white legs, as such are very apt to produce green and even black legs, which fault is a certain disqualification. Birds as large as possible with good carriage and style. Hens should be large in frame, beak strong and yellow, neat head, wattles and deaf ears brilliant red, as should also be the eye, body broad, with plenty of fluff, tail small and almost covered with the



soft feathers which surround it, soft thick cushion. White Cochins require to be well protected from the sun, otherwise it will make sad havoc of their plumage; shelter should therefore be provided, either by trees or covered runs. In mating, it is better to breed from cockerels with two year hens, or pullets with old cocks. A city is not well suited to rearing cochins as the dirt of a confined place will soon destroy their plumage, but if afforded the run of a nice clean well sheltered lawn they are truly a handsome bird, and will do but little injury either to the flower beds or the garden. While a fence but a few feet high will keep them within bounds.

Hints to Exhibitors.

(Continued from Page 309.)

SPANISH.—We have several varieties of this breed, White faced Black Spanish, White Spanish, Black Minorcas, White Minorcas, Andalusians and Anconas, but as the prize list only mentions Spanish, we presume the White faced Black is the variety for which prizes are offered, they being more numerous in Canada than any of the other varieties, our remarks shall therefore apply to this variety. In both sexes, the beak should be dark horn color, comb and wattles brilliant red, except the inside of upper part of the wattles, and across the throat which are white. Face and cheeks pure white, the white to extend over the eye in an arched form, reaching far back, clearly behind the true ear, which should appear as a black spot on it, and thence turning down, merges into the ear lobe, which must be of the same pure and brilliant white. The face should be as free from folds and projections as possible, and leave the sight perfectly free. Legs and feet a dark leaden blue or almost black. Plumage all over pure deep black, with as

much green gloss as possible, especially in the cock. In the cock, head large and deep, beak rather long, comb very large, single, perfectly straight and upright, of a handsome outside arch or curve, and with the serrations symmetrically formed and disposed; wattles very long, fine and thin in texture, face large, bare of feathers, and fine in quality, deaf ears very long and pendulous, free from folds and wrinkles broad and rounded on lower edge; neck long and carried high or well back, and with flowing hackle. Body large at shoulders and tapering to tail, light and active in appearance, back rather round and slanting towards the tail, wings carried tightly to the body, but shall be long and well developed, breast rounded and very full. Legs and thighs long and slender, hocks perfectly clear, toes long and thin. Tail large, the sickle feathers very much arched and carried high, but not so high as to be termed squirrel fashion. The general shape rather slender looking, and the carriage very upright and strutting with much movement of the head and neck and the average about six pounds. The hen should be similar in all respects to the cock, except the comb, which should fall over to the side, almost or quite hiding one side of the face. The defects are bad shaped combs, deficiency in size of face, roughness or want of quality in the face, sight obstructed, ear lobe folded, wrinkled, or duplicated. The scales or blemishes in the white, too scanty hackles, squirrel-tail, want of size, general symmetry and condition. The disqualifications are, cock's comb falling over, or twisted in front; or hen's erect, any decided red in the face, plumage of any other color than pure black. Legs of any other color but dark lead color, blue, or black, crooked backs or any other bodily deformity, combs in any way trimmed or pierced. Triumming away of the feathers between top of the face and base of the comb.

