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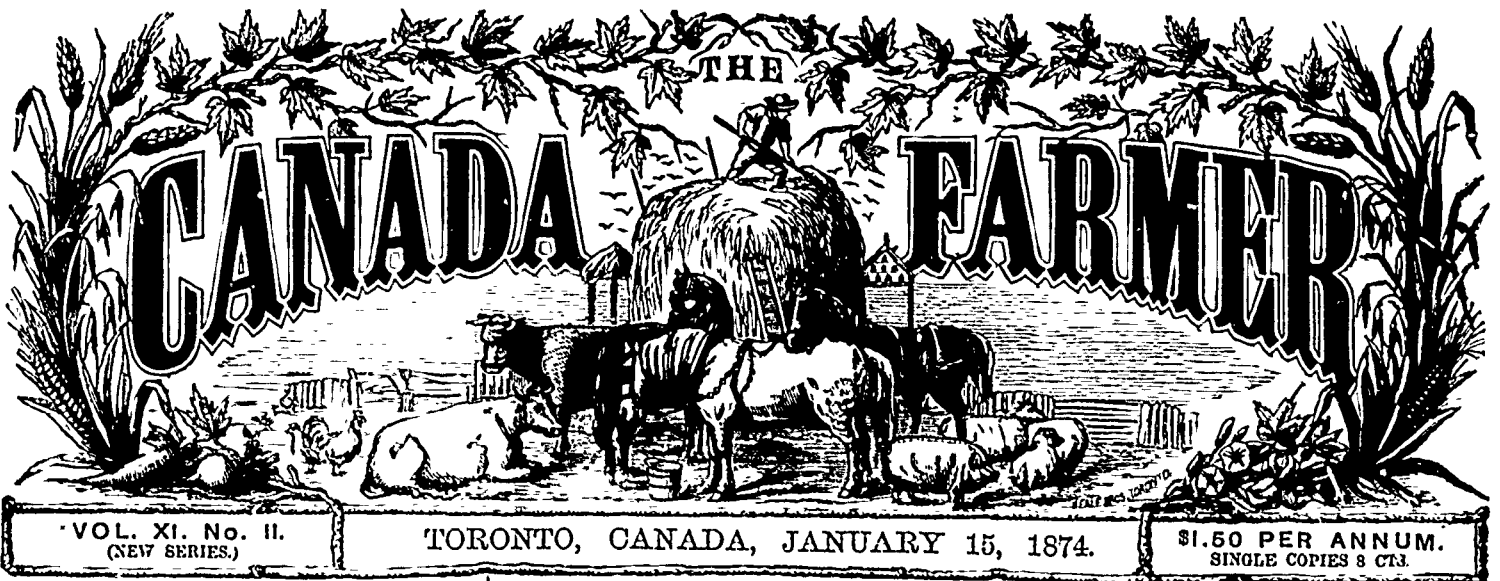
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The Field.

Trout-Farming.

Trouting and farming are generally supposed by steady going, industrious people, to be incompatible with one another. To such, the compound word at the head of this article will read strangely. Nevertheless, it stands for an industry, which, though of but recent history, has already made considerable progress, and bids fair, when better understood, and more generally engaged in, to play an important part in providing a valuable portion of the world's food supply.

"Fish, flesh and fowl," are the three classes into which we divide the animal food consumed by man. For ages it has been the practice to make the production of "flesh and fowl" a department of human industry. Stock farming has received a great impetus of late years, both on account of the demand for meat, and the vast improvement resulting to land from a liberal supply of the manure made by animal droppings. Until recently, however, nothing worth speaking of has been done with a view of meeting the demand for fish by means of fish farming. Mankind have depended on chance supplies, and natural propagation. This course, except as it respects the ocean and great fresh water lakes, has proved insufficient. All over the world it is found that streams are speedily "fished out," unless they are preserved for private use, or from time to time restocked with young fish.

The discovery, a few years since, that spawn and milt could be taken from full-grown fish, and hatched in boxes, with a very small per centage of loss, and that the young fry could be fed and fattened like chicken, calves or pigs, has led to the introduction of a new line of business, and much has been done, both in the old world and the new, in the way of restocking streams from artificial fish hatching establishments. It has been found that the impregnated eggs, and even the small fry, can be sent long distances, thus enabling those who embark in the business to obtain profit from three sources—eggs, fry and dead fish. The Governments of England, France, the United States, and this country, have done, and are doing, something to encourage this important interest, with a view of increasing the food supply. Our government, so far, has limited its operations to the single fish-hatching establishment at Newcastle, Ont., superintended by Mr. Samuel Wilmot, who deserves great praise for the persevering manner in which he has toiled in promotion of this new and important industry. His experiments have proved that all our streams communicating with the sea can be restocked with salmon. At an early day, the Humber, Credit, and other streams flowing into Lake Ontario, abounded in this noble fish. Now we have to go to the Saguenay, Lower St. Lawrence, and

Maritime Provinces, for the sport of salmon-fishing, and a supply of this delicacy as an article of food. The restoration of the salmon to his old haunts is an object of public benefit, well deserving the attention of Government. In like manner, all our small inland lakes can be restocked with the different varieties of bass, and our larger ones replenished with salmon-trout and whitefish. By the proper steps being taken, the waters of our country may be made as productive and remunerative as its fields.

But, as we set out to call attention specially to "trout farming," we must return to our text. We advert more particularly to this, because there are so many of our readers who are in a position to do something in that line. They have streams running through their farms that were once full of trout. Now they are empty. Not a speckled beauty is to be seen in waters once all alive with them. They were fished remorselessly, no means were taken to keep up the finny supply, and now it is exhausted. In small creeks, fish spawn is exposed to so many enemies that only a small per centage of it hatches, and a still smaller per centage comes to maturity. Hence the necessity for some artificial means being resorted to. Wherever there is a trout stream this can readily be done. Ponds can easily be formed, hatching and feeding places made, and not only a supply of fish secured for family use, itself no mean item in home comfort, but a surplus raised for the market. It is thought, by those competent to judge, that if a farmer wishes to raise trout only on a small scale, it will pay him better to purchase the young fry. These cost \$20 a thousand. The processes of hatching eggs and rearing the young fish are somewhat delicate, but not more so than those of cheese-making, and other operations on the farm. With a pair or two of mature trout, and a few inexpensive facilities for the business, any person of ordinary intelligence and perseverance can succeed.

We earnestly advise all who think of trout-farming to obtain full information on the subject before they begin. Rushing into lines of business about which little or nothing is known, is a fruitful source of disappointment and loss. It is thus in dairying, bee-keeping, and other rural economies. There are several treatises on trout-farming, which contain ample practical directions. Of these we may name: "Domesticated Trout," published by J. R. Osgood & Co., Boston, Mass.; "Practical Trout Culture," published by Orange Judd & Co., New York; "American Fish-Culture," published by Porter & Coates, Philadelphia; and "Trout-Culture," published by Seth Green and A. S. Collins, Caledonia, N. Y.

There are a considerable number of establishments in the United States which make a business of raising and selling fish stock. The Pequonnock Fish Co., W. Clift, Mystic Bridge, Connecticut, secretary, advertise not only to supply spawn and young fry, but to lay out ponds, and give practical directions to parties desirous of going into the business. The fish-

ponds of Green and Collins, Caledonia, N. Y., are also quite famous. The U. S. Agricultural Report for 1872, states that some eight years ago Mr. Green's was the only establishment of this kind in the United States. Now there are about a dozen widely-known fish-farms, and some hundreds of smaller ones which have attained only a local reputation. Of these, Pennsylvania has the most in number, though not the largest. Massachusetts is probably next, while New York boasts the largest and most complete. The Western States have gone into trout-culture with great energy. Ponds for this purpose are now to be found in Ohio, Wisconsin, Michigan, Illinois, Indiana, Kentucky, Tennessee, Minnesota, and California. It would seem that the business must be found successful and profitable, from the manner in which it is extending. Seth Green says of it, "The business has paid us, and paid us better than any land-farming we ever heard of in this section of country, and if it has paid us, there is no law in this land forbidding one man to do as well as another."

To show what can be done on a very small scale, Mr. Green relates the following incident:—"I once met an old farmer who was taking a trout to the village hotel for sale. The fish weighed plump four pounds, and was a beauty. I learned that he was in the habit of bringing such fish occasionally, and on questioning him, found that he had a little spring stream of water running through his land, and that, in its course, he had dug out a deep hole—simply a hole in the ground, without screens or apparatus of any kind. The larger trout from the stream collected in this hole, and he would feed them with scraps from his table, refuse meat from his butchering, &c. With the outlay of very little trouble, and no cash, the old gentleman must have gathered a good many dollars per year from his hole-in-the-ground-trout-pond. As a hint of what may be done in fish-raising, with small means, his example is worthy of consideration."

In conclusion, it must be borne in mind that an unfauling supply of spring water is indispensable to success in trout-farming. It has happened before now, that a beginner in fish-culture has found his ponds without water, his beautiful spring dried up, and his young fry all dead. It is desirable, though not essential, to have such a fall that the pond can be drained, and it should be so managed, that a rise in the stream will not overflow the pond. Where there are these facilities, and they abound all over the country, trout-farming, if judiciously undertaken, and properly attended to, can, without doubt, be pursued with success.

WHERE THE WHEAT GOES.—The careful estimates made of the wants of England for the years '73 and '74 by the *Mark Lane Express*, are *Twelve Million Quarters of wheat*, equal to 96,000,000 bushels, an amount vastly beyond all that the United States can supply.

The Potato Disease.

At a recent meeting of the Smithfield (England) Club, Mr. J. Dent, M. P., reported that the Committee had received, and had to lay upon the table the Report of the judges who were appointed to award the prize offered by Earl Cathcart for the best essay on the potato disease and its prevention, and after considering the recommendations made in that Report, they begged to give notice that at the next Council they would ask for a grant of £100 to carry out the first recommendation of the judges. They proposed that a special Committee, consisting of Lord Cathcart, Mr. Whitehead, Mr. Jabez Turner, Mr. Wakefield, Mr. Brandreth Gibbs, Mr. Brown Jones, Mr. Algernon Clarke, and Mr. Carruthers, be appointed to consider the suggestions 2 and 3; if they think it desirable, to draw out in detail a scheme for farther investigation into the growth of the potato, and the incidence of the potato disease, and to submit such scheme to the Council. The Committee further recommended that the Royal Agricultural Society of England should carry out its own independent investigation, but as far as possible in concert with the other national societies.—This Report was adopted.

The following is the Report of the judges on the competing essays: The judges appointed by the Council of the Royal Agricultural Society to examine the essays competing for the prize of £100, offered by Earl Cathcart, for the best essay on the potato disease and its prevention, have the honour to report as follows:—They have examined ninety-four competing essays, and have carefully re-examined twenty-three selected from the total number. They are desirous of expressing their recognition of the great pains bestowed upon the preparation of some of these essays, especially in the collection of facts relating to the history of the potato disease, and to the various theories that have been promulgated as to its cause and prevention. The theories most frequently advanced by the essayists, either for affirmation or contradiction, may be stated as follows:

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| <p>CASES</p> <ol style="list-style-type: none"> 1. Degeneration of the tubers. 2. Fungus on the tuber. 3. Wet weather and generally superabundant moisture. 4. <i>Peronospora vesicaria</i> attacks the foliage. 5. Electricity. 6. Methylene chloride, or diseased condition of the plant caused by the use of specific manure. | <p>THEORY OR USE</p> <p>Use of new sorts for planting.</p> <p>Sleeping, or kindling the tubers previous to planting.</p> <p>Use of lime as a manure.</p> <p>Clumping, tamping, or bulking growing tubers having downwards clear of the tubers.</p> <p>Draining upright to stakes, or growth of sorts having erect stalks.</p> <p>Dressing haulm with sulphur, chlorine, &c.</p> <p>Cutting off tops on appearance of disease.</p> <p>Sowing disease-proof sorts (either especially mentioned, or generally, as very early and very late vigorous sorts).</p> <p>Use of lightning conductors of various modes of construction.</p> <p>Avoidance of the use of certain manures.</p> |
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A number of other theories were also advanced, but it is not necessary to particularize them. Like the foregoing they have, probably without exception, been for many years familiar to those acquainted with the practice of potato growers, or with the literature of the subject. Amongst the ninety-four essays abundant evidence may be collected both in support and in contradiction of any of the foregoing theories, and it is especially noticeable that the essayists generally consider it sufficient to assign a cause and a mode of prevention of the potato disease, without giving any scientifically accurate theory of their proposed remedy, or sufficient experimental proof of the accuracy of their statements. The judges, are, therefore, unable to admit that any essayist has established the truth of his theory, particularly as the first condition attached to the offer of the prize is, that "all information contained in prize essays shall be founded on experience or observation."

Like the theories of the cause of the disease, the practical suggestions made with a view to its prevention do not go beyond those with which agriculturists and horticulturists were previously familiar, and, as regards the botanical part of the subject, it must be confessed that all the essayists appear to be in accord of the present condition of scientific knowledge.

The judges have, therefore, but with much regret, come to the conclusion that, in accordance with one of the conditions on which the prize was offered, they must recommend the Council not to award it to the writer of any one of the essays that have come before them.—*Farmer.*

A Cedar Swamp.

WHAT CAN BE DONE WITH IT.

Mr. Joseph Day, of Wenham, some years ago, bought a small farm, on which was a cedar swamp of three acres. The value of the swamp was reckoned at \$50 an acre, about the value of the wood on it. It was connected with a pond whose surface was but little below that of the swamp. A thinking, industrious man, Mr. Day believed he might make this swamp, apparently of no value, a source of great profit, and about ten years ago laid his plans accordingly. He worked at his trade as shoemaker in the forenoon, and spent the afternoon on his land, as much time as possible on the swamp. He first cut off the wood, selling it for \$40 an acre. He then lowered the outlet of the pond, so as to bring its surface even feet below the swamp, and cut ditches through it to drain it thoroughly. He dug out the stumps of the trees, many of them the remains of trees cut off years ago, and thus secured wood enough to supply his family for years. He took off two feet of mud, making about six hundred cords to the acre, which he has sold for \$1.50 a cord, or at the rate of \$2,700 for the three acres. Some of the mud he buried with pieces of stumps, and sold for \$5 a cord. After the mud was removed he planted cranberry vines, and this year took off three and a half bushels to the rod, selling them for \$4 a bushel, or at the rate of over \$2,000 an acre. The mud has not been as yet all removed, and but a small part planted with cranberry vines, but next spring he will plant an acre, and in two or three years have the swamp entirely changed to a cranberry meadow. He had so far sold to the amount of \$2,000, mainly from the mud. When done he expects an annual income of \$5,000 from the cranberries.

It should be added, what is certainly remarkable, that all the labor, three days' work only excepted, has been done by Mr. Day's own hands. We know of no better example of what one man can do with a cedar swamp.—*Cor Mass Ploughman.*

The Guano Question.

What is to be done to supply the place of Peruvian guano, the source of which appears to be fast working out? "Find other deposits, of which there are plenty in many parts of the world," is the reply that would be made to the question. But the quality of the Peruvian article, which renders it so exceptionally valuable to the farmer, is due to the almost entire absence of rain in that country. A shower fell a few years ago, to the amazement of the inhabitants, those under seventeen years of age having never seen such a phenomenon in their lives, an interval of that extent having elapsed since the previous shower. Copious night-dews are the substitutes provided by Providence to supply the place of rain, but it must be evident to any one that the absence of rain must have a powerfully conservative effect upon the materials or elements of which Peruvian guano is composed, and which are peculiarly liable to the deteriorating influence of water in the shape of rain falling upon it from time to time. This alone causes the difference existing between the properties and, consequently, the increased value of one—the Peruvian—over all other kinds which have hitherto been discovered; no other possessing the amount of azote or of phosphates of the Peruvian, and we believe there is no hope of discovering any country in which the absence of rain is coupled with the immense and marvellous clouds of sea birds, which are the immediate producers of the guano. However, the stock is so reduced in the Chincha Islands that the purchaser must now be satisfied with a simple guarantee that the guano is delivered pure and unadulterated. Such is the present condition of the Peruvian guano trade, which, during the few years that it has lasted, has produced almost a revolution in the application of manure to the land, and helped, by the collateral operations arising from it, to spread a general knowledge of agricultural chemistry and of the application of its principles in the management of the land.—*Mass Law. & Proc.*

The Object in Applying Manure

This is a question too little discussed and too frequently ignored by the every-day farmer. Too many work in a somewhat aimless manner in the application of fertilizers. If a definite object is had in view, there seems to be an indefinite idea how that object is to be attained with a considerable class, and thus they work less understandingly, and oftentimes to a considerable loss in several ways. One man has in view the permanent improvement of the productivity of his soil, while at the same time he is desirous

of immediate returns from the present crop. Another has in view the growing of the largest possible crop, leaving the permanent improvement of the soil as a secondary consideration; and so on to the end of the chapter. The varieties of soil—sandy loam, light sand, clayey loam, or clay, stony gravelly loam—are differently constituted, and each is better adapted to some special crop than the other; some of them are what we term "light" soils, while others are "medium" or "heavy." Now the cultivator of each of these varying soils wishes to attain a specific object in its culture, and to that end he applies fertilizers and grows a crop which he finds, from experience, that his soil is adapted to. Scarcely any one at all experienced would think that the same object would be attained by applying manure in the same state, in the same manner, to each and all of these varying soils. Local experience and a knowledge of local farming and circumstances always best determined the matter of application of manure, and in the discussion of the subject all these matters should be considered; but my questions remain: What is the object in applying manure? Should we let any other object take precedence of the present crop? One crop is certainly all we are assured of. If we apply manure to ploughed and hoed ground, it cannot be done without in some way permanently improving the same, for the aeration causes the manure and soil to act chemically producing the improvement.—*W. H. White, Country Gentleman.*

About the Sweet Potato.

The sweet potato is one of the most widely distributed cultivated plants of South and Central America, and it, as an article of food, passes back to the earliest historic period. In Brazil it is called *Juca*, in Mexico *Cumote*, words, the original roots of which belong to the original tongue of the country. The name *Batatas* is a corruption of potato. Even upon the Antilles this useful plant was found cultivated as early as the year 1526. Columbus brought it with other novelties to Europe, and presented it to Queen Isabella; the consequence was that this plant, which is suited to the climate of Spain, was immediately cultivated there. C. Clusius mentions that as early as 1601 he had eaten it in Spain.

The sweet potato was first brought by the Spaniards to Manila and the Moluccas, and thence by the Portuguese distributed over the entire Indian Archipelago. This plant soon reached China and India, although when and how is not known. There is a Chinese as well as a Sanscrit name for this plant. It has ever been believed by some to be of Asiatic origin, or that the American and Asiatic plants are to be considered as different species. Neither of these suppositions are probable, on historical grounds, and on account of the fact that fifteen species of this genus hitherto known, are peculiar to America, four of which only have also found their way to other parts of the world. The sweet potato has not been found growing wild by any one, although the tropical portion of America is to be considered as its native country, with most show of probability *E.*

Wire Fences.

The wire generally used for fencing is No. 9, which weighs one pound to the rod, and costs about twelve and a-half cents a pound. The cost of a wire fence put up substantially with posts one rod apart, will not be far from \$1 per rod. Eighty cents might cover the cost under favorable circumstances. Five wires should be used, the upper one of which should be 4½ feet above the ground. The distance of the wires apart would be 14, 12 10, and 10 inches, counting from the top downward, and the lowest wire 8 inches above ground. There should be straining-posts well braced every 60 rods or 300 yards, or less, according to circumstances. These are strongly braced, and the wires are stretched upon small wooden rollers, upon which the slack is wound up. When the wires are sufficiently tightened the rollers are held in their position by an arm in each, which rests upon a pin in a hole in the post. When the wires are stretched, the staples in each post through which the wires pass are driven up tightly, and they keep the wires firmly in their places. For pastures, wire fences are often very dangerous to horses or cattle, which, not perceiving the wires, are apt to run against them at full speed and become seriously injured. This danger may be obviated by using bars or rails in place of the upper wire. These should be spiked upon the top of the posts, and in addition to this advantage they act as braces to the posts and render the fence firmer. One of the chief advantages of the wire fence is that it does not encourage snow drifts, which the board fence does, and for roads it is much more preferable to any other.—*N. Y. Times*

A New Fertilizer.

From the *News and Advertiser*, of Milford, Delaware, we copy the following on Indian meal as a fertilizer:

Indian Meal is said to be equal to Peruvian guano as a fertilizer. Like the latter, it will kill the germ of the seeds if applied in too large quantities. It may be used in the hill, furrow or broadcast, in about the same quantities as guano. At 60 cents per bushel for corn, a ton of it costs \$24, or about one-third as much as guano. It acts quickly upon the growing crops, and may be applied to wheat in the spring, at the time of sowing clover, and raked in with the grass seed.

From all that we have heard of this article as a fertilizer it is certainly worthy a trial, and we hope that some of our readers will experiment with it the coming season, and report the result. Wheat bran also may be quite as valuable for this purpose, and may be tried in the same manner. A tablespoonful of cornmeal may be applied to a hill of corn, or 30 lbs to the acre on wheat or other broadcast crops. It is said to answer quite as well on potatoes and other root crops.

Night Soil.

Night soil is a valuable and extremely powerful manure richer in nitrogen than horse or cow dung. It should be deodorized before using, by sulphate of iron or powdered charcoal. The use of charcoal for deodorizing night soil is attended with peculiar advantages, as it is of itself, from causes not entirely ascertained, one of the best auxiliary manures known to agriculture. Wherever charcoal is present to a considerable amount in the soil, there grapes and all kinds of fruits flourish luxuriantly and mildew is unknown. Charcoal and gypsum are the best deodorizers of night soil, as they both fix the ammonia. Lime should never be used with night soil, nor indeed in the composting of any animal excrements, as it drives off the ammonia. As before stated, plants take up their food in the liquid and gaseous condition which, of itself, shows conclusively that the urine of all animals should be given to the soil.

CROPS FOR SOILING—Last spring, I sowed winter rye for soiling; it looked very fine a few weeks after sowing, but as soon as the warm weather set in, it was good for nothing; the stalks were very thin, and there were hardly any heads. To fill the gap between fall-sown rye and corn-fodder, I like early sown oats the best. I sowed oats a few weeks later, and they were a great deal better than the rye.—*Cor. Country Gentleman.*

SOILING—FOOD FROM AN ACRE—J. R. B., in the *Practical Farmer*, gives an account of what he produced from two and a half acres of land put in first-rate order, and used for soiling and root-growing. The land was used from August 1st, 1871, to the end of the season of 1873. The corn-fodder, green rye (for autumn use), and white mustard, furnished food for twenty-five cows for two months, and for thirty-five cows and two oxen for one month. In addition to this he raised 840 bushels of round turnips, the same quantity of beets, and 250 bushels of ruta-bagas. When dairymen learn to produce such an amount of fodder from an acre, a fifty acre farm will carry as many cows as 200 acres under the wasteful system of three to four acres to pasture a cow. If dairymen would study the best method, supporting more cows on their small farms instead of buying more land to be spoiled by half tillage, they would make an improvement in the right direction.

ON SURFACE MANURING—A correspondent of the *New York Tribune*, writing from Livingston County, N. Y., on experiments in manuring, says: About nine years ago I became the owner of a small farm near where I reside, and in one of the fields I discovered a side hill or knoll, unproductive. After plowing it for wheat I scattered over it a thin coat of manure, then harrowed it, and drilled in the wheat. The consequence was that the wheat was there as stout as it could stand. The sowing that followed was just the same, and to this day, though no manure has been added, it is the most productive part of the field. I have tried it in other places with the same results. This year, though we have not half a crop of wheat, wherever surface manure has been spread there is a full crop. Hay has dwindled down to about one-fourth of the usual crop, but where I scattered manure over the surface, during the winter, no better or more abundant grass ever grew. To this experience I will add that I have several times plowed under manure for corn and beets, but have never discovered any effect, except to get it out of sight.

Implementments of Husbandry.

Implement Review.

In briefly reviewing our labors in this department during the year that is past, there are various considerations that must have struck the reader as standing out in bold relief. The first of these is the great degree of perfection to which our Canadian implements—take them all in all—have arrived. Beginning with the plough, and passing along through the entire series, to the threshing machine, and fanning mill, the strides that have been made in almost every case are often surprising, and not unfrequently perfectly marvellous to contemplate, when we contrast our present agricultural machines with those of even ten, or twelve years ago. We have the rough, short, stub-plough for breaking up the sod upon new land, and arranged with every facility for dipping, and digging its way amongst the spreading roots of stumps, or growing trees. Following close upon it we have the long, and short iron beam, the jointer, and a hundred different varieties of ornamental implements, for fancy ploughing, all of which, made at the present time, are very good, although, of course, some of them are much better adapted to certain localities than others. And here lies a truth, which, when properly considered, should do away with much of the jarring, and unpleasantness which often, unfortunately, occur between manufacturers both on this, and the other side of the line, as well as beyond the ocean. It is that, as a rule, the implements manufactured in certain localities are better adapted for these special localities than others. Both makers and users will understand, and appreciate the force of this remark. It follows logically, as a fact, from another fact, viz., this: that wherever an agricultural implement emporium is established, the manufacturer is guided largely, may we not say mainly, in his improvements by the ideas, and suggestions of his customers. In fact, without these there would be no great improvements. One man growls about his reaper; it does not cut this aright, and it lays that all wrong, and so on. The maker thereupon looks into the matter with him, deliberates over it maturely, and, at length, one, or both of them hit upon a remedy—or it may be two, or three different remedies, any of them bettering the case—hence invention, and hence improvement. But it must not be forgotten here that in this Province of Ontario especially, there is a very marked difference observable in the character of the soil, as well as its productions, in about every fifteen miles square of its area. So, from this fact, it will at once be seen that certain implements admirably suited to one locality will not answer nearly so well in another—perhaps fail altogether. Hence it is that certain machines, adjudged first-class, and conscientiously so by their manufacturer, are decried when they go a long distance from home, and he, feeling naturally aggrieved in consequence, attributes it all to spite, or jealousy, or slander, on the part of some rival, and whenever any of this rival's pet machines find their way into his locality, and fail, he is not long in returning the compliment, and that with a vengeance.

In harrows, no very great changes have been made, at least there has nothing much been gained by the changes, except in the case of "chain" drags, which certainly leave behind them a beautiful, and smooth bed, but they are serviceable only on a very clear, and fine quality of land.

The roller, in segment, is a decided improvement. The segments dip down into ruts, and hollows, as it rolls along leaving scarcely any portion of the surface unrolled whilst the scrapings that always accompanied the turnings of the old one-piece roller are entirely obviated.

In subsoilers, and cultivators, improvements have also been very rife. The tooth may be now bought of almost any shape, from the single prong, to the web, or duck foot, thus rendering it suitable to almost every kind of soil.

In seed drills, both for grain, and roots, as well as for the various manures, one might almost say that perfection has been reached. To be able to utilize one, and the same machine for sowing every kind of seed, from the small turnip atom to the bean, is an achievement worthy of the nineteenth century. Similar remarks are equally applicable to the case of the larger grain drills, and above all, the fact that crops have multiplied under their use, renders them specially worthy of notice.

In cutting machines, reapers, and mowers, we cannot say that anything absolutely new has been permanently added for some years. Of course we have had any amount of ingenious contrivances added, principally in the "reception" and "delivery" departments of the former machine, and not a few attempts have been made to add the "binder" to it, either manually, or mechanically; but so far all these have been either discarded, or regarded with a considerable degree of suspicion, at all events, none of them are regarded as permanent additions, as yet. On the contrary, we find most of our successful, and responsible manufacturers inclined to settle upon the self-rake—the "sweeper,"—introduced about eight years ago.

On the hay-field, we find that the "Tedder," and horse rake are gradually replacing the hand implements. The large amount of labor, and time saved by both these, as well as the various kinds of hay forks now in use, leads us strongly to the belief that they will all three come to be used universally very soon.

In threshers, that upon which we have heard the most favorable comments thus far, is the "vibrator" or "agitator" which tosses up the straw six or seven different times ere it leaves the building, thus completely depriving it of grain. It cannot be denied that in the other ordinary threshes, long in use in this country a very considerable quantity of grain was carried off in the straw.

Of the other "stock" implements, we cannot omit the many excellent kinds of Food-choppers, Grain-crushers, and most particularly the "Steamer" now in use—saving and improving as they do the feed, and with it of course the stock—thus conferring direct benefits in three different ways.

In conducting this department during the present year, we shall endeavor, whilst marking improvements and inventions as they occur, to dwell a little more upon the theory of working the land, and the reasons why the soil when operated upon by suitable implements, should yield more and yield better than by the old principle of hand labor.

A New Manger.

The difficulty of feeding horses and cattle by walking up alongside of them in the stall, and pouring out the feed at their heads, is known to every farmer. Not only is it troublesome, but positively dangerous sometimes, especially in the case of a fiery horse or a restive or hungry cow.

Few, therefore, will be found to advocate the old plan, and so an improvement has been made which meets the case in some ways, but not sufficiently. We allude to the plan of feeding from a passage-way in front, by opening up a hinged board, feeding, and then closing it down again.

The objection to this method is, that whilst there may not be the same difficulty and danger attending it, yet there is a probability that a portion of the feed may still be scattered or spilled in the process, and consequently lost. A horse will dive at his oat measure, and a cow will keep tossing her head about, especially if she expects something extra good for a lunch, and so the food is partially lost.

Now there is a way of obviating all this by another form of manger, which is but of recent invention, and meets all the objections to the two former cases. It is a hinged trough. Understand us. You make your trough in the first place somewhat after the form of a wedge, (of course, you can insert a bottom in it high or low, to suit you) and, having done so, hinge it at the bottom by means of a couple of strong T's, or by hook and staple, to the partition which runs across the front of your stall in such a manner that when one side of the trough comes flush with the partition, in other words, when the affair is shut, its other side juts into the stall at the top, and the whole is therefore ready for the animal to eat out of it—

that is, if there is anything into it to eat. A little latch or turn-sneck keeps it fast in its position until it is required to be replenished.

Of course, it will be understood that there is a hole cut out of the front partition in the first place, just large enough to be nicely filled up by either side of the manger, so that when the manger needs replenishing, or when you desire to feed, you simply walk into the passage-way in front, turn the 'sneck,' catch hold of the top of the manger and pull it towards you. Its other side will then close the opening, so that whilst you are pouring in the feed—gram, turneps, or whatever it may be—you and it are both hidden from view of the animal. Then, simply push it from you and close it, turning the 'sneck' on it to keep it in its place, and the animal can feed away.

This manger, wherever it has been tried, is immediately admitted to be one of the best things of the kind ever invented.

Lightning, and Lightning Rods.

Mr. J. M. Mott has been reading a series of papers before the meteorological section of the Franklin Institute, on the above subject, and arrives at the following conclusions:—

1. Lightning rods, as usually erected, do not afford much protection.

2. Insulators, and glasses, at the points of support, are of no use in any case; they destroy the most valuable influence of the rod, and may, under certain circumstances, be the cause of most terrific, and destructive return strokes.

3. The conducting power of lightning rods is proportional to their solid contents, or sectional area, with similar metals of equal lengths, and not to their surfaces.

4. A lightning rod should have the conducting power of a copper rod one half-inch square, and perfect metallic union of all its parts. A rod made exclusively from copper wires, if of sufficient size, constitutes one which is perfect in theory.

5. Sharp points for the upper termination of rods are necessary. Rods are of but little value without them. Points should be plated, to prevent oxidation. They are also of value when used at the lowest terminus of the rod.

6. It is necessary to place a point at each gable, chimney, and ventilator; to connect all together; to connect the rod with metallic roofs, gutters, valleys, steam pipes, gas pipes, water pipes, speaking tubes, and other permanent metallic bodies about buildings, and the more numerous the connections with the earth the better.

7. The rod must be attached directly to the building, the closer the better. It must not be insulated by being passed through, or over rings of glass, horn, or other non-conducting substances, nor be placed at a distance from the object to be protected.

8. Ground rods must have two or more branches penetrating the earth to permanent moisture; must extend below the foundation walls, or the bottom of the cellar. In some instances, where it is difficult to reach moist earth, they must be imbedded in charcoal.