FRENCH FOWLS.—Three breeds of French fowls are included in the Prize List. Creve Cœur's, La Fleche, and Houdans. The general appearance of the head of the Houdan Cock should be brisk and lively, medium sized beak; comb large and branched, somewhat resembling two leaves of an open book, with a bunch of coral in the centre. Wattles neatly rounded and rather long; deaf ears somewhat small, and nearly hidden by the muffing; crest large and full; beard full and thick both under the throat and at sides; neck carried upright of medium length, well arched and full of hackle. Body full and square; back very wide and slightly drooping; breast broad and prominent, wings well developed and carried close and tight to the body. Thighs and shanks short, and moderately stout, shanks free from feathers. Toes straight and well developed, with a fifth toe behind, to be distinctly formed, and turned rather upwards as in the dorkings. Tail upright, broad sweeping sickles upright, and lively carriage square and deep shaped, weighing between eight and nine pounds. In all characteristics the hen should resemble the cock except that the comb and wattles are small and the crest round and compact. In both sexes the beak should be horn color, comb and wattles brilliant red, with bright eye. Legs white or pinky white, mottled or spotted with lead color or black. Plumage black and white, straw colored feathers objectionable. The defects are, bad comb, deficiency in crest or muffing, straw colored feathers. Plumage too light or too dark, or unevenly broken, want of size, symmetry, and condition. The disqualifications are, absence of fifth toe, absence of muffing, of beard or of crest, red or brown feathers in plumage, or total absence of black or white, yellow or feathered shanks. Wry tails or any other bodily deformity, any fraudulent getting up. In the Creve Cœur Cock, the head and neck must resemble that of the Polish in general appearance, beak medium size, comb two horned, and as free from small branchlets as possible, and of good size, wattles moderate and well rounded, deaf ears

should be small and hidden by the muffling, which should be full and thick, hiding both throat and cheeks, hackles full and sweeping on a neck carried very upright. Body neat, massive, with much fullness of build, back wide and flat across slightly drooping, wings tight to body, breast deep and full; thighs short, shanks as short as possible and free from feathers; toes large and straight. Tail large with broad sweeping sickle feathers; weight from seven to eight and a half pounds. *The hen* in all respects similar to the cock, with the usual difference of sexes. *In both sexes* black beak, comb and wattles brilliant red. Lyes red, legs dark slate or black; the plumage should be a deep brilliant black all over. The defects are, bad comb, deficiency in crest or muffling, white in crest, want of size, symmetry and condition. The disqualifications are.—Absence of muffling, beard, or crest. Red, brown or straw colored feathers in plumage. Feathered shanks or of any color but black or leaden black, presence of fifth toe, wry-tail, or any other deformity, and any fraudulent getting up. In the *La Fliche* cock, the general appearance of the head and neck should present a slightly coarse and cruel look, beak large and strong, nostrils wide, comb a double spike, standing nearly upright, with very small spikes in front, head quite free from crest, wattles long and pendulous, deaf ears large, neck long and carried very upright, hackle full. Body large and powerful, plumage close and hard, back wide, rather long and slanting to the tail; wings powerful and carried tight to body, breast full and prominent. Thighs and shanks long and powerful, toes straight and large. Tail medium size, carried not too high, sickles full and glossy. A bold prominent appearance, large in frame and weighing between eight and nine pounds. *The Hen* is in all respects similar to the cock, with the usual sexual differences. In both sexes beak black, comb and wattles deep bright red, deaf ears a brilliant white, face red, eyes may be bright red or black, legs very dark slate color, plumage glossy black all over, with bright green reflections. The defects are, bad comb, stained deaf ears, white face, want of size, symmetry, and condition. The disqualifications are, presence of crest, entirely red ear lobes, shanks feathered, or of any other color but black or leaden black colored feathers in plumage, wry-tails or any other bodily deformity, any fraudulent getting up.

(To be continued.)

Silver Spangled Polands.

We are requested by a gentleman in Warren, Pa., to give our opinion of Silver Spangled Polands, and state their qualities as a farmer's fowl. In reply we would say that we consider them a very desirable acquisition to any poultry yard. We have bred them for some years and find them hardy, small eaters, and everlasting layers. We have never had one manifest the least desire to incubate, and although there are cases on record of their rearing chicks, such cases are isolated and rare. They are certainly among the most beautiful of all fowls and by some are considered handsomer than the Silver Hamburg.