9. Lightning rods, constructed and erected in accordance with the foregoing principles, will afford full protection in the hour of danger, and their use is strongly urged as a necessary means of safety.

CATTLE STANCHIONS.—Three years ago I built a barn, and, thinking I would be merciful to my cows, I had the platform on which the cows had to stand, built four feet and nine inches long, with only two inches drop. I tried this almost two years, but I found the cows got very dirty, especially in the spring, and fall. I then took it up, made the platform four feet, six inches in length, and six inches drop. I found this quite an improvement, but still it did not quite suit me; and this fall I made the platform four feet, and four inches long, with a slant of one and a half inches from front to rear, the drop being six inches at the rear, as before. This, I find, works like a charm with my cows, which are medium size; but for larger cattle the platform would want to be from two to four inches longer. If I was going to improve it all, I would make the drop platform an inch or two higher.—*Correspondence Country Gentleman.*

Grasses and Forage Plants.

Renovating Power of the Grasses.

A respectable volume could easily be written on the above theme. How often has clover exerted an almost magical influence on light, sandy lands, well nigh reduced to utter sterility by injudicious management. What an important part the grasses play in a good rotation of crops, not only by the change of product they bring round, but by the recuperative power they put forth.

But we took pen in hand to note down a few things concerning the beneficent part the grasses are playing in the restoration of agriculture in the Southern States. In extensive regions at the South, where the over-culture of cotton and tobacco had quite exhausted lands once highly fertile, grass-growing is being introduced with excellent effect. The agricultural and local papers are arguing very earnestly recourse to this means of recuperation for soils worn out by exclusive crops and a bad system of tillage. Quite a stir is being made, and if such a thing as an excitement can be induced in the quiet realm of agriculture, then there may be said to be an excitement about grass-growing. As an example of the earnestness of this movement toward improvement, a writer in one of the prominent farm-journals says, referring to clover, "a few pounds of diminutive seed furnish machinery to absorb from the atmosphere, and pump out of the earth, the elements of fertility needed to replace what our wasteful and improvident predecessors have expended. I solemnly believe, that in the benign providence of God, clover is to be the Moses which is to deliver Southern agriculturists from the bondage of poverty and debt, by restoring our wasted and worn inheritance to its original fertility."

Considerable prejudice as well as ignorance appears to prevail in the South in regard to these products. A farmer in Hale county, Alabama, writes to one of the Southern journals, that in his opinion it will "take time to eradicate the prejudices of the planters against grass, which they have been fighting all their lives," and adds that he believes "the salvation of the South in great measure depends upon the introduction of cereals and grasses."

The "Sunny South" seems to be peculiarly adapted to some of the grasses. The Fescue-grass, (*Bromus Schraderi*), proves of great value there. Mr. C. W. Stewart, Montgomery County Texas, testifies that four mules and two milch-cows were pastured on less than two acres of this grass all winter, besides hogs. It greatly improves the flavor and quality of milk and butter. One party who experimented with it, did not break up or plough the patch for three years.

In South Carolina, clover seed rolled in with wheat will give a crop of stubble-hay after the grain comes off, which is better than corn fodder for cattle. If the land be good, the clover which stands three years yields a larger profit in hay than can be gained by any other crop. Then clover-sod ploughed in and put to corn will give thirty bushels to the acre. Next comes the wheat crop, after which the land stands in clover another three years. This is exactly the system of rotation we have known pursued very successfully in certain parts of this country known as "oak plains." That such a course should retain the productivity of the soil, is a striking proof of the renovating properties of clover.

Lucerne does wonderfully well at the South. It is considered by those who have tried it to be superior to all others as a forage plant, and is largely used for feeding green or soiling. Its yield of hay is enormous, five tons to the acre being no uncommon crop. Lucerne hay is said to be very nutritious, and is eaten with great relish by horses, cattle, and sheep. An acre will produce fodder enough, green and dry, to keep five horses. So says the *Southern Farm and*

Home We believe much more use might be made of lucerne at the north, if its habits were better understood, and the best modes of culture ascertained by careful experiment.

But after all clover is our "Moses," as truly as it is that of the Southerners. There is nothing like it as a recuperator of the soil. Clover, well dressed with plaster, is a vegetable magician. Its long tap roots go down into the depths of the earth for food and moisture, and its broad, magnetic leaves, attract the fertilizing gases and humidity of the atmosphere. Whatever there is in the heaven above or in the earth beneath, which its leaves and roots can gather, will without fail be brought to the soil to improve its condition. And it flourishes most luxuriantly here. Of all the sights that are fitted to bring hope and joy to a farmer's heart in the summer time, commend us to a glorious field of red clover!

Special Uses for Grasses.

In various quarters we find considerable discussion as to the value of the various grasses used in agriculture. The majority prefer timothy; but now and then some one is sure that orchard grass is best of all, while others contend that blue grass, red top, or some other is best of all.

After all it seems to us a matter of climate or soil, or season. In Kentucky the blue grass becomes famous, not only for the heavy crops it yields, as for the large amount of nutrition it seems to yield. The same grass is widely known in Pennsylvania as green grass; but no one seems to have observed in this State that this species has any specially nutritive character more than any other.

Orchard grass has many admirers. It yields heavily, and as it will do tolerably well in situations where other grasses do not do so well, it has this advantage. Again, it pushes up its herbage earlier than some others, and as anything green in spring is inviting to animals kept on dry food all winter, they seem very grateful for an early turning out to graze in an orchard grass pasture.

It is interesting to note how little heat seems to be necessary to get some kinds of grasses to grow, and how much it takes to start others. Thus timothy hardly begins to start till long after all others. Green grass and herds-grass, or red-top as it is sometimes called, is also rather late. The two which seem most easily started, of the popular kinds, are rye-grass and orchard grass. In this part of the world rye-grass has become rather common as a pasture grass. Many English people at various times have settled about here, and rye-grass being the favorite English grass, has naturally been extensively tried by them. So far as we have been able to see, however, in no case will it yield anything near the amount of hay that timothy will; but for a pasture grass it proves one of the very best. Many of our lawns have rye-grass among its other herbage, as it is a chief element in many popular lawn-grass mixtures, and here the first lawns to put on a green spring dress, as the gardeners say, are those in which a liberal stock of rye-grass prevails. It is quite as early, to say the least, as orchard grass; and, though, as we have said, cattle seem to eat orchard grass with great avidity in early spring, they will leave it for rye-grass if they have a chance.

The occasional rye-grass pastures we have about this city have been splendid cow pastures this season. The few tolerably warm days we had early in December, made them push rapidly into growth; while most of the others kept a dingy brown after the brief cold November spell. In the favored rye-grass pastures we have reference to, cattle are being turned out to graze up to the time we now write, near Christmas, and seem to have all they desire. From the preference they seem for it over others, it is probably nutritious grass, as cattle, unlike so many of the human species, seem to have an instinctive knowledge of what is good for themselves. But we have never seen any figures in regard to this subject.

In the south they seem to have no especial grass on which they run. Indeed, there is a sort of tradition that grass will not grow in the south, although as a distinguished southern man has recently said, half the summer time of the south is spent in weeding out the grass which grows spontaneously between other crops. No doubt there are many grasses which would do well in the south, if care were taken to select the kinds best suited to that region. Even here, a country fitted by nature especially for grass, we see how much depends on soil and climate, as well as indeed whether we want the grass for pasture or

for hay. It will also be well for our friends to remember in discussing the grass question that we cannot stick to one kind alone for all purposes. The advocates of this or that variety—orchard grass or whatever it may be—may also take a hint that we need all the kinds we have for various purposes.—*German Town Telegraph.*

Orchard Grass.

Orchard grass, or cocksfoot is regarded by those who have given it a fair trial, as one of the most valuable grasses grown. If cut at the proper time and well cured, it is nutritious and greatly relished by stock.

Soil.

There is no variety of grass grown that is so well adapted to all kinds of soil and situations. Its name would imply that it must be grown in the shade, though it does well in orchards where no other grass succeeds, yet it is no less valuable in the open fields, be the ground light or heavy, wet or dry, unless it be on uplands during a severe drought. If a farmer desires to seed but a single field to orchard grass, it would be advisable to select rather wet ground.

When to Sow.

It should be sown in the early spring. Though, like timothy and clover, it does better sown alone than with a growing crop, yet it may be sown with a crop of growing wheat before the frost is out of the ground in the early spring. Though we do not advise mixing different varieties of grasses for meadows, yet if it must be done, there is no variety that is better than this to mix with red clover. They arrive at maturity nearer at the same time than any other two varieties. I believe it better to leave out the clover and sow more orchard grass seed. I would not use less than two bushels per acre. D. L. G. will see his mistake in sowing so little seed during the coming summer. If less than two bushels be used, the stalks will be coarse, and the grass will grow in tufts instead of forming close, even sod. Its permanency in a meadow is superior to that of timothy, it arrives at maturity much earlier, and yields two good crops of hay. A crop may be cut for seed, and a second crop gathered; but if left until the seed is ripe, like timothy grass, the stock has become woolly and almost worthless. Another trouble in allowing the seed to ripen is that it is apt to get scattered and mixed with other meadow grass, which, on account of its early maturing nature, should be guarded against. The seed is saved and prepared for market the same as that of the Kentucky blue grass, white top and blue top. The amount of seed from an acre varies so greatly, as with other grasses, that we can give nothing like a definite answer to that question.

For Pastures.

Besides the value in the meadow, there is no variety superior to it for pasture. It makes an early start in the spring, is permanent, will bear close and constant cropping, and is of good quality. If sown for pastures, it should be mixed with other varieties, for the reason that it does not, when alone, make a thick, close, and compact sod, which is desirable in the pasture. It will greatly improve the stand of orchard grass to go over the field early in the spring with a harrow, and if it can be obtained without much trouble, add half a bushel more seed to the acre.—*Ohio Farmer.*

HUNGARIAN GRASS-MILLET.—Hungarian grass so closely resembles millet in every respect, that there is practically no difference between them as farm crops. The seed of each is so like the other that they are indistinguishable. The habit of growth of both is alike, and the only difference by which one can be distinguished from the other, by an unscientific observer, is in the closeness of the panicle, or head. A peck of seed per acre is generally sown, but as the fodder is more valuable when fine, twelve quarts per acre would give a closer, and consequently finer herbage. It must not be sown till danger of frosts has disappeared, and warm, dry weather has appeared. It is originally a tropical plant, and loves warmth, and can resist drought very well. It should be cut before the seed has formed, and cured as hay. It is quite possible, by sowing early, that is about the 10th of May, to follow it with a crop of corn for fodder; or the fodder corn might, perhaps, be better followed by millet sown in July. Fodder corn should be sown in drills, and cultivated. It does not yield so well sown broadcast. Potatoes, in hills, should be planted twenty to thirty inches apart. Varieties having small tops, as Early Rose, should be planted at the shorter distance apart, and those with large tops, as Peachblows, the wider distance. Where the soil is clean, drill planting is preferable, but otherwise it is better to plant in hills, and cultivate both ways.—*N. Y. Times.*

Rural Architecture.

Designs for Barns—(Continued.)

Design IV.

My plan of a barn is somewhat of the English style—but perhaps none the worse for that—and I have seen none in this country to surpass it. The diagram, fig 2, is of suitable size for the accommodation of forty animals, 40 feet wide and 100 feet long, exclusive of a one-story lean-to for corn cribs (X Y) 15 feet square. In the main building adjoining the cribs are two rooms—F for small grains, E

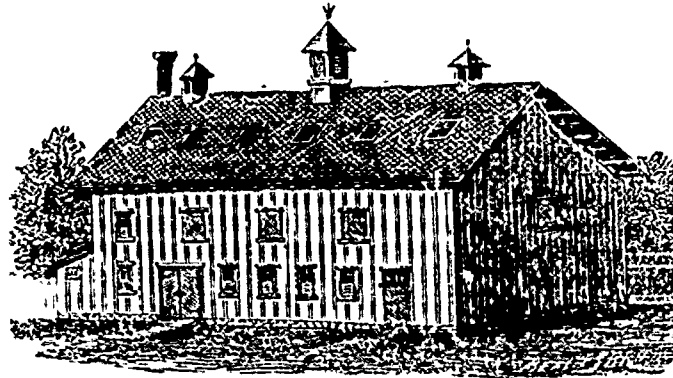


Fig. 1.—Barn for Short-horns.

for a steaming room—each 15 feet square, and a room for pump—and boiler, if one is used,—15 by 10 feet, C. Then comes a waggon-way through the barn, 10 feet wide. Next come the stalls for cattle, of which there are eighteen, each 10 feet wide and 8½ feet long; then a six-foot alley, which uses up the length of the barn, with the exception of nine feet, which is divided into a stall (T) 10 feet wide, for a bull, a smaller stall (U) for a young bull, a space (V) 10 feet wide for hay coming down from chamber above, and a box stall (W) 14 feet wide for the cows to calve in. The alley behind the cattle pens (N) is 5½ feet wide; the

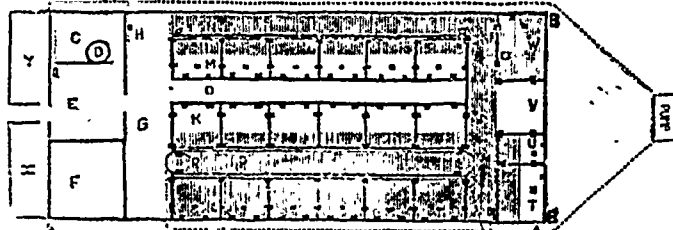


Fig. 2.—Ground Plan.

alley O is 4½ feet wide; and the alley P, 5 feet wide. I lay a floor of brick running lengthwise the barn in all the alleys, and extend the same three feet up each stall, laying them lengthwise of the stall. The remaining part of the stall I fill with clay, or good soil well beaten down. I lay a curb, either of plank or stone, behind all the stalls, somewhat higher than the causeway, and depress the last three rows of bricks next the curb, so as to form a channel behind where the cattle stand; and towards this the floor of the stall has a sufficient pitch to carry into this channel all liquids. The centre of the pathway is also somewhat higher than the channel. These channels lead into drains, which connect with a tank outside the barn. I put a feed-box of cast metal on each side of the stall, and in the centre place a hay-rack in the shape of the letter V, the point or angle projecting into the stall, so as to be convenient for two animals, one on each side.

The stalls L are for suckling calves; the stalls opposite (K) are for their dams, and the stalls M for other cattle. The stalls for calves are closed by gates opening in the middle, and swinging back to the stall posts on the other side of the alley, so as to throw both into one. When through with the calves, they can be driven to their proper places, the half gate closed, and there will be no further trouble with them;

the alley way is then left clear. Of course these stalls can be used for other purposes if desirable. In the front of the stalls for cattle there is a feed-box on each side, and hay-rack in the centre; also a door hinged above the feed-box to admit feed from the alley. In fig. 3 is shown the construction of

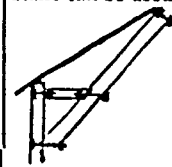


Fig. 3.

roof, for durability and the most room for hay. A great point in this barn is the economy in the bedding. The cattle lie on a dry, clean bed; the calves are kept two together, easily suckled and returned to their places, making no trouble to turn out the cows, as the barn is perfectly clear. The channel throws off all urine into grates put in to receive it, and it is at once carried by drain pipes into a tank clear of the barn. The drain pipe should not be less than five inches. I prefer stench traps for grates; they receive all sediment, and can be easily cleaned out twice a week. You thus have the liquid in the tank, which is often wasted in other barns, for putting on the manure pile, where its utility will soon be discovered. You also have the barn clear of all effluvia arising from decaying litter under the cattle—an important item in raising good stock.

You can make the barn of any length you require, every ten feet in length provided for six cattle. Any number of windows can be put in on either side of the building. I prefer plenty of ventilation in hot weather, but like the windows closed up in cold weather, when the barn is well drained and free from any unpleasant smell.

You can put an engine in the pump room to shell and grind corn, cut hay, and pump water into a cistern put up to feed the engine and water the cattle. The hay cutter is put up in a chamber convenient for the hay, which, after being cut, comes down a spout into the room E below. This room can be used for steaming, by fixing a pipe from the boiler into a steaming tub. This system I prefer where good cattle are to be raised, as experience teaches me.

In the perspective view, the squares in the roof are plates of glass, put in the same as shingles or slates.

Directions for Building a Smoke-house.

A smoke-house should always be built of stone or brick, if possible; at least, the first four or five feet from the ground should be so, especially if wood be burned for the household fires, since then there is almost absolute safety from fire, and the bottom may then be used for storing ashes. It will require about six square feet to hang an average ham. The cross-bars, into which are driven the hooks for hanging the hams, should be about eighteen inches apart, and the hooks the same distance apart thereon, or say, seven hooks to each bar. A house ten feet square will, therefore, hang about fifty hams in each tier; the upper tier should be two and one-half feet above the lower. The lower tier of hams should not be less than six feet from the ground. Your lower crossbars will be eight and one-half feet from the ground; the upper one, eleven feet, and, if you choose to put in a third tier, this one will be thirteen and a-half feet from the bottom, which will give the height of your building. This will be a good proportion, and if only one hundred hams are required, the lower tier of crossbars may be omitted, which will give a greater distance from the fire to the meat.—*Western Rural.*

Breeder and Grazier.

Advantages of Keeping Stock Well.

We are afraid to feed our stock. "So much feed and so valuable! These are the thoughts. And so the hay is spared, and the grain withheld. The result is, the certain running down of the stock, when the feed is the very thing we seek to convert into profit; the more we can use the better—the greater will be our profit.

"But so much hay will be fed! and I'll only have my cows in the spring! Less would still give me my cows. I get my milk and they go into pasture the same as though I had fed away my hay and my grain; and I would have to buy, besides! And thus poor farming is continued. But such a dairy of poor, weak cows will do but little more than what a good dairy will do, while this, if kept up to the highest point, will produce a still greater difference; for the great feeders consume the raw material, and produce a proportionately large quantity of butter and cheese and beef. Your well-kept cow will yield, as we have said, double, and more than double the quantity of milk that it otherwise would, and it will be richer.

Does any one question this? If so, it is because he has not tested it. But let him inquire into the matter, and all doubts as to the benefits to be derived from liberal feeding will at once vanish. It will then be perceived that it takes only a certain amount of feed to keep a cow—to keep her the year through. If she has less, she will run down, and she must have the deficit restored to repair the loss, or else she will do poorly; the machine for converting feed into milk being weak and out of order, it cannot perform the work which a stronger machine in good running order would do. You get four, five or six pounds of butter per week from your cow. Had a little more hay or grain been added, the condition of the cow would have been kept up, her strength would have been maintained, and all her organs well conditioned and in full vigorous operation, and the result would have been seven, eight, nine, ten, or as we have known, twelve and fifteen pounds of butter per week. This we have seen demonstrated in many cases. We have seen it in single cows as well as in whole dairies, and we are seeing it daily. Every reader, we will venture to say, can see the same, if he will only inquire, or test the matter.

Well, how much difference does this make in a season? From five or six (as an average) to nine or ten pounds. It makes nearly half; it is therefore nearly doubling the butter or cheese. Will the little difference in hay or grain balance this? Is it more than a trifle compared with the increase of product which now gets all the benefit?

Then there are other advantages besides in keeping stock well. The theory is, that it is the only true one, to feed all your stock well, and of the best kind, short of that which would result in the laying on of fat, which young stock and milch cows are apt to do. A little feed laid up in fat is no harm as it will be there ready to supply any deficiency that may result from any mishap or untoward circumstance that may arise, for fat in the system is food laid up in store.

In thus feeding freely, you make away with your feed but comparatively little faster than you would if you scrimped your stock, for it takes the same quantity of food to keep at a certain point whether that be a high condition or a low one. You gain, in your feed, only what the cow loses in declining from one condition to another; then it costs just as much to keep them there as in the better condition; provided always you do not over-feed or waste. Feed as much as can be well digested, and as much as will be eaten under such circumstances.

Wise dairymen, that is our best farmers (and they certainly are not the tools), feed—how? What quality of stock do such men keep? You go there to see the best stock. Do you ever hear them say it does not pay to keep the best—not necessarily blooded stock, but stock kept in the best condition? No; you never hear them say this. They will tell you you must keep up your stock if you would realize profit by it, both sheep and cattle, as well as horses, hogs, poultry and all. They have much stock, and they make it pay—to a great extent they have accumulated their means in this way. But the poor farmers have poor stock, and it is keeping poor

stock, for one thing, that keeps them poor; and the probability is, that, as the keeping of such stock betrays ignorance, other business connected with the farm will be conducted accordingly.

The proper way then is, to inquire into the matter and see,—and then act upon the result. This is the simple way in which people generally succeed, and not by proceeding hap-hazard. Remember! animals are machines for passing food through, with a view of realizing a profit thereupon.—*F. G. in Live Stock Journal.*

Balking.

As to the matter of "balking," no general direction can be given, or rule established. If the education of the colt has been conducted in accordance with the principles I have in previous pages laid down, he will not balk. Balking on the part of colts is, for the most part, the result of the trainer's ignorance or passion. Yelling and whipping on the part of the trainer or driver, over-loading, sore shoulders, or ill fitting collars, these are the causes that make horses balk. But if you have a horse or colt that balks while I can not, without a personal knowledge of the subject, tell you what to do, I can tell you what not to do—never whip. If he won't go, let him stand still and think it over. He will very often think of it, and after a few moments' reflection, and a few losses of his head, go on of his own accord. Or, if he does not answer, get out of the waggon and pat him, and talk to him kindly. A horse is very susceptible to kindness, and I have known more than one quite vicious horse gentled into good behavior by a few pats from a lady's gloved hand on the moist neck and veined muzzle. Sometimes it is well to loosen a strap or start a buckle. I have known the act of mere unchecking and rechecking the animal answer the purpose. It took his attention off in another direction, you see, changed the current of his thought, and broke up his purpose and determination to resist. For this same reason, an apple, or a bunch of grass from the roadside, or a handful of oats, or a few kernels of corn, will often accomplish what an hour of beating would never effect. The truth is, a man must govern himself before he can hope to govern lower animals. A man flushed with passion his brain charged with excited blood, and eyes blazing with rage is not in a condition to think clearly; and it is just this *think clearly* that is, above all else, needed in directing and controlling horses. Hence it is that contact with horses, and an actual experience in teaching them, is one of the finest disciplines a man can have. He grows to love the colt he is teaching, and no nature is utterly depraved in which is going on the exercise of affection, no matter how humble the object of it may be. His employment makes it necessary for him to think, and this keeps intellect, which might otherwise have no development alive. The language of the stable is not, as many pious and ignorant people imagine, all slang. Care and anxiety are felt in the groom's room, and consultations held, upon the issue of which the health and safety of valuable property depend. Plans are formed, and methods of procedure adopted, upon which fame, and vast sums of money, come and go. Faults of nature and practice are corrected, and the trainer discovers, that, in schooling his creatures, he is being schooled himself. Thus, as in all other branches of honorable industry, the horseman discovers that he is the point from which his current goes forth and another enters in. He bestows, and he receives, he educates, and is educated; and the life which so many thoughtless people despise, closes, as in the case of Hiram Woodruff,—the upright in heart and act—with honor, and a fame which can fail only when kindness toward animals, and integrity among men, are regarded as of no account.—*From Mr Murray's Book on "The Perfect Horse."*

An Hour with the Blooded Cattle.

To any person who has an eye for beauty and symmetry of form in the animals of God's creation, it will richly repay to drive to the stock farm of Robert Milne, Esq., of Lockport, in this country, on purpose to see some of the finest specimens of thorough-bred short-horns to be found in this or any other state. Having been formerly engaged in the same line of business for a few years, we recently visited the hospitable home of Mr Milne, for the express purpose of looking at his large herd of bovine aristocracy. After partaking of a sumptuous dinner with Mr Milne and his excellent family, we repaired to the barn-yard and pastures, and feasted our eyes for an hour upon the "straight-backs," the low, full "briskets," perpendicularly straight legs, the "lining out" from the

point of the hip, the full flanks, the gentle eyes, the delicate horns, and even to the well balanced and beautiful tapering tails.

Mr Milne is, we believe, the pioneer breeder of short-horns in Will County, having been engaged for a number of years actively, in his efforts to serve the public interest, as well as his own in the improvement of the stock in the west. His herd at present numbers about 50 head, all herd-book animals, whose pedigrees are clear and unquestioned. Taking into consideration the large number of this herd, it is the best round lot of Durham cattle we have seen in the state, belonging to one man. There is not a scallawag or inferior animal in the herd; great uniformity, and uniformly good, is the strong characteristic of the herd. Much the larger number, of course, are cows and heifers, many of them superior milk cows.

Mr Milne has lately added materially to the value of his herd by an importation of two animals from Scotland, one of each sex. The bull calf is a deep, rich red color, soft coat of hair, well grown of his age and very perfectly formed, and is without a most beautiful animal. Mr Milne has resided at Lockport for thirty years, and is known by a large circle of acquaintances throughout the state, as a man of the strictest integrity and honor, and, consequently those who purchase of him for breeding purposes are not disappointed in the quality of the stock from exaggerated and high-wrought descriptions.

In Mr. M.'s barn cellar we observed an item of general interest to all farmers and feeders of stock, especially dairymen. Some large bins were well filled with mangel-wurtzel beets, 5,000 bushels of which were raised on ten acres of ground the last season. This vegetable is highly nutritious, and forms a large part of the winter's food for this valuable herd of cattle. Farmers! try a half acre of it next year.—*Joliet Sun.*

Hints on Feeding.

This is an all-important matter to look to. There are not many turnips or roots grown in the United States, or clover cake available for feed; therefore something must be sought as a substitute, and you must set up an engine to shell and grind corn, and cut hay. Mix the cut hay with the corn meal, and linseed or flax meal, and other feed stuffs, and steam all together, and you have a good feed that cattle will thrive on. Some people say Nature has prepared all feed for animals. That is a mistake. Man is set on the face of Nature, and must prepare and make the feed in a proper form for the animal to digest it, so that its blood and body may be kept in good order, or the animal would soon become ill-shaped and diseased. For instance, feeding on corn, in the ear or shelled, will soon prove this idea true. The blood becomes too much heated, and disease presents itself. How many cattle are troubled with foul, a disease in their feet, difficult to get rid of as long as they are allowed to stand in wet litter and are fed with dry corn? Why not grow more flax or linseed, and use it freely in steamed food? Then you might expect to see your cattle taking on flesh in good and perfect order.

Cleanliness is the point next in importance. The animal should lie on a clean, dry bed of straw, and by setting the animal up from the channel of the footpath you obtain this, the channel carrying off all liquid, which is drained into the tank, and is highly useful for enriching the pastures for summer feed and expelling some of those weeds which now over-run them.

There is one point I would here notice in the Short-horn cows—that is, garget or spoiled bags, owing mainly to suckling their calves. They should be carefully followed, and all milk remaining after suckling be taken from them, and their bags rubbed dry; and should the animal be out of order, it should be attended to immediately, for bad results sometimes follow where a little attention in time would have set it right.

Good usage is of great importance in raising fine stock, and the countenance of the animal soon indicates whether good or bad treatment is practiced. I have known bad treatment used in the attempt to subdue an animal, but it always failed.

BRASS TIPS ON CATTLE'S HORNS.—Will you, or some of your subscribers, inform me how to put brass balls upon the horns of cattle? Can they be put on with the expectation of remaining, when the horns first appear? J. L. A. Canton, Miss. [Screw them on with any kind of a wrench that will fit the button. If the horn is slender, the point which protrudes through the button should be cut off. They are not usually put on until the animal is at least three years of age. We do not remember seeing them on any animal younger than that.]—*Country Gentleman.*

Poultry Yard.

Poultry Notes—No. 2.

Selection of Stock—Principles of Breeding.

If the careful breeder has not already done so, he will now select his stock and "make up" his yards, a proceeding which must be governed by circumstances, and the accommodation he can afford his fowls. To insure success a knowledge of the adaptability of fowls to certain conditions will be of advantage, if not essential; some birds will live and thrive where others would die; some bear confinement well, while others require a wide range. For general purposes however, the most economic breeds to keep are perhaps the Brahma, Dominique, Houdan and Leghorn, the two former belong to the sitting, and the two latter, the non-sitting varieties. Where many chickens are required, the Brahma will be found a very suitable fowl, Dominiques are excellent layers, very hardy and good table fowls, if eggs alone are required, then Houdans and Leghorns are all that can be wished for. Other breeds there are equally good and equally useful, but for the farmer with his extensive fields and wide range, these varieties will be found amongst the most profitable to keep. If a little extra care and attention be given, the Dorking is also an excellent variety of fowl, but not quite so easily reared as those mentioned. Fanciers and amateurs will select other varieties more suitable to their tastes and circumstances, among which will no doubt be, Cochins, Spanish, Polish, Hamburgs, and some of the French breeds, while the lovers of Game fowls and bantams will not fail to devote a few yards to each variety of their choice, whichever be the breed selected, it is important to know something of the general principles of breeding, and the results likely to be produced in the offspring of birds when treated scientifically.

We are all aware of the general laws of re-production, but if we turn to the science of breeding as effecting the quality of the offspring, we are at once confronted with the fundamental law that "like produces like." If we view the wild races or those whose type has long been fixed, this law appears to be invariable; in color, gait, form, courage and habits, the progeny are the counterparts of the parents. Just as the oak produces oaks, and all the different varieties of oak beget the same kinds; so does a Brahma produce a Brahma, a Dorking produce a Dorking, and so of each variety of the different breeds of fowls known. But this law is true of the qualities of the individual parents as much as those of breeds, and therefore this hereditary transmission of personal properties is of great importance in maintaining a breed at a standard of excellence already attained. Yet though the general characteristics are transmitted, the offspring is never the exact counterpart of the parent; it becomes therefore quite as important to breeders to study the laws of variation as the laws of hereditary transmission. In controlling these we find the secret of all improvement in breeds. The selection then of stock for breeding purposes which show variations of a desirable kind, and the rejection of those which show the opposite characteristics, will go far to effect this object, as the majority of the offspring will usually show the same personal qualities with their parents. Let us illustrate practically. If the desire of the breeder is to produce a neat comb, or a beautiful tail, or a particular shape of the body, then by the selection of birds possessing in the highest degree any or all of the desired characteristics, and again breeding from such of their offspring only as show, in a still higher degree of excellence, the ideal point sought after, in the course of a few generations it will become so firmly fixed and established that no difficulty will be found in re-producing it in future generations. So also of

any degree of merit, such as laying qualities. In every lot of hens some will be greater layers than others, if by a careful selection of these hens and breeding again from them, in a few years an established strain of great egg-producers may be secured; these remarks will apply equally to all other economic qualities as well as the production of eggs. But, in the principles of breeding, we may go a step further, and avail ourselves of the knowledge of some of the causes of variation, under which may be noticed, prepotency of race, imagination of the mother and the influence of the male bird. It has been ascertained that violent crossing between two breeds of strongly fixed types will tend to reversion, and also that the progeny from two alien races of the same breed, one of the parents of which having no "fixed character" will in all probability be unlike either of the parents. Mr. Wright relates a few cases of variation within his own knowledge worth reproducing. He knew of a good strain of Dark Brahmas which usually bred beautiful pullets, but when crossed into another strain, or on the introduction of "fresh blood," almost always produced very inferior chickens. In the same way, two alien strains of Buff Cochins occasionally bred pullets with a great deal of black in the hackle. In exemplification of these supposed anomalies, Mr. Darwin offers the following. "It has long been notorious that hybrids and mongrels often revert to one or both of their parent forms, after an interval of from two to seven or eight, or, according to some authorities even a greater number of generations. But that the act of crossing, in itself, gives an impulse towards reversion, as shown by the appearance of long lost characters, has never I believe been hitherto proved. The proof lies in certain peculiarities which do not characterise the immediate parents, and therefore cannot have been derived from them, frequently appearing in the offspring of two breeds when crossed, which never appear, or appear with extreme rarity in those breeds so long as they are precluded from crossing," and then quotes several instances of such variations, in support of his own theory.