In lieu of the broad, red comb of the Hamburg, they have a large crest sometimes so large as to almost obstruct their vision; this gives them a kind of serio-comic look not possessed by the Hamburg. They are very tame and quiet for such a small breed, and easy to keep at home, there is no more novel and handsome sight than a fine flock of Silver Spangled Polands with their large crests and beautiful spangles. They rank among the first as egg producers, and although their eggs are not quite as large as some other varieties, as long as eggs are sold by count instead of weight, their eggs will bring as much in the market as any other breed; but as they never sit, no person who could only keep one breed, and desired to raise chicks, could keep them. For the farmer who only keeps one breed for eggs and poultry the Polands have no attractions. He must select from the Asiatics, either Brahmans or Cochins; and although we have bred the Asiatics for some time it would be very had for us to select the best one variety.

E. O. BORDWELL.

(Penn Yan, N. Y.)

Entomological Department.

The Promethea Emperor Moth.

At this time of year, the careful observer may find feeding upon the leaves of the various trees several kinds of large and curiously marked caterpillars. Among these we would specially draw attention now to that of the Promethea Emperor Moth, (*Attacus, Callosamia, Promethea, Druryi*). When fully grown, as it usually is at the commencement of September, this caterpillar is a very handsome object—at least in the eyes of those who are sufficiently unprejudiced to see beauty in a worm! It is then about three inches long and half an inch in diameter, of a pale bluish green color, and with the body adorned with a number of rows of tubercles, or small warts of a deep blue color, four large coral-red warts near the head, and one long projecting bright yellow wart near the

smaller figure in our illustration—is of a deep, rich black color, while the female is of a lighter reddish brown. Both have a pale, wavy line across the middle of the wings, a pale outer margin, and a beautiful eye-like spot near the tip of the front pair. The female has also a pale angular spot near the middle of each wing; its antennae, as usual in this family of moths, are very much narrower and less feathered than those of the male.

Soon after emerging from the cocoon, the female Promethea Moth lays her eggs on the twigs of the tree which is to serve as food for her larvae, generally in clusters of five or six together. They are of a pale cream color, shaded with brown, oval in shape and slightly depressed above.

Both moth and caterpillar of this insect are so beautiful, and so seldom numerous, that we do not class them for a moment among noxious insects, but regard them as interesting objects, worthy of our study and admiration. Any one unfamiliar with the species, may find its cocoons where ash trees are abundant, hanging on the boughs in winter, and may, without any difficulty, obtain from them the handsome moths in the Spring.

A Few Notes on the Aphides.

Never within my memory have I observed the Aphides (commonly called Plant-lice) so abundant as this spring; in fact, every tree, plant and flower is covered with them. How hated they are by those who are fond of floriculture and even by the most listless, who in plucking a flower, find the nasty effect of their sticky juices! There is not a plant but that can boast of their company, and can show more or less the evils of it. The aphids most generally



hinder extremity. It feeds upon the leaves of the ash, sassafras, and wild cherry, and occasionally on some other trees.

When it has attained to maturity as a caterpillar, it wanders off to find a suitable tree on which to form its cocoon and spend the winter. In the neighborhood of gardens it very commonly selects the lilac; otherwise we have usually found it upon ash or hickory. Its mode of operation is at this time very curious. After selecting a leaf of suitable size, it securely fastens it to the twig from which it is growing, by a strong cord of twisted silken thread, which passes also down the mid-rib of the leaf; then it draws together the opposite sides of the leaf, and in the hollow space thus formed constructs its tough silken cocoon. The leaf, of course, withers in due time, and becomes separated from the twig, but it is prevented from falling like the rest of the foliage by its silken fastenings. Here it remains all winter, dangling in mid air, and tossed about by every breeze and storm. Its resemblance to a dead leaf is no doubt a great protection to the chrysalis within, and saves it from many an enemy.

In the following June, the Moth comes forth and is a large and handsome insect. The sexes differ from each other to a surprising degree. The male—the

remarked is the one that feeds on roses. It is a bright-green color, has an oval body, and a small head, which is furnished with a pair of bright scarlet eyes. Its antennae are long and fine, and reach almost to the two tube-like appendages on the extremity of its back. It has six legs, which are long and thin, each of which is terminated with two short hooks, with which it can cling in a marvellous manner to whatever plant it happens to get on. When looking at the aphid on a plant, one would think, from its tranquility, that it was doing no harm; but then, on examining it with a magnifying glass; it will be seen that it has a long proboscis, with which it has pierced the tender shoot, and is feasting on the sap which ought otherwise to nourish the plant. When looking at a large aphid the other day, which was settled on a current leaf, I was much surprised to see the insect very uneasy, but soon the cause was made apparent by the fact of its having given birth to a little one, which clung to its mother in an affectionate manner, and regaled itself on the juice that came from the syrup-tubes of its parent. I disengaged it with some difficulty, as I wished to see if it could crawl. Thus it did, and went and joined the smaller ones of its species on the same leaf. Various are the colors of the aphides that infest lime-

trees, elms, elder, apple trees, hop plants, &c.; but any reader can examine these easily. It has often been argued whether the aphides ever lay eggs; thus they most undoubtedly do, and the time is probably in autumn. From these will spring the insects which are to be the ancestors of succeeding generation in spring and summer. When looking at a dahlia that had many of these insects on it, I observed numbers of black ants running up and down the stem of the plant. Having heard of their being able to "milk" the aphides, I watched for the performance. This I saw very cunningly performed. The ant very cautiously approached the aphid, which had the antenna laid flat on its back (for those that had theirs up always crawled away), began with its antenna to tickle the hinder part of the aphid, first slowly, and then quickly. This had the effect of pleasing the insect so much that it squirted out a few drops of the much-coveted liquid, this the ant seized on, and having devoured it, proceeded to do likewise to some others, with the same success, and thus satiated its appetite. It might be thought that, as the aphides are such small insects, they cannot do much harm; but their immense numbers, and the quickness with which they increase, will furnish, I think, clear evidence against them. If they were not kept within bounds and prevented from over-multiplying by birds, insects, and their other enemies, all vegetation would suffer to a fearful extent. They must be possessed of some powerfully acrid fluid in their proboscis, as on many plants that they attack the leaves are found to be crumpled up and contorted in a curious manner. On examining the back of the leaf, a colony of aphides is sure to be found. This subject is so interesting that any beginning to investigate into it is led on to make further inquiries about an insect which, although well known by general appearance, still is unknown as to its development and peculiarities. Many modes of exterminating it from plants have been suggested, and some, no doubt, have succeeded; still, I think I can prescribe a simple and effectual remedy, and one that, as far as I can observe, will do no injury to the plant. My mode of action is as follows:—Purchase at any druggist's a square of carbolic soap, make a strong lixivium of it with rain-water; this should then be put into a bowl or other suitable vessel; into this submerge the buds or leaves of the plants infested with the aphides. After a few applications of the above the plant will be found to be freed of its destroyers, and will probably never again have any others on it.—*Ralph H. Westropp, in Science Gossip.*

The Turnip Fly.

This insect pest is a great source of injury and loss to the turnip crop. It attacks the young plants, in the "braiding" or springing stage, deserting them when far enough advanced for the rough leaves to form. Various expedients have been resorted to, with a view of preventing the depredations of this insect. Steeping the seed in oil and afterwards dusting it with sulphur before sowing, has been found of use. Fresh lime thinly strewn along the rows of the young plants, is a still more effectual remedy. Some recommend a mixture of lime and soot. The use of a long-haired hearth brush, lightly sweeping along the young plants, to shake off the flies, immediately followed by a dusting of quick-lime, is a good plan when the insects are numerous. Sowing a small quantity of white turnip seed in the hollows of the drills, will attract the flies from Swedes, as they prefer the white ones. But after all, the surest method of combatting insects, is to push forward the growth of the young plants by the use of stimulating manures at the time of sowing, and to keep the soil well stirred by timely after-culture.—*Exchange.*

The grasshopper is a burden and no mistake in portions of California. In what is called Big Valley, a twelve-acre lot of wheat at one o'clock in the afternoon was green and vigorous, and at three o'clock its destruction was as complete as if 1,000 cattle had been through it, and that destruction was caused by an army of grasshoppers.