Closely connected with the subject of variation is that of *imagination on sight* of the hen, during the breeding season, which is asserted by some American and English writers as largely influencing her progeny. Mr. Wright, in his *Book of Poultry*, says the experience of every year impresses on him the desirability of avoiding anything that may act strongly on the "*imagination or sight*" of the hen, and in support of his own views quotes an American breeder who had some Light Brahma hens running with Spanish fowls, the cocks being Spanish only, and as long as the white hens were allowed to remain, the Spanish chickens came with many white feathers, which ceased when the Brahmas were removed. Another instance is given of a gentleman who put a single combed hen into a pen of Creve Cœurs, the next clutch of chickens varied much in color, several had single combs, and most were worthless, after the strange hen was removed they were all right. He next vouches the fact of his own knowledge that a well known English breeder, frequently found that whenever he put black hens with his white Cochins he got many chicks with black splashes which ceased when they were removed. He then further relates his own experience on the imagination or sight in reference to the vulture hock, he asserts that in his own yard, breeding as he had frequently done from a hocked cock to compensate want of feather, he always found that cutting off the vulture hock diminished by thirty per cent. the number of hocked chickens.

The duration of the cock's influence over hens with which he has been mated is another subject in which the breeder is deeply interested, but as we purpose in another paper to treat more fully this subject we will not now notice it further than to state that by

far the safer plan is to keep separate each breed of fowls intended to be used as stock birds; as it has been proved, beyond a doubt, that hens of different breeds, and animals of various kinds after the birth of half-bred offspring, ever afterwards manifested a tendency to produce offspring bearing traces of a first pregnancy.

The Pekin Ducks.

(To the Editor of the CANADA FARMER.)

These ducks elicited so many enquiries at the late exhibition of the Connecticut State Poultry Society, that all poultry fanciers, and farmers, who have good facilities for raising water fowl, will be interested to know something more about their good qualities, and history. They were brought to this country, from Pekin, by Mr. James E. Palmer, of Storrington, Ct., and landed in New York on the 14th day of March, 1873. Quite a large number were put on board the ship, but most of them died during the passage. Mr. Palmer succeeded in getting one drake and three ducks to his farm alive, but, of course, dwarfed by the long voyage. His attention was first called to them in China, by their large size. He at first supposed they were a small breed of geese. They recovered their flesh sooner than he expected, and, before he had suspected them of laying, he found a lot of their eggs in a small brook, running through the pasture where they were confined. The ducks laid constantly until the last of July, something over one hundred eggs each. Some of the eggs were sold, given away to friends, and set under hens. About fifty birds were raised. The eggs hatch in twenty five days, and the young birds are about one-third larger than the Rouens, when they first come out of the shell, and they grow more rapidly through the season. Mr. Palmer's largest pair at the exhibition, only five months old, weighed sixteen pounds, without any fattening, or special preparation.

They are clear white, with a yellowish tinge to the under part of the feathers, which are very thick, and downy. The wing primaries, and all of the flight feathers, are remarkably short, showing that they have long been domesticated, and are not disposed to fly much. They are very hardy, not minding snow, or rain, are easily kept in small enclosures, and only require a little clean water, and regular feeding to raise them successfully. Where they have a good run, they are excellent foragers, and will take care of themselves as readily as any other breed of ducks. They have large, yellow bills, and reddish legs. Their long, graceful necks, their white plumage, and remarkable size, make them pleasing objects, upon the water, or about the farm-yard, and lawn.

They have excited a great deal of interest among all poultry fanciers who have seen them at Mr. Palmer's farm, and were the leading feature of the State exhibition.

The *Hartford Courant*, in its notice of the show, says: "The most interesting event of the show, and of the year, in poultry matters, is the importation, by Mr. J. E. Palmer, of a new variety of ducks, previously unknown in England, or America. They are as much larger than the common kind of ducks as the Cochins, or Brahmas are larger than ordinary fowls."

A pair of the old birds, and four pairs of their offspring were on exhibition. The importance of this new acquisition to our list of water-fowl will be felt by all farmers, as well as fanciers. If they do for our ducks what the Asiatics have done for our hens, it will indeed be a great acquisition for the whole country.

Mystic Bridge, Ct., Jan. 3, 1874. W. CLIFT.

HEN'S TEETH.—"Scarce as hen's teeth." This is an old saw. Yet you should see to it, that your fowls are possessed of good teeth. Not natural ones exactly, neither artificial ones, but natural artificial ones, in the shape of gravel stones, with which they may triturate the food in their gizzards. Hen's teeth comprise no incisors, nor canines, but are all grinders. The flatish, or scaly gravel is not suitable, but a form approaching the spherical is to be preferred; if your neighborhood is not gravelly, blocks of granite, or quartz, may be reduced to irregular, angular fragments, which are excellent. Shells of the quahog, or round clam, pounded, save the double purpose of grinding, and affording a supply of lime for the formation of egg shells, and on this account are better than oyster shells.

Light Brahmas—No. 2.

The inexperienced fancier is frequently in doubt of the true contour of a perfect Brahma. He has a general idea of the form of all Asiatic fowls hanging mistily before his eyes, but if asked to describe a Brahma or a Cochins' true shape he will as likely as not confound the one with the other. Nor, is it the inexperienced fancier alone who finds himself thus awkwardly placed: many who undertake the position of judges of this class at our shows are but little if any better. Hence it is we see so many ill-shaped birds receiving prizes, birds which should be on the spit, instead of in the show pen. It is well understood by good judges that while the tail of a Cochin is as small, low and soft as possible, that of the Brahma should be nearly upright, of a tolerable size, containing a small amount of quill and with the top feathers spreading out. In the Brahma again, the plumage of both cocks and hens lie close and compact they being a hard-feathered breed, while that of the Cochin is of a loose or downy character, again, the Brahma while well furnished, has less fluff than the Cochin, and while square is not "bumpy" in make. The appearance of the Cochin is quiet and solid, that of the Brahma sprightly and active. The cushion in a perfect Brahma hen or pullet should rise more and more and more, until it merges harmoniously into the nearly upright tail, while that of the Cochin hen is almost globular in form. The breast too of a good Brahma is deep and full, with the crop low down, thus contrasting directly with the shape of the Cochin in which breast is greatly wanting.

Other differences in shape there is which will present themselves to the eye of the fancier, and to make them more plain we reproduce from the English *Journal of Horticulture* a few illustrations of Light Brahma pullets furnished that journal by Mr. Wright, carefully recommending them to our breeders here.

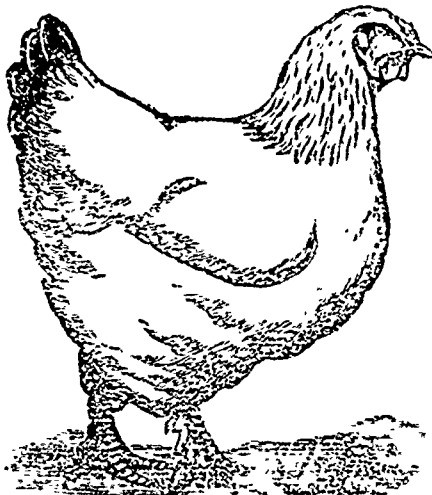


Fig. 1.

In alluding to a former article, on shape, size, and feathering, not being incompatible in the same bird, he now adds "that the foundation of all real improvement, must be correct shape, and hence wished more particularly to explain what he meant by "duck" shape as contrasted with the true contour of the Brahma "pullets" should have a good fluff and a broad and ample cushion—neither of course so full as in the Cochin, the Brahma being properly a much closer feathered bird, but a good cushion there should be, broad over the tail, but

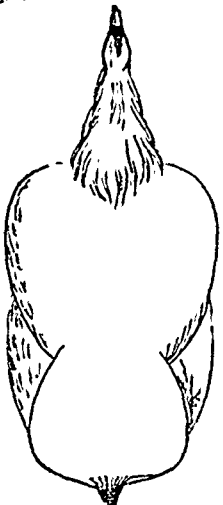


Fig. 2.

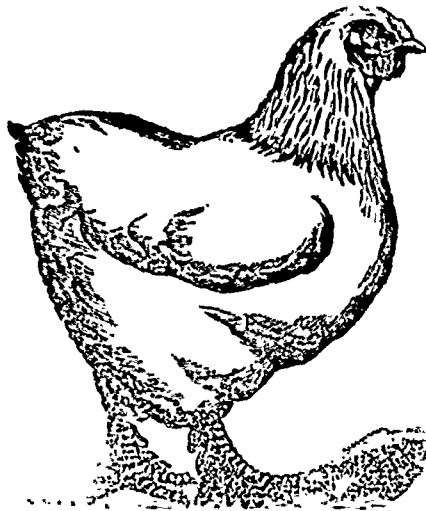


Fig. 3.

rising more and more to the very last, where it merges harmoniously into the line of the nearly upright tail, such an outline is presented in the diagrams figs. 1 and 2, and which represent the true shape as it exists in high class birds.

"But in looking at any light class of pullets we shall find many birds which fail utterly to conform to this type. There are duck birds, too, which fail in it, as I freely admit; but while I myself exceedingly object to such taking prizes, it must be remembered that whenever they do there is almost always extraordinary penciling, which catches the judge's eye and condones the fault in shape, while the white of the other class affords no such counterbalance. Still, the fault is at least three times more general, as I carefully noted at London and Birmingham, than in the dark classes and the sketches (figs. 3 and 4), were made from a pullet, which was a fair type of about fifty single pullets in the class. In some there is literally no cushion at all, but in others as in my sketches, it appears to start out well over the wings. But as the early promise is not kept; as it gets towards the tail it becomes narrower and narrower, so that viewed from the top the pullet appears widest across the shoulders and gradually tapers off to the tail, giving the bird a triangular instead of that square compact shape which the other type presents. Looked at sideways the same fault will generally be found. In place of the rising Brahma cushion and nearly upright tail, the little cushion there is starts up too freely, and then gradually droops, the tail itself being nearly horizontal. Of course, in some cases, the tail will show from the top and not from the sides, or vice versa, but the two as drawn commonly go together, and are what is meant by "duck shape," being analogous to the formation of the Aylesbury Duck. In the cocks, the same fault will be found. The saddle may start well, but gets narrower over the tail, or does not form a nice rise to it, and the whole bird is narrow behind. Broad-saddled cocks are more numerous this season, as I was glad to observe, but are still much more rare than in the dark classes."



Fig. 4.

A boy eight years old, in one of our public schools, having been told that a reptile is an animal that creeps," on being asked to name one on examination day, promptly and triumphantly replied "A baby."

Dressing Table Fowls.

Very little attention is paid to the dressing of table fowls; farmers too frequently kill badly, and pick badly, tearing the skin off the body in large patches; the fowls are then thrown into a large box, or barrel, without any attempt at arrangement, and when offered for sale in the market offer a very distasteful appearance. With a little care, and additional labor, this would be obviated, and the extra price received would more than pay for the extra labor bestowed. Farmers' wives who bring to market butter made up in handsomely-devised prints, or in neat rolls, folded in clean cloths, will, at the same time, bring a box crammed full of all kinds of poultry, pressed into shapeless masses. This is not so much attributable to carelessness, or negligence, as to a want of knowledge of how to pluck and dress fowls for market, or table. Where so much attention is bestowed upon the dairy, it is but reasonable to suppose a share should also be given to the poultry-yard.

All fowls, before being killed, ought to be fasted for at least fourteen hours, so that the crop may become quite empty. Food in the crop at the time of killing will very soon ferment, and if much time is allowed to pass before being opened, the flesh is likely to be injured, especially is this the case during the season when fowls are plentiful, and purchased in large quantities by poulterers, kept in dark cellars, and then resold for family use. There are several ways for killing fowls highly recommended. Mr. Soyer recommends breaking the neck, which is done by taking the head in the right hand, with the thumb against the back of it, seizing the neck with the left, the same arm supporting the fowls; then a quick jerk with the right hand, turning the thumb downwards, separates the vertebra, but it takes rather a strong arm to do it. The same object is attained by wringing the necks, as it is usually called, which is done by taking the fowl in the right hand, and swinging it round by it. If properly done, one swing will dislocate the neck. Another method is to strike a sharp blow on the back of the neck with a stick. The French mode, we think a very good one, as it causes nearly instant death without much pain or disfigurement, and is done in this way: Open the beak of the fowl, and with a sharp-pointed, and narrow-bladed knife, make an incision at the back of the roof, which will divide the vertebra and cause immediate death. In this case, the fowl should be first banded, to prevent struggling, and hung up by the legs. Many persons cut the head clean off, in which case the skin should afterwards be drawn neatly over the stump, and tied.

Poultry should be plucked while still warm, when the feathers will be removed with much less difficulty. This method is called "dry-picking." There is, however, one objection to this system; it does not improve the appearance, although it does the flavor, but, while cooking it will "plump up," and come out of the oven looking much finer than when it went in. This method of killing for family use is much preferable to the usual mode of scalding the fowls before removing them; the fowls will also keep much longer. Another plan is, after the fowl is dry picked as above, plunge the carcass into a vessel of boiling water for a few moments, which will plump it a great deal, and make the skin look bright and clean. This greatly improves its appearance for market. After scalding, turkeys and fowls should be hung by the legs and water-fowl by the neck until thoroughly cooled. It may not be out of place to remark that, if after scalding the fowl, the cavity be filled with charcoal broken in small pieces, it may be kept sweet a considerable time. Aged poultry will be much improved if let hang for ten days, when the weather permits, drawn and filled with charcoal as above-mentioned. It then has banded, and the cooking finished by fire, they will be found much more tender than if the roasting process alone be employed.

Poultry killed and plucked, as already described, are now ready for market. The next thing, then, to be done, is to pack them into proper boxes, first seeing that they are thoroughly cooled. Provide a box, and place in the bottom a layer of clean, straight straw, thoroughly cleaned from dust. Commence in this way: Bend the head of the fowl forward on the breast, the legs straight, and the wings neatly folded on the sides, then lay it in one corner of the box, with the head against the end, and back upwards. Continue to fill this row in the same manner, until completed. Begin the second row in the same way, letting the head of the bird pass up between the rumps of the two adjoining ones, which will make it complete and solid. In packing the last row, reverse the order, placing the head against the end of the box, letting the feet pass under each other; should there be space left between these two rows wide enough to lay in a few sideways, do so, passing the feet under the same way; but if it should not be wide enough, then fill tight with straw, so the poultry cannot move. This gives a uniformity of appearance, and a firmness in packing that will prevent moving during transportation. Over this layer place straw enough to prevent one layer coming in contact with another, then add other layers packed in the same way, until the box is filled. Care should be taken that the box is filled tight, in order to prevent any disarrangement of the contents; for should they become displaced, the skin may become disfigured, and the value of the poultry depreciated. When extra care is needed, put paper over each layer before placing the straw on it, this prevents dust from settling on the poultry, and their cleanliness adds much to their appearance.

The age of plucked fowl can be judged simply by the legs. If the scales on the leg of a hen are rough, and the skin hard, it will not be necessary to see the head to determine that she is old. Still the head will corroborate your observations; if that of an old hen, the bill will be stiff and hard, and the comb rough and thick. The scales on the legs of a young hen are smooth, glossy, and fresh-colored, whatever the color may be; only the rudiments of spurs are observable, the claws tender and short, the under bill soft, the comb thin and smooth. An old turkey has rough scales on the legs, callousities on the soles, or bottom of the feet, and long, strong claws, while a young turkey has the reverse of these marks. A young goose, or duck, can be readily told by the tenderness of the skin under the wings, the strength of the joints of the legs, and the coarseness of the skin.

"Blood" in Breeding—What it is, and what it does.—III.

Mr. Wright concludes this subject, with the following article, which we take from the *Poultry Bulletin* :—

"In my last article, I tried to make it clear, that the only way to ensure breeding any particular point was to select stock in reference to that point for many generations repeated, *without breaking any link in the chain*. To break one link is not necessarily to destroy all the work previously done, but it always destroys much, and hence we see the evil of choosing a bird one year to correct one fault, and then flying off to another, and so on. The practical application of all this to what a breeder *should* do is to be my subject now.