ANOTHER INFESTION.—A couple of days ago while visiting at a friend's house in Chippawa, our attention was called to another and new enemy to the potato plant, in the shape of an ugly white grub which burrows into the ground, penetrates the potato itself, and makes sad havoc of a whole hill full in a very short time. The potatoes shown to us had their entire inside eaten out, and Mr. Grub, when captured was taking his desert from the hollow rind.—*Hamilton Times.*

Agricultural Chemistry.

The Chemistry of Sandy Land.

It has often been noticed that a farm which has been given up in disgust by its owner, and sold for a trifle on account of the light soil composing it, after passing into the hands of a man who has learned to use brain work as well as manual labor in his calling, has, in the course of two or three years, entirely changed in appearance, both with respect to the soil itself and the crops borne on it.

Now this is not the result of some magic wand, nor of a streak of luck, but it is what follows from the practical application of a scientific knowledge of the chemistry of soils.

While the former owner endeavored to extract the ingredients, which were already deficient by exhaustive crops, the more intelligent agriculturist makes it his first object to supply such deficient materials to the soil, and thus bring it near the condition of fertile ground.

Now, what are the ingredients which are deficient in sandy soil, and how may they best be increased or supplied? In the first place let us find the proportion of materials required to compose a fertile soil. According to Bergmann this would be about four parts clay, three of sand, two of calcareous (containing salts of lime) earth, and one of magnesia.

Another analysis of 400 grs. of fertile soil gives:

	Grams.
Water	52
Siliceous Sand	240
Vegetable Fibre	5
" Extract	3
Alumina	48
Magnesia	2
Oxide of Iron	11
Calcareous Earth	30
Loss	6
	400

Of the ingredients mentioned above, those which require to be supplemented in light soil are chiefly water, vegetable fibre and extract, alumina and calcareous earth. The importance of water being in proper supply for plant growth is too well known to require proof. By its means alone is the soil enabled to take up the earthy phosphates and carbonates present in the soil, in a state which does not permit assimilation.

The water, especially when containing carbonic acids, which it derives principally from decaying organic matter, acts as a solvent on the earthy phosphates and thus presents them to the cell of the plant in a condition fit for absorption. Now, in a sandy soil, the water derived from the atmospheric speedily filters through the loose material until it meets with a firmer substratum, and is also rapidly lost by evaporation from the surface. As we cannot increase the quantity of rain, and as artificial irrigation is inadmissible on account of expense, we must endeavor to change the character of the soil in such a way that the filtration and evaporation may go on less rapidly. It will be shown below how this is to be done.

Vegetable fibre and extract are the materials which form the principal portion of what is termed vegetable mould, the value of which when present in soil is well known to every one. We find but a small proportion of these ingredients present in a light soil and it has been under the cultivation of one of the exhaustive agriculturists mentioned above. What may have been present in the land when first cleared of the forest, has soon been abstracted by successive crops of grain, grass or roots. These ingredients therefore require to be largely supplied in an artificial way.

Alumina or Clay is necessarily deficient in quantity in the soil of which we are speaking, and something

must be supplied to answer the same purpose in a more or less perfect manner. It is this substance which gives to the soil tenacity, and forms a basis for the roots of different plants. It also possesses the valuable property of absorbing atmospheric moisture. On account of the very small proportion found in plants themselves, it is denied by some writers that it constitutes a vegetable food at all, but it certainly acquires value from the properties mentioned above.

Calcareous earth, or earth containing the various salts of lime, such as the phosphate, carbonate and sulphate, furnishes an important part of the plant's food. It is while green herbaceous plants are in an active state of vegetation that the phosphate, the principal salt, is found in the largest quantity in the ash. The importance of remembering this fact will be seen shortly.

Now what are the means to be employed in order to supply the deficient materials just described? 1st. By

Manures.

These may be either animal or vegetable substances in a state of decomposition. It is always necessary that manure should be in a state of fluidity (in solution) or gas, in order to constitute food for the vegetable creation. When a manure already consists of matter principally soluble in water, its fermentation or putrefaction should be prevented. It is only when the manure consists of vegetable or animal fibre that these processes are necessary. In order to ensure such fermentation, three agents are necessary, namely: a temperature above the freezing point, the presence of moisture or water, and oxygen gas.

The principal animal manures easily attainable are the solid and liquid excrements of animals. The constituents of the solid parts of animal excrements vary with the nature of the food. The soluble parts of the ashes of the consumed food exist in the fluid excrement, while all the insoluble portion of the ashes (inorganic portion) are present in the solid excrements. On account of the large quantity of soluble alkaline phosphate in grains of all kinds, the fluid excrements of carnivorous and graminivorous animals contains these compounds, whereas, that of herbivorous animals is free from such salts. In the case of the latter, whose food abounds in insoluble earthy phosphates, the feces contain the residue.

From the above facts we deduce the principle that the solid and liquid excreta of an animal have the highest value as manure for those plants on which the animal has fed.

The manures obtained from horses, cattle and sheep are all valuable for our light land where we make it our first object to obtain some crop, which, on account of its comparatively small loss by evaporation, can withstand a dry soil.

Mineral Substances.

All plants require for their food alkalies and alkaline earths, each in certain proportion; and cereals in addition require silica in a soluble condition. The natural silicates in soils differ greatly in the facility with which they undergo decomposition. It is by allowing land a period of rest from cereal crops that it becomes enriched with a supply of the soluble silicates. During such a period the agency of the atmosphere is at work in decomposing and rendering the silicate capable of absorption.

We possess in quick-lime another agent, which, when mixed with alkaline argillaceous silicates, sets free the alkali and renders the silicates soluble. Thus we see the benefit exerted by *marls* (clays containing a large portion of lime) on all soils which do not effervesce with acids.

Gypsum or Sulphate of Lime.

This salt enters into the composition of clays and grasses, and is consequently a necessary ingredient of the soil when these are to be grown. It is now

largely manufactured and sold for such purpose. Liebig holds that it acts by giving the plants the power of condensing and absorbing the nitrogen by means of its surface exposed to the air

Phosphates.

These are present in considerable quantity in all our most nutritious plants. This substance forms the chief part of what is sold as bone manure, and is the ingredient which gives to that manure its value, for it is not, as was formerly held, dependent on the amount of nitrogenized matter for its fertilizing effect. A soil which is destitute of this material is totally unfit for producing grain, peas or beans.

Common Salt

can hardly be said to constitute a vegetable food, but still it is of service in assisting the decomposition of vegetable and animal fibre, and would therefore assist in the assimilation of green crops when turned under. It is possible perhaps that its property of attracting moisture from the air may also be of value

Vegetable Manure.

Under this head we include perhaps the most valuable means of enriching light soil. All green succulent plants contain saccharine and mucilaginous matter, with woody fibre, and readily ferment. They should therefore, if intended for manure, be used as soon as possible after death. Hence the grand principle of turning in green crops. They must not, however, be ploughed under too deep, lest fermentation be prevented by compression and exclusion of air. As was mentioned above, such crops should be turned under when in flower, or at the commencement of flowering, for it is then that they contain the largest quantity of easily soluble matter.

What crop is most suitable for the purpose mentioned above? It has been found that clover possesses the valuable property of withstanding a dry soil, and in consequence will succeed where cereals would fail. It also reaches perfection at a height which permits it to be turned in, and in consequence possesses a great advantage. As to the proper variety, the common red succeeds perhaps as well as any; for we must look chiefly to the amount of material likely to be produced. The roots of clover also possess a peculiar advantage in the manner in which they bind the soil together, thus increasing its firmness and affording a basis for successive crops of more exhaustive character. By giving the soil a fibrous consistency it increases its retentive powers with respect to moisture. The reader has only to visit the neighborhood of Paris and Brantford to see what a fertile district has been made out of what was formerly, in a great many places, an expanse of soil so light as to be shifted by rain storms and carried into hollows and ditches. We have frequently seen hills of corn left bare in such cases, where now an artificial soil has been formed which supports fine fields of wheat, peas and oats. This has been accomplished by means of the above agencies, but more especially by the latter practice of turning in timothy and clover.