The most obvious preliminary to doing anything, is to consider the comparative ease, or difficulty of obtaining any given point in what is considered a perfect degree, and the very moment this question comes to be considered, it is seen that different points vary in this particular very widely. In going again to Dark Brahmas for an illustration, let me say at once (because an English journal has just misrepresented my first article in the *Bulletin*, most grossly, taking care, however, not to quote it), that I do so simply because I understand that breed best, and am most at home with it, but the same principles will apply to all other breeds. Well, then, taking some of the principal fancy points of a dark Brahma hen,

it will be found that a small, and straight comb is decidedly difficult of attainment, and that perfect pencilling, free from brown, and streaks, but showing distinct semi-circles up to the very throat, on the breast of pullets, is very difficult, indeed, to obtain in any large proportion. But, on the other hand, such a point as leg-feather can be modified with the greatest ease. If the hens be almost bare-legged, a single heavily hocked cock will breed at once a great proportion of chickens perfect in this respect. It will be found, too, that shape, though not influenced quite so quickly, is yet easily modified; so that a lot of long, narrow hens, if mated with a very short, broad cock, will breed a good lot of chickens, leaving nothing on the score of width to complain of. And it will be found, too, that size, if lost, is readily restored in the produce, even of small birds, by breeding at the best seasons from mature hens, and good feeding. We might examine the points of the cock in the same way, but the hen will answer my present purpose.

If, now, I have been intelligently followed, I think the course of a breeder will be plain in starting to breed for dark Brahma pullets. He finds that two points in the breed—comb, and pencilling—demand great attention, and care, while others he can at any time quickly obtain by using special means adapted to produce them. He must, therefore, concentrate his chief attention on these points, and keep it on them, paying such heed as he can to others by the way, but never losing sight of these. He will provide, at least, two yards, that he may not have to cross too soon, and will stock them with hens perfectly pencilled up to the throat. If he can only afford two such birds, better have them than a dozen even a little inferior; for thoroughly first-rate pencilling at first, will save no end of trouble after. If, besides these two hens, two cocks with the necessary pullet-breeding qualities can be secured, I would make up two pens, with one hen in each pen, putting more hens of some other breed, to make up a judicious number. And if one of these cocks, besides the necessary pullet-breeding points, has the fine, wide saddle, straight, small comb, and glossy black breast of an exhibition cock, from such birds every egg should be set, and from no others. Most people would add inferior Brahma hens to make up their pen, and I wish to point out the folly of this. If the cock be a good pullet-breeder, it is very likely that there may be from these inferior hens some small proportion of really well-marked pullets. Well, is not this clear gain? No; most emphatically no; it is a *dead loss* from a breeding point of view. If these birds be bred from, they "throw back" to the inferior parent, and much time is lost; therefore a pen should only be so made up that the amateur can ensure the parentage of every chick being known. If he can be sure of this, he may then add to his pen; but should only use even the good chickens which come from these inferior birds to exhibit, and sell, on no account to breed. Unless he can ensure knowing every chick from the best pen, he had far better put in hens which lay white eggs, or whose chickens, if hatched, he can make no mistake about. Of course, if more than two hens, of proper quality, can be obtained, so much the better; but the grand point is, be they few, or many, to breed for pedigree purposes only from well-pencilled birds.

By following this plan, the very first season there will be some small number of really well-pencilled pullets. How many will depend on the pedigree of the hen, or hens from which they were bred; but I never knew a hen really well-pencilled that did not breed a few chickens as good as herself. In some cases there may be as many as a fourth of the pullets well-pencilled, even up the breast, the very first season; but this will not often be the case. If it would, the cock which bred them should be treasured with peculiar care, as he is sure to have better qualities than ordinary. Then, in the fall, next year's mating has to be considered. From the produce of each hen a few of the very best pencilled birds are to be selected, choosing good size, and feather, also, if possible, but sacrificing leg-feather unhesitatingly, unless the well-feathered birds are really well marked. In choosing them, let attention also be paid to the combs. If only one or two birds can be found which have first-class marking, and also possess good combs, and fair size, and feathering, let them not be sold at any price. The pullets thus selected may be mated either with (1st) their own father, and if he has bred many good pullets, this is a good plan; or, (2nd) with the cock from the other pen, and if he has bred many good pullets, this is a still better plan; and (3rd) with a cockerel from the other pen; and it will be best, by using all these changes, if there are good birds enough, to make up this year three or four pens, by which crosses enough can be kept up for several seasons without much injury. This second season of breeding, the propor-

tion of well-marked chickens will be very fair, almost certainly reaching one-third of the total number. Out of these, therefore, stock enough can be got to select also good combs, size, and other matters. Here is the advantage of concentrating attention on the one most important point. We have now, even in the third generation, secured it in a fair degree, and *without dropping it*, can find enough birds to select for other points as well, to a moderate extent. The cockerels also, will be now amenable to selection, for amongst these, which are evidently good pullet breeders, there will be one or two approaching the exhibition type, and such are to be selected, with a view to form a strain which shall breed both sexes good. This last is always a work of time. It is much more difficult than to get a strain that will breed one sex, and can only be attained gradually, and by degrees. It must be sought in the same way as the other secondary points, that is, never sacrificing the cardinal ones, or putting a *coarse* pullet-breeding bird to a pullet breeding pen, because he is a better show cock, but only choosing amongst the good pullet-breeders, those which are best in the desired secondary respect; and, in the same way, always choosing a good show cockerel to breed cocks, but choosing from such a one in the yard, those best adapted to breed pullets. The next season the proportion of pullets beautifully marked will be fair indeed, and there will be no difficulty in picking from them the required few, which are fair in comb, and on other points as well; but I hardly need pursue the subject further, for what I mean will be fully understood. By thus keeping attention steadily fixed upon the one or two points most difficult of attainment, and, therefore, most important, that point not only becomes at last so fixed, and certain, that the greater part of the birds will show it well, but, at last even some little departure from it may be risked for the sake of other points. This must, however, always be done as a risk, and only to a small extent, never breeding from a really badly-pencilled bird for the sake of a beautiful comb, but only allowing a bird one or two degrees inferior to the best to be used. And there will never be necessity for more than this, since at length there will be such a large number of pullets well-pencilled, that every other desired point may be secured, without having to put up with any short-coming in this respect. Leg-feather may be left till last of all, if necessary, since a hocked bird will give this at any time.

So much for dark Brahmas; but the same principles will apply to other breeds. Every variety has some point, or points, which demand long breeding, and patience to acquire, and on these should attention first be fixed, and kept there, gradually giving attention to others, *not by turns*, but just as fast, and no faster, than the increased number of birds good in the first point, and, therefore, admissible to breed from, enables selection for the second, and subsequent points to be made. In this way every year will show a sure, and steady improvement in the proportion of birds fit for exhibition; and, after the first two seasons, that improvement will be so rapid as to be almost beyond belief. One thing, however, is obvious. The best birds, from the breeding point of view, must never be sold, but kept for the breeding yard; for a man cannot reasonably expect to make any marked progress who is constantly selling what represents nearly all the ground he has gained. And, on the average, this will be found not to sacrifice anything, even in the shape of sales, since it will frequently happen that the birds nearest to a show standard, and, therefore, the most saleable, and valuable, merely for show, or sale, are not those to be kept for breeding during the early stages. For instance, going again to our Brahmas, we have seen that the birds to be kept are the best pencilled, even if at first these birds want feather, and some other points. But the best birds for show, at this stage, will probably be those which are rather worse in color, but better in the general average of points. Later on, when higher degree of perfection is secured, the best for breeding will also be best to show; but by this time the amateur will have plenty both to breed from, and to sell also.

I do not wish to be dogmatic, but these are the principles which my experience has taught me will infallibly lead to the formation of a strain, or of "blood" that will "tell" in breeding to an extent many poultry fanciers have little idea of, though it has been proved to a demonstration in the Short-horn tribes. I only add one remark in conclusion. I have spoken of "pullet-breeding" qualities in cocks, and vice versa. These points in one sex, which tend to breed perfect points in the other, are very important to ascertain, and this can only be done by experiment. If you have a yard which breeds nearly all the pullets good, you can tell from the cockerels bred along with them what a pullet-breeding cockerel should be,

though discrimination is necessary. The same of the other sex. As a general rule, wherever depth of color in the hens is wanted, you also want it in the cocks; thus the cock for breeding a rich partridge colored, black-breasted, red game hen, is darker considerably than the shade most admired—at least in England—for exhibition cocks. In such cases it is difficult to breed both sexes from the same birds, as either the hens come pale, or the cocks too dark; but often, by perseverance, the very fashion can be changed, and a half way shade for both be brought into favor with the judges, so as to remove the difficulty. There is no "finality" in these things, and a strong marked individuality will always, in time, impress itself upon a strain, so that fowls of the same breed, from two breeders' yards, will show differences arising from the different ideals each has followed, quite perceptible to an educated eye. But on such objects I need say no more to the intelligent fanciers of America.

Why My Hens Lay.

Having had unusually good success in getting the full quota of eggs from my poultry, I am frequently asked what I do to persuade the birds. I have no very extraordinary method but simply apply two very plain common sense rules to the case. The first of these is based on the fact, that the hen, as far as egg-laying is concerned, is simply a machine, and as a machine must be kept in good order to accomplish its work properly, so the hen must be kept in good condition if a constant yield of eggs is desired. A cold, hungry, half sick hen cannot be depended upon for eggs. The second rule, is that the egg shell, yolk, white, etc., is composed of a variety of materials so the hen must have a variety of food out of which to manufacture the egg.

A good condition of the machine and a proper supply of material for the manufacture is the ground work, the particulars would probably vary under different circumstances. Living as I do in close proximity to neighbors, I am obliged to keep my hens confined through the very season when their instincts lead them to rove and therefore I am obliged to carry to them many things which in other circumstances they would get for themselves. Almost daily, through the summer, I cut them an armful of grass or pull them a barrow load of weeds. They need this green food, and were I a farmer, with plenty of cabbage leaves, they should have a taste every two or three days throughout the winter. The good wife would be willing to attend to this for the sake of an abundant supply of fresh eggs. I have stated that I keep my hens confined but they have a fenced yard to run in some 15x30 feet into which yard is thrown the droppings from the horse stable which they thoroughly pulverize. I also dig up a strip of this yard at intervals of a few days through the summer, thus giving them fresh earth in which to exercise their instinct for scratching and a wallowing place as well. I doubt if any number of fowls can be kept in good condition without access to earth. I fill several boxes or half barrels of air slacked lime standing for years in the hen coop and found it an excellent preventive of lice. Further I have a load of clear sand hauled on to my premises just at the edge of winter and occasionally throw a few shovelfuls into their winter quarters. This gives them the grindstone's without which they cannot digest their grain.

My winter quarters for them are not as large as they ought to be, being only 12 feet square for from 20 to 30 fowls, but they have the run of the yard whenever the snow does not forbid. Instead of cleaning out these quarters weekly or oftener, as is so often recommended in the books I occasionally throw a few shovels of earth (from the boxes before mentioned) over the droppings. Their quarters are not as warm, as I should provide, were I to build a house expressly for them but I have two large windows in the south and east sides (discarded sash from an old house) which gives them all the benefit of the sun's warmth and makes up for considerable lack of batten-

Cold weather is the trying time when most people complain that their hens do not lay. It requires more attention to the fowls to get eggs in winter than in summer but they can be had. Give them sunlight and keep them warm, in the first place and secondly give them varied food.

I feed principally corn through the winter but vary it with wheat, oats, buckwheat, potatoes and meat scraps. Part of the corn I feed whole and a part I have cracked or ground into meal. I prefer the cracked. I feed whole grain at night and the ground in the morning on the principle that through the long night they need something that will stand by them, that having digested all their night's feed by morning they need something that they can act upon quickly. For the same reason in the very coldest

weather, when I go out to give them their morning's feed, I carry a basin of warm water, from the teakettle, and wet up their dough with that. It will warm them quickly and make them feel comfortable, an essential as I have before said to a supply of eggs. The wheat I feed is screenings which can be had at any feed store probably.

Mashed potatoes fed warm are just the vegetable food they need, and were I on a farm I should carefully husband a few bushels of the small potatoes for this purpose.

The meat scraps I buy of the butcher in large cakes and I believe it is as cheap as corn, while it answers a purpose like that of the bugs and worms of the summer.

A very important part of the egg is the shell, in fact, an egg without a shell don't amount to much. And unless the hen has material for the shell the other preparations are void. In winter the hen has little chance to secure shell material for herself and hence it must be furnished her. I have found the simplest way to be this: Occasionally I throw a handful of bones on to the coals, clear them a little, pound them fine and mix them with the feed. If bones are not to be had oyster shells may be served the same way.

The tendency to set is a troublesome one out of its proper place, but this difficulty which seriously annoys some poultry keepers, is easily obviated. I have a large covered coop in the yard into which, as soon as I find a hen inclined to set, I put her with a rooster, feeding her liberally and with a variety of food, hells, bones, etc. A week of this treatment will cure her every time and usually set her immediately to laying again.

I find the white Brahmas the best in many respects but they are too heavy, often hurting themselves in flying from the roost, breaking eggs internally, etc. To remedy these defects, I cross my Brahma hens with a Houdan cock and yet a lighter fowl than the Brahma, and good layers, not so often inclined to set, and not so good for the table as the pure Brahma. For the latter purpose the Brahma is unequalled. I can put two pounds more flesh on to a Brahma at seven or eight months old than on to any breed I have ever fattened.

I presume the above details will seem too fussy and too much trouble to many, and any one, who does not consider a full supply of fresh eggs all winter worth a little extra trouble had better let poultry alone. But there is much less trouble than you imagine my friends. It is just as easy to have three kinds of feed as one if you think so. It is but little more trouble to wet up a dish of meal than to throw the hens whole corn. To boil potatoes and pound bones, is a little trouble, but a dozen times during the winter will be enough and will pay well. To throw in a few shovels weekly is certainly not an exhausting task and it is worth while. It pays.—C. W. Dickerman, in *Ex.*

Polygamy in Pigeons.

Pigeons, say the various treatises, are monogamous, and the rule thus positively stated, I have hitherto regarded as being one which did not admit of an exception. There is, of course, the well-known proverb that there is no rule without an exception, but as regards the monogamous nature of pigeons, I have never, until this year, met with an illustration of the truth of the proverb.

I do not attempt to speak of the experience of other pigeon-fanciers in the matter; but my own experience has been that, although, if they have not been properly mated, two birds will sometimes "break pair," as it is said, and each bird take to itself a new partner of the opposite sex, the male bird of a pair properly mated will not associate himself with a second female partner, and at the same time continue to consort with the hen with which he was first mated. Such, I say, has hitherto been my experience, but I have this season met with what I believe to be a remarkable exception to the rule in question, and as a statement of the facts may interest some of the readers of "our journal," I will endeavor to give a short account of the case.

I may begin, then, by saying, that I became possessed a short time since of two pairs of tumbler pigeons, one a pair of black short-faced, and the other a pair of blue long-faced tumblers. These two pairs of birds were placed together in the same house, but apart from all other pigeons. They had not been more than a few days together when I observed that the black hen took but little notice of the invitations made to her by her own partner to enter a nest, whilst she seemed much attracted by the attention showed to her by the blue cock. This state of affairs was immediately followed by the blue cock beating off the black one from the companionship of his hen, and by his driving both hens to nest most

persistently. In a very few days two nests were made in two separate corners of the house, and a pair of eggs was laid in each nest. Both hens commenced sitting, and during the period of incubation I believe that the blue cock regularly took his turn on each nest, for I repeatedly saw him setting first on one nest then on the other. I should mention that from the time the two hens were first taken charge of by this bird, I have never seen the other bird even approach his own hen, or attempt to enter her nest; nor have I ever seen him attempt to pair with the blue hen, so there could not have been a change of partners.

Now for the hatching. The eggs laid by the blue hen were, during my absence from home, injured by some means; but I ascertained from examination of them that each contained a bird. From the eggs laid by the black hen two birds were hatched, which lived until they were about three weeks old. Both birds were blue, so that their parentage on the male side may be regarded as fully established. The cohabitation of the one cock bird with the two hens did not, however, end here, but has continued down to the present time. Somewhat more than three weeks ago the two hens went to nest, each again sitting on a pair of eggs. On this occasion, as on the former, the blue cock has, I believe, regularly taken his turn of sitting on both nests. All the eggs, too, have again proved fertile, two birds having been hatched from each pair of eggs. One pair of these young birds I have been under the necessity of shifting to the care of nurses, a circumstance which I regret, as I should have been glad to have observed how the one cock bird would have managed with the two pairs of young ones claiming his attention at the same time. The foregoing is as I have already indicated, the only case of the kind that has come under my observation in any way; but perhaps other readers of the *Journal* will state what their experience has been.—R. W., in *Journal of Horticulture.*

Milk for Hens.