Lastly, we must not omit to mention a most important

Mechanical Means

of improving sandy soil. This consists in the use of the roller. Without this implement no farmer can successfully till a light farm. Compactness is one of the qualities which is deficient in such a farm, and in consequence the moisture escapes too rapidly from the soil, and the seed is not sufficiently protected by the firm envelopment of earth necessary to its successful germination. The use of the roller supplies this quality, and moreover gives to the ground a greater capability to resist the wearing action of violent rains

By putting these principles into practice, the farmer may expect to make a farm, otherwise worthless, fertile and profitable; but he must not forget that as he every year takes away a large portion of materials from his land in the shape of different crops, so must he yearly pay the land back its due interest, namely, the manure, or otherwise in a short time it will yield neither principal nor interest; and he will find it reduced to the condition of the farms in the Southern States, where the great object has been to get everything possible out of the land with the least possible outlay, and the consequence has been, in one word, poverty. C. M. SMITH, M. P. Owen Sound, Aug. 19, 1873.

Concentrated Manures for Wheat.

Farmers in the older settled States are becoming convinced of the necessity of sowing with wheat in the fall, some fine, quick-acting fertilizer, in order to give it such a start that it will become deeply rooted to endure the freezings and thawings of winter and spring. Our winters are becoming harder, or, at least more unfavorable for fall-sown grain, either because there is less snow, or the winds, in consequence of the destruction of forests, blow it off the fields, leaving them exposed to the action of the weather. In order to preserve the wheat under such circumstances it should be well rooted and have a good growth of top.

It is impossible for ordinary farmers to make enough barn-yard manure to cover their cultivated fields, or even their wheat crop should they make that a leading crop, and if they could, it will not, in dry seasons, yield up its fertilizing properties soon enough to be available for the autumn growth of wheat. It then becomes a question of the highest interest, is there any economical substance for barn-yard manure procurable, that will answer the desired end? We believe that it is generally admitted, both by chemists and practical men, that those manures which are the richest in available nitrogen are the most promptly, and the most powerfully. There are various kinds of special manures offered to the farmer which are more or less valuable if honestly made.

Peruvian Guano.—A pure article of this fertilizer is undoubtedly valuable to sow with wheat to give it a rapid start, and as it is rich both in ammonia (a compound of nitrogen and hydrogen) and phosphate of lime, it furnishes two important ingredients of wheat. But the amount of genuine Peruvian guano that finds its way to Western New York is small and expensive. We are not certain, if the pure article could be obtained for four to five cents a pound, that it would not pay to drill in with wheat, some 200 pounds to the acre.

Bone-Dust, when genuine, is generally made thus:—The animals dying in a city are collected, the skulls of slaughtered animals are obtained from slaughter-houses, and the bones from which the meat has been cut for Bologna sausages are gathered, and boiled a long time until the flesh will readily cleave from the bones. The mass is then sorted over, and the harder bones picked out for manufacturing into buttons, knife-handles, &c. The next softer class are burned in tight vessels to make boneblack, or animal charcoal to be used in sugar refining. The small, broken pieces, and softer bones, together with the flesh, hair, &c. (substances rich in nitrogen) are dried and ground, forming the bone-dust of commerce. The nitrogenous portions of the bone-dust are rapidly digested by the soil, and assimilated by the growing plant, while the phosphate of lime is much more slowly appropriated. Where this bone-dust is ground sufficiently fine to pass the drill and is honestly made, we believe it is an excellent fertilizer to sow with wheat.

Super-phosphate of Lime is sold in two forms; the raw bone, and the burnt bone. The raw bone is bone-dust treated to sulphuric acid, which unites with a portion of the lime of the bones, hastening their decomposition, and leaving an excess of phosphoric acid available to the nutrition of plants. Burnt bone, superphosphate is made of the refuse bone-black, or bone charcoal of sugar refineries, digested in sulphuric acid. This is destitute of nitrogen (that gas having been driven off in burning the bones), and is in consequence much less valuable than the raw bone. There are many manufactories of these fertilizers through the country of more or less reliability. That extensive frauds are perpetrated in adulterating the pure superphosphate there is no doubt. The fact has led farmers to distrust all commercial fertilizers, and prevented that general use of them, which would greatly increase the profits of farming were they what they ought to be.—Rural Home.