We have generally had very good success in inducing our fowls to lay in winter, but an acquaintance has for three consecutive years bent us at that game. This season he has been doing it with our own fowls, that is, with pullets procured of us, showing that it is management, and not breed that must account for it. We have visited his farm-yard repeatedly, and made observations, and he is very frank in describing his method, and the result is, we are convinced that an ample allowance of skimmed milk is all the magic there is about it. His fowls roost in a lean to, which is not only on the north side of the barn, but is not especially tight either. The only chance they have for sun is free range out-of-doors, and the run of several long sheds, which, though facing the south, are unglazed, and entirely open on that side, and so high that the birds may be said to live day and night in an atmosphere nearly as cold as an open field. We mention these particulars to show that we are not to look to warm quarters for an explanation of the prolificness exhibited. We add, that they do not lay on account of being hatched extra early, but on the contrary, they came off last May. They commenced laying in October, and have been at it ever since, to the astonishment, if not the envy, of the neighbors of the fortunate owner, who has been selling eggs for the past four months for forty-five cents per dozen, and upwards. Not one particle of meat, or scraps is given, and but the veriest trifle of vegetable food is fed in the shape of a few boiled potatoes, about once a week. Abundance of grain is allowed, of various sorts, ground, and unground, but never cooked, and plenty of unburnt oyster shells, pounded, are at all times accessible. They have a pailful of skimmed milk every day, so that they can help themselves to all they want, no other drink being provided.

Now, there are other fowls, and plenty of them, on hundreds of farms, of just the same breed as those of our friend, and of the same age, which are allowed just as good rations of grain, potatoes, and powdered oyster shells, and just about the same sort of buildings, and range, that do not lay from October to February. Moreover, it is not during one exceptional season that this has been done, but, as we have said, it has occurred year after year. We are satisfied that it is the milk that accounts for it. Skimmed milk, and the whites of eggs are very much alike, and, though the cream has been separated, undoubtedly the full allowance of Indian corn supplies the only constituents of the yolks. Some farmers think they cannot afford to give milk to hens, but must save it for the pigs. But if skimmed milk is worth 12 cents a quart, to feed to swine, as some claim, it is worth 3 cents for poultry, if, by its use, winter eggs can be obtained, and sold at high prices.—*Poultry World.*

Correspondence.

How to Make an Ice-House.

(To the Editor of the CANADA FARMER.)

SIR,—Ice-houses are certainly a *seasonable* topic at present, and if the luxury of ice is to be enjoyed next summer the preparations must be made now. Very few farmers think that they can afford the time and trouble necessary to secure a supply, imagining it to be too expensive for them, and that only denizens of towns and cities can have it furnished at a large outlay of money, but I can assure your many readers that no one need be without an unlimited supply of purest ice, and at an expense so trifling as to be within the reach of all.

No excavations are needed, nor double walls with expensive roofing for an ice-house, any out-house, however cheap, may be used. In fact for two years, I have used a part of an outer wood-shed, and my ice has kept perfectly.

Now, for the manner of storing. Sprinkle the earthen floor with saw-dust, and you are ready for operations. Saw the blocks of ice as large as can be conveniently handled, and as nearly square as possible. Place them neatly together, leaving a space of ten, or twelve inches from the boards. Light felt, by ten or twelve feet is large enough for an ordinary family. When one layer is completed, fill all the cavities with pulverized ice, then place another tier, and so on until your block is four or five feet high. Then enclose the remaining two sides, leaving, of course, the space from the ice. This fill with saw-dust, covering the top the same depth, and your work is completed. This may seem too simple, but experience has taught me that a building through which you can "throw an old hat" is as good as one costing hundreds of dollars. Try this plan, and next July your gratitude will be so intense as to lead you to acknowledge that I deserve a "leather medal" for my suggestion.

Yours respectfully,

Burford, Jan. 7th, 1874.

E. Y.

The Sparrows Indicted.

(To the Editor of the CANADA FARMER.)

SIR:—An article in a recent newspaper states that "everybody knows how much good is done by little birds in the removal of noxious and troublesome insects, and that the English sparrow is the most active and unsparing of the insectivorous feathered tribe." I bear no malice against the sparrow family for past injuries, and would not say a word against them, but for the attempt to introduce them in this city under false pretences. Everybody who knows the history of the tribe, knows them to be most audacious thieves and robbers, and I have yet to learn that they have one redeeming trait in their character. Their admirers may possibly say that they have reformed, and now use the same kind of food as the robin, red-belted, hedge sparrow, tit-lark, and other insectivorous birds. But no faith should be placed in any change so long as they retain that terrible strong bill, which will thresh an ear of wheat, or rip open a pea pod, as quick as thought, which other small birds cannot do, being provided only with a slender, delicate bill, suited like that of the roguish sparrows, to their own particular wants.

These active and unsparing thieves commence their depredations with the gardener, in the spring, by stealing the seed from the beds, and ripping them up as they begin to sprout. Owing to this, peas have sometimes to be sown two or three times over. As soon as the currant and gooseberry bushes begin to blossom, the sparrow may be seen actively engaged, not in destroying insects, as some innocent people believe, but enjoying the luxury of the fruit in embryo, and destroying as much in one meal as would produce a quart or two when ripe. Green

peas are a great treat to them, and they claim most of the early crops. Not contented with a fair share, they seem to take a malicious pleasure in destroying about ten times the quantity they eat. The farmer has a still more serious charge. He has to employ boys to prevent them stealing the seed grain when scattered in the land, and as soon as grain is formed in the ear, scare-crows have to be placed in the fields, boys again brought into requisition, with rattles, to keep them off the standing crops, and in spite of all precautionary measures, they cannot be prevented from doing an immense deal of harm, as a small flock will soon destroy an acre of wheat, or any other grain. It is most fortunate that forty-six out of the fifty of these pests, that were intended to be let loose here, are not likely to do any further damage, and to prevent what may become a great public nuisance, a premium should be offered for the heads of the four let loose at the Union Station.

If Mr. McMurrich, or any other enthusiastic admirer of the tribe, can refute the serious charges I bring against them, and can show that they have been made through malice or ignorance, I will readily acknowledge my error, and give a hearty welcome to as many as may be introduced to our shores.

COCK ROBIN.

[NOTE.—The above communication has been mislaid for some time, for which we owe the writer an apology. We shall be glad to hear from Mr. McMurrich, or from such ornithologists as Hon. G. W. Allan, and J. Campbell, Esq., if they have any defence to offer in reply to "Cock Robin's" grave accusations against the sparrows.—Ed. C. F.]

The Canada Farmer.

TORONTO, CANADA, JANUARY 15, 1874.

Farmers' Clubs.

Whether or not it is inevitable in a new country, where almost every one is busily engaged in striving for the means of subsistence, and where, at best, the struggle for wealth is a paramount object, that intellectual life should suffer, is perhaps a question on which all will not be agreed: yet it will generally be conceded that a too eager pursuit of riches, or an unrelieved bondage of toil for daily bread, are not conditions favorable to intellectual growth and enjoyment. Where this unvaried drudgery is moreover comparatively isolated, where each one is wrapped up in his own pursuit, and rarely comes into collision with other minds, a degree of stagnation of the mental faculties becomes the more imminent. On this account, the farmer is placed somewhat at a disadvantage, and if he would assert the true dignity of his calling, he must stir himself to resist the adverse phases of his lot, or rather bend the circumstances of his position toward his truest and highest advancement.

That there is nothing in his avocation really inimical to intellectual advancement, is evident from the character and attainments of many who have made agriculture the business of their lives. Take, for example, the better class of tenant farmers in Great Britain, and it will not be easy to find a more intelligent class of men. There is no reason why the same should not be said of the Canadian farmer. The spread of education in the land, the establishment of Agricultural Schools, and Agricultural Societies, and other general agencies, all tend to raise the class that is at once the most numerous and important in the country. But after all, it is the farmers themselves that must determine their position, and this by united as well as individual effort.

Among the means of promoting intellectual improvement, few are more useful than a well conducted Farmers' Club, and it is gratifying to observe that these institutions are being multiplied in the country. In another column will be found a report

of a meeting and discussion of the Hamilton Township Farmers' Club—one of the oldest in Ontario, and still kept up with tact and energy, and the meetings of which are almost always interesting and instructive. We are at all times glad to receive such communications, and shall cheerfully give insertion to condensed reports of a similar character from other places.

The constitution and character of these associations have so often been explained, that it is needless to refer to the subject at any length. Some authorities recommend that to render them as little formal as possible, there should be no essay read, or set speaking, but that neighbors should meet, perhaps, at a public house and talk together about their affairs. Now, this does not appear good advice. The "talk," under the circumstances, would hardly be profitable. The plan adopted by the Hamilton, and other successful clubs, seems far preferable—namely, that the topic of discussion should be pre-arranged, and that some person should be responsible for opening the subject—either by a prepared paper, or by an extemporaneous address, at his own option. Variation of procedure, to remove formality, and give a social character to the meetings will readily suggest themselves according to the circumstances of the neighborhood. Winter is the farmer's period of comparative leisure, and perhaps the only season during which such meetings could be held. We hope to chronicle a large increase in the number of these pleasant associations.

THE BUSHEL OF WHEAT.—If there is anything we have more faith in than all others in Canada, it is in our wheat, and it is of importance to every one to know what properly to do with this valuable grain. We have all our lives known that a bushel of wheat weighed sixty pounds, until lately, when a new order of things has obtained. Several grain-dealers having opened up a correspondence with the Department of weights and measures, at Ottawa, on the subject of the Cental Sec. 5, Cap. 47, Vic. 36, Dominion Statutes, and its effects on commercial operations, the Department writes to Mr. G. P. Dickson, Inspector of weights and measures, in this city, as follows:—"That although no special penalty is provided against making contracts, or delivering articles by the bushel, still such contracts would be illegal, and could not be enforced. And further, that a bushel of wheat, even if specially mentioned in an agreement under sub-section 2 of the Act quoted above, would not mean sixty pounds (60 lbs.) as heretofore, but only a bushel of capacity—namely, 2,150 42-100 cubic inches—and so of all the other articles mentioned in the section above referred to."

BINDING VOL. X. CANADA FARMER 1873.—Messrs. Brown Bros. of this city, are now prepared to bind the Canada Farmer for 1873 in cloth embossed and lettered, at fifty cents per volume. Parties wishing to avail themselves of this offer will forward their numbers to the Messrs. Brown Bros. direct, and not through the office of the Globe Printing Co. as heretofore.

TRANSACTIONS OF THE NEW YORK STATE AGRICULTURAL SOCIETY.—The Annual Report of this society, contains a condensed account of the year's transactions, and several valuable papers, forming altogether a goodly octavo volume of more than 800 pages, is of more than ordinary interest and value.

VICK'S FLORAL GUIDE for 1874 is before us, replete with useful information, and blushing with beautiful illustrations. No Florist should be without it.—See Advertisement.

GREGORY'S SEED CATALOGUE.—We are in receipt of James J. H. Gregory's annual Catalogue of vegetable and flower seeds, which, as usual, comprises a full list for every department of the garden.

Horticulture.

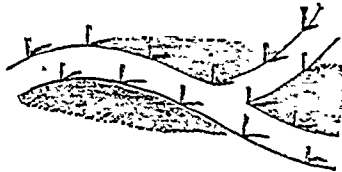
EDITOR—D. W. BEADLE, CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Laying Out and Planning Curved Walks.

"A few suggestions on the improving of grounds and the adornment of rural homes, I think, will be useful, and prevent a great many inquiries that I am unable to answer satisfactorily by letter, especially in the business season.

In the first place, I would remark that the space in front of the house, and generally the sides exposed to view from the street, should be in grass. No arrangement of beds, or borders of box, or anything else, will look so neat and tasteful as a well kept piece of grass. It can also be kept in better order at less cost than in any other way. Mixed beds of flowers or shrubbery in the most conspicuous part of the garden is always unsatisfactory. Get a good plot of grass, and good, dry, neat walks, and all other things will soon follow with but little trouble."

"Make no more roads than are absolutely necessary, as many walks divide the lawn too much, especially when small, and greatly disfigure it. Of course there must be a bold walk to the front door, and one passing from this to the rear of the house, and in general no more will be necessary. These should be made in the most convenient places—in the place that one would naturally walk in going from one point to the other.



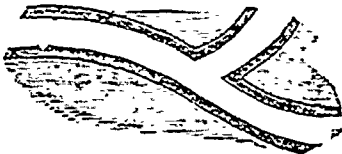
1—Walk Staked Out.

"If the ground to be improved is only a small lot, it can be done best by the spade, and it is not well to endeavor to do it with the plough. In that case, mark out the walks first. Do this by setting up little sticks on the line you design for the road, as shown in the above engraving, changing them until you get just the curve that seems graceful and pleasant to the eye. Put a row of sticks on each side of the road, measuring carefully so as to get the width equal. Another plan for securing the desired curve to walks is by the use of a stout line as shown in the second



2—Locating Walk with Line

engraving. Next, remove the earth from the walk to about the depth of eighteen inches, using it to fill up any low places. The walks now, of course, have somewhat the appearance of broad ditches. All stones found in digging or ploughing should be thrown into the roads, and often sufficient will be obtained to fill within six inches of the surface; if not, enough can be procured usually without much difficulty. The stone cutter's yards, the brick yards, and the stone piles in the roads and fields generally furnish abundant material. When the walks are filled with this rough material to within six inches of the surface of the soil, the ground being raked up nice and smooth, then set a tuft about six inches wide for a border to the walk, as shown in the engraving, being careful to keep the tuft as low as the level of the adjoining soil, or a little lower, and to do this, remove three or four inches of the soil where the tuft is to set, according to its thickness."



3—Walks with Tuft Edging.

A good deal of this rough work can be done in the autumn, so as to leave only the finishing up in the

spring; but if commenced in the spring, it should be hurried up so as to get the grass sown as early as possible, for grass seed will not start well unless it has the benefit of spring showers. All being done as previously advised, sow the grass seed on the well prepared surface, raking it in, and if pretty dry, it is well to roll the soil after sowing. Sow red top or blue grass, or a preparation of the most desirable grasses for lawns, sold as lawn grass, at the rate of four bushels to the acre

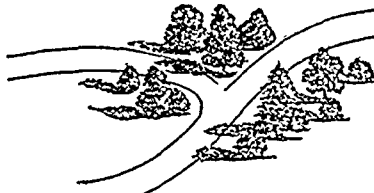


4—Section of Walk.

After sowing the grass, finish the walks by covering the rough stones with five or six inches of gravel, as clean as can be procured. It is best to leave the finishing of the walks until the last, because, even after sowing the grass seed, and raking it in, a quantity of stones will be gathered, and you will need a place to put them and the walk will need the stones. A section of the road when done will appear as shown in the engraving, and will be always dry and free from weeds and grass.

Trees and Shrubs

Two great errors are usually made, both by gardeners and amateurs; one destroying the lawn by cutting it up with unnecessary walks and flower beds, the other producing the same result by almost literally covering it with trees and shrubbery. Grass cannot grow well among the roots and under the shadow of trees and shrubs, and no lawn can look well



5—Planting for Curved Walks

cut up in sections by numerous roads. Most of the little lawns we see in this country are almost entirely destroyed by one or both of these causes. The main part of the lawn should be left unbroken by any tree or shrub, as a general rule, and if any tree is admitted it should be only an occasional fine specimen, like a purple beech, or magnolia, or cut-leaved birch. A tree or two in certain appropriate places for shade, is of course, desirable, but plant for the future, not for the present, and always have in view the size and form and habits of the trees when full grown, and not their present small size and perhaps delicate form. Every curve should be a sensible one; that is, have a reason for its course, either real or apparent, therefore arrange your planting so as to make an apparent necessity for every turn. The idea is shown in the accompanying engraving where the walks turn to accommodate the trees.—*Vick's Floral Guide for 1873.*

An Ornamental Orchard.