The Philosophy of Vegetation.

The following is the substance of an essay read by Dr. A. A. Pratt, of Washington University:

Each seed, bud or young plant is an individual living being. As it passes through its periods of youth, maturity and reproduction, it must be fed and nourished, to sustain its development. Some of the essential conditions of perfect development are beyond our control, such as the composition of the air and life, the history and physiology of the plants which are subject to the fixed and immutable laws of the Creator. Others can be modified and controlled by us; such as the porosity, wetness, dryness or composition of the soil; also the seed and the season and manner of cultivation and harvesting. It is to these latter only that the agriculturist can, with advantage, devote his attention.

All plants receive their nourishment or food through two channels, First—Through their leaves, from the atmosphere. Second—Through their roots, from the soil in which they grow. In general terms the leaves absorb all the carbon (in the form of carbonic acid gas) that is found in the plant, also part of the ammonia, but very little, if any, water. On the other hand, the roots absorb all other elements, of which are lime, magnesia, potash, soda, chlorine, sulphur (sulphuric acid,) phosphorus (phosphoric acid,) silicic acid, (sand,) oxide of iron, alumina, nitric acid ammonia, and a few others in very minute quantities. It is evident, from the conditions of the case, that we cannot modify or improve on nature, by attempting to feed the plant through its leaves. For this nature has abundantly provided. But the channel or medium of the roots is entirely under our control. From 9-10 to 90-000 of the bulk and weight of plants come originally from the carbonic acid of the air, and from the water of the soil. Both these go off as gases when the plant is burned. The ash or mineral matter left came only from the soil. The ash of wheat (grain) is only two per cent. of the original perfectly dry."

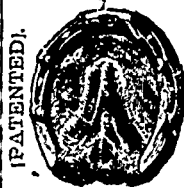
Table listing percentages of various materials: Of wheat straw ... 5 per cent. Of clover hay ... 6 per cent. Of rice ... 1/2 of 1 per cent. Of corn (grain) ... 1 1/2 per cent.

And still this very small proportion of mineral matter is absolutely essential to the growth of the plant. You may sprout grain floating on the surface of pure water, in a glass, or in a bed of pure sand, but it cannot thrive or grow. But, if you add to the water (or sand) all the elements of the ash as given above, it will rapidly revive, flourish, and arrive at maturity in the usual season. If a single important element, however, is omitted, such as magnesia, potash, sulphuric or phosphoric acid, the plant is unable, to mature and reproduce itself. This has been proved.

In general terms, then, any application made to the soil, with a view of increasing the yield of the crop, may be considered a fertilizer.—N. Y. Times.

Advertisements.

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v 10-9-11.

IMPORTANT SALE OF SHORT-HORN CATTLE AND COTSWOLD SHEEP.

Mr. GEO. MILLER, of Riggsfoot Farm, Markham, Ont., will sell by Public Auction, on Wednesday, the 15th day of October, 25 Short-horns and 150 Cotswold Sheep. For particulars see hand bills. Catalogues will be furnished on application

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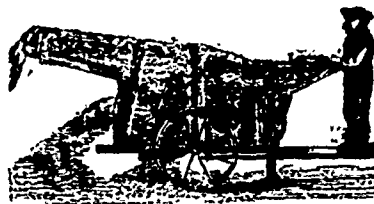
Fall planting, if the trees are got early, is better for all hardy fruits than Spring. If got late, they should be heeled in as directed in catalogue, and planted out in spring, which is a much better plan for even tender varieties than waiting till Spring to order them, as they can be planted as soon as the ground is ready, a better selection can also be got.

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Send for descriptive circular. Will have one at coming Provincial Exhibition at London.

JOSEPH SHRAMAN, STRATFORD, ONT.

v10-16-11.

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