An orchard, combining utility, shelter, and ornament, would, in many places, be a desideratum; but is such a combination practicable? Doubtless it is. Fruit-trees are, or may be made, as handsome in form as most other kinds of trees; while among the latter, none can vie with them in beauty when in blossom, or when laden with fruit. In fact, it is marvellous that they are not more generally planted for ornament, chiefly, or wholly, than they are. What tree can compare in bloom with the soft, pink flower of the apple, with the snowy whiteness of the blossoms of pears, cherries? And then the fruits in all stages are beautiful; what shading into green, gold, scarlet, silver, and pink we have among them! What spots, and streaks, and flakes of beauty? What perfection of form! And then there is the beauty of the leaves, their color changing from green of all hues to golden russets, brown and red. An avenue of pear trees is beautiful, even in winter, especially when covered with hoar-frost. Each tree stands out like some grand work of art, formed, as it were, of frosted silver. As to shelter, there can be no doubt of fruit trees being capable of affording any amount of it in summer, but, like other deciduous trees, they give comparatively little in winter. That little, however, is much more than is generally supposed. If a number of large pear trees, for example, be planted, quincunx fashion, in rows, and pretty

closely together, it is astonishing how much their bare boughs will break the force of prevailing winds. The thermometer may not register much difference as regards temperature, yet the testimony of the senses, and the surer testimony of the better growth of the trees that are sheltered, alike declare that there is a manifest difference between the exposed, and sheltered sides of orchards, and gardens, even when the sheltering medium is only the trees themselves. But shelter might be further afforded by a screen of evergreens on the exposed side. Many, of course, plant orchards merely for their produce, and there are two general methods of planting them. By the one, each plant is expected to become a full-grown tree, by the other, its area is limited throughout its life. In an orchard of five acres there is room for both systems, and both may prove best, according to circumstances. In the garden only, small trees are fairly admissible; but it is widely different in the orchard. Here the fine, ancient timber trees of the olden times may prove as profitable as the pyramids, and bushes of modern days. Many may question this. But my advice to all who are about to make orchards, is to try both plans. A noble apple, or pear tree, wide-spreading, and high, is not only a grand object to look upon, but a most profitable thing to possess. Perhaps finer fruits may generally be gathered from smaller trees on dwarfing stocks; but, for the quantity, and fair quality, the extension, or full-sized system, is the more profitable. The untramped, and conical, and bush systems, may be kept separate, or intermixed; and, in any case, as trees are relatively cheap, and land dear, and time is more than money to most planters, the trees should be planted thickly at first. Permanent fruit-trees, with a clear bole, of say from 4 to 5 feet in height, ought to be planted at distances of from 20 to 25 feet apart. The old orchardists used to recommend almost double these distances. But in these days of craving for immediate results, the half of five-and-twenty feet will seem a large space to devote to a single tree. Of course they will not be very long in occupying it, but we hold it better to prune them than to wait long, and an orchard, like a landscape, can be made, or at least managed, by the knife, as well as the spade. But, even at these distances, another row between each permanent one, and also a second plant between each pair in this row, should be introduced for immediate fruiting. These will pay for their purchase many times over, before being removed to make way for the permanent trees. The supernumeraries are useful also as affording more shelter, and the permanent plants will grow faster thus nursed up, than if they stand alone. Indeed, in bleak positions, orchard trees should be nursed up with larch, spruce, or other forest trees. But, unless in very exposed places, it is far better, and more profitable, to make the trees nurse each other by planting thickly. The decaying roots also agree better with the living ones, if the trees are of similar families. As to the sort of fruit-trees used as nurses, this is mostly a matter of taste, or of profit. Of the taller forms, pyramidal trees are by far the most profitable. But they require, rather than give shelter; whereas temporary standards of similar height to the permanent trees, give, and receive support to and from the latter. The dwarf trees, however, shelter the stems, which, some suppose, need it most; others again, prefer a permanent mixture of standards and dwarfs—a very profitable arrangement. Plant the standards at distances of, say, 20 feet apart, and fill up the interstices with upright pyramids, or those of semi-weeping habit, like the pear trees at Frogmore and at Sandringham. Again, mere temporary bush trees, or cordons, might be planted even between the dwarfs, and yield an immense crop, then to be removed out of the way, leaving the pyramids, or standards, as permanent trees, or either of them only in the end. The grouping style of planting would prove much more ornamental, and equally, or more profitable, than the usual hard and fast lines, and indiscriminate straight admixtures. The style, and form, and colors of many fruit trees are sufficiently distinctive to classify them into groups. For instance, separate masses might be planted of such useful varieties of apples as Bleuheim Orange, Nonsuch, Reinette du Canada, Gloria Mundi, Scarlet Crofton, Kentish Fil-Basket, Lord Suffield, New Hawthornden, &c. In Pears, again, Louise Bonne de Jersey, Winter Nelis, Marie Louise, Beurre de Capiaumont, Passe Colmar, Glout Moreeau, Duchesse d'Angouleme, Flemish Beauty, &c., would form distinctive groups, either singly, or combined. The same principle could be carried out with pyramids, and groups, formed of each of such well-proved varieties as Golden Reinette, Melon apple, Mother apple, Ribston pippin, Early Harvest. In a similar way, pears, cherries, plums, &c., might be massed into clumps of any size and shape. The spaces between could be occupied with small fruits, silberts, kept dwarf, or with upright, or vertical cordons.

The latter would look rich in groups, and would yield a maximum return from a minimum of space. It has not been adopted to anything like the extent its merits demand. Winding walks, either of grass or of gravel, should be carried through the orchard in all directions, rendering it an easily accessible and pleasant promenade at all seasons. All these possible effects would be heightened, were the ground undulating by nature, or made uneven by art; in either case the tall trees should occupy the summits, and the lower ones the lower ground, reserving the lower points of all for walks, or stand points, with an occasional rise, to get a view from the top, as well as the bottom. With skill in planting, and a proper gradation of height, and contrast of form, capital ornamental effects might be secured, even in an orchard of small extent, and that, too, without sacrificing, in the least, the main purport of all orchards—utility, or profit.—*The Garden.*

Grape Vine—Madresfield Court.

This new variety of the vine was raised by Mr. Cox, of Madresfield Court, England, and sent out to the public by the Messrs. Lee, of Hammersmith, with even more than the usual flourish of trumpets. During the earlier part of its career, it appears to have sustained all that was claimed for it by its most ardent admirers, several celebrated grape growers going into ecstasies over it, declaring it to be possessed of every quality desirable in a first-class grape, and, of course, lending the weight of their names and influence to the extension of its culture. When being sent out, it was claimed for it, that while it was vigorous, hardy, and prolific as a Black Hambro', it possessed the rich, and delicious flavor of the Muscat, together with the keeping qualities of the Alicante, one of its parents. Of course it was evident, that it possessed of these merits, even to a moderate extent, it must assume at once a foremost place amongst our present varieties, and was, in consequence, much sought after, and planted. In the course of a couple of years, when the canes began to come into bearing a change began to "steal o'er the spirit of the growers' dream," until, from being the most lauded, it became the best abused variety ever raised, not even excepting Golden Champion. True, a few voices are still being raised in its behalf, but are almost wholly lost in the tide of clamour which has set in against it. That it is a really magnificent variety we can ourselves testify, nor have we ever yet heard the slightest imputation cast upon its superior flavor when thoroughly ripe, or the vigor of its constitution. Lately, however, it is charged against it that it is impetuous, or next to impossible to thoroughly mature the fruit, owing to a constitutional tendency to premature disease, through the berries "spotting," or "cracking" immediately before attaining maturity, the infection spreading so rapidly as to infect the whole crop in the short space of a week, or ten days, and rendering it wholly unfit for table. It is not our province, nor do we propose enquiring if all this noise is wholly disinterested, or if it partly arises from that "spirit of carping criticism" which almost invariably assails our horticultural novelties, the good often faring no better than the bad, nor are we aware if the necessary precautions were taken to thoroughly test its several qualities, before sending it out to the public, though we hope to see the notable example now being set by Mr. Thompson, of Tweed Vineyard, with his new "Duke of Buccleuch" grape followed by the raisers of all new fruits, so that before purchasing, the public may have an opportunity of judging for themselves, of their qualities, both for market, and exhibition purposes, or whether there are special circumstances necessary to its proper development, such as peculiar treatment with regard to root, and atmospheric moisture, temperature, ventilation, or its being grown on the roots of some variety other than its own. Indeed, it is beside our present purpose to enquire if it is wholly unsuited to the dank, and humid climate of Britain. Assuming that this tendency to disease does exist—though we are rather sceptical on the point—there appears to be no doubt whatever that if this one weakness could be overcome

the many excellences of this sort would entitle it to rank A 1 amongst our present varieties. Now, as varieties possessing that rich, aromatic, and muscat flavor, which the grape connoisseur so delights in, require a very high temperature for their thorough development; when we find a variety possessing these merits, and which is equally at home under the treatment received in a cold vinery, or a pine stove, we consider it to be too valuable to turn away from until we give it, at least, a reasonably fair trial. The pertinent query for us, therefore, is, how is the climate of Canada adapted to its requirements? Will our dry, light atmosphere, and under the rays of our almost vertical sun, counteract the tendency to disease, if it does exist? We unhesitatingly answer, yes. We say this advisedly, as being not only our personal experience, but the experience of every one who has fruited it in this country. That veteran grape grower, Mr. John Gray, of Toronto, who, we believe, first introduced the Madresfield to this continent, claims for it, that it is especially excellent as a late-keeping sort, hanging for months after being ripe. We are not in a position to speak authoritatively on this point, but are rather inclined to fear, from the nature of the skin, that its keeping properties would be considerably inferior to such thick-skinned varieties as the Royal Vineyard, and the Lady Down's Seedling. Our personal opinion is, that its chief value will be as a mid-season grape, and it as such we would confidently recommend it to parties about to plant either cold vineries, or those heated by artificial means. We are not of those who would recommend this, or anything else, simply because it was "new," or had made a "noise" in the horticultural world. Our maxim is rather the Scriptural one, which bids us prove all things, hold fast to that which is good. But, as in this case, there is so little to lose, and so very much to be gained, we would strongly impress upon those who propose setting out young vines, the desirability of giving it a moderate trial, were it only to the extent of one cane in a collection. Even should this disease manifest itself, of which, if we are to judge by the trials already given it on this continent, there appears not the remotest danger, if one of these free, and vigorous growers upon which is a "stock" any other variety can be most successfully worked. And if this should meet the eye of any one who has planted Muscat of Alexandria's, which, from some cause, are not doing as well as could be desired, let this variety be grafted upon them at the earliest opportunity, and we will stake our reputation on it that the results will be eminently satisfactory. An excellent old variety of grape vine, the Chateau Musque, has a tendency to behave in much the same manner as is now attributed to the Madresfield. Indeed, many growers discard it altogether on this account. It is well known, however, to intelligent cultivators, that with proper attention to root, and atmospheric moisture, this disease rarely shows itself, and when it does, is easily checked by cutting the lateral, upon which the bunch is growing, about half through, and allowing the laterals which have no fruit on to grow freely. We have no doubt the same treatment would be equally successful with the Madresfield, in case the disease ever should manifest itself.

JOHN M. BOTHWELL.

A Hint on Lawns and Hedges.

Anyone who has taste in that direction cannot but observe, within a dozen miles around Philadelphia, where fine lawns are cultivated, how much damage is done to the beautiful hedges and evergreens by allowing the silver maple and other ugly and useless trees to be mixed up with them, overshadowing them to such an extent as must lead to their early defoliation and destruction. The exhaustion of the soil also by these worthless trees, does more, however, to injure the evergreen, than even the shade. Once let the evergreens be damaged and they never recover. What the object is in permitting such trees to remain in these lawns and along hedge-lines, we cannot imagine. Either the gardener is incompetent for not suggesting their removal, or the proprietor is obstinate in refusing to exterminate trees which he has not knowledge enough to see are ruining his place.

If anyone has a liking for silver maple and other deciduous trees in their lawns, let him enjoy his taste, and not mix them up with evergreens. In large lawns, it is true, there may be many varieties of trees without injury to one another; but it is folly to mix them on small lawns, or planting them close together.

Hedges, even the hemlock, which stands shade better than any other, will show its dwarfing influence, and cannot resist the exhausting of the soil by the roots of large trees standing near; while no arbor vites will long survive from either of these causes.—*Germantown Telegraph.*

Fruit Houses.

The inquiry is made almost daily "what are the principles of these buildings, that preserve fruit until May, July, and other "out of the season" periods?" And I notice a brief article in the *Practical Farmer*, without the author's name which explains this matter in a few words, and is worthy of the attention of all interested in the subject. With a few alterations of mine, it reads thus: "In the ripening of fruit hydrogen and carbon are given off. The former unites with the oxygen of the air, forming water. The latter also unites with the same oxygen of the air, forming 'carbonic acid.'" The rooms are "gas" or air "tight. If closed up for two days a candle goes out in them almost instantly." In this state of things "the fruit is surrounded by an atmosphere of the nitrogen of the air and carbonic acid. Hydrogen and carbon then cease to be evolved from the fruit," and hence "decomposition also ceases in a great measure. Decay is much retarded by the absence of moisture. This is removed by sprinkling the floor with dry chloride of calcium," (in more common language, "chloride of lime,") "which also may be spread on shallow pans, and when moist be dried," and replaced in the pans after being dried by heat. "Waste of salt works" (called "bittern") "answers equally well, and is nearly costless." This from time to time is to be dried, whenever it becomes moist. "It has been found that 100 bushels of apples throw off half a gallon of water each week which by the drying powder" (chloride of lime, or bittern) "is withdrawn from the air of the room." The floor or ceiling of the room "above is made of galvanized iron," and must be supported by iron girders and columns, or otherwise made very stoutly, and be "perfectly water-tight. On it is placed every winter ice to the depth of four or five feet," or any other depth necessary to last until the fruit is sold; "thus by cooling the air in the room below to the temperature of 34°, or only two degrees above freezing," aids greatly in preserving the fruit. "Motion is given to the air by fans in the room by wind-mills on the roof.

Of course I need not add to the above that the wall and other appliances of such a house must be made to correspond. The above is the plan of what is called "Nyc's Fruit House." I request attention to its principles, as it explains much of what is the philosophy of all such structures, in a plain, common-sense way, that all can understand. And as buildings are being constructed for fruit preservation, the reasons above given cannot but be valuable to every thoughtful reader. It needs no detailed explanation from me. It asserts that the changes produced by the fruit in any dry, confined vessel are sufficient, when aided by the lowest possible temperature, without freezing to preserve the fruit. Such vessels have been occasionally shown for years past, with fruit in them. The construction of a large room is but that of a large vessel, except the mode of going in and out, or putting in and taking out the fruit. The ice, of course, must be piled on the roof of such a house in the latter part of winter—say February—before its use, which will be in August and September following, in a new house. What are called "ice stoves," are boxes attached to the ceiling of the fruit room to cool the air. For a room 12 by 15 feet, a tight box of iron three feet square is as effective as if the whole room cover was of iron. It must be kept supplied with ice from a regular ice-house. So, also, it is apparent that one cannot go into such a house, any more than into a well, filled with carbonic acid gas; and hence there must be ways to get the fruit out without going into the room, or else the room must be ventilated whenever any one goes in. It were better that the stars go down into the room from its top, as I recommended years ago, and the ventilation be by a door at the bottom whenever any one goes into the room.

We need fuller details of such houses. The principle is applicable not only to fruit, but to a large number of perishable articles, and animal food also. Hence I have been ready to call attention to anything that I think makes this important subject clearer.

As to exclusive rights to these plans, I have nothing to say. It is clear that the principles are the property of all mankind, and that long ago most of the experiments were tried. At any rate, every town needs at least one such preserving house, in a day when it is being shown how profitable fruit raising is.—*Cor. Country Gentleman.*

Preparation of the Manetti Stock for Budding Roses.

Cuttings are prepared in the following manner: Take the strongest shoots you can procure of the season's growth, and cut them into lengths of about 10 inches. Some of the long shoots will make two cuttings. After preparing the number required, whether it be hundreds or thousands, the next operation is to cut off the spurs, and with a good knife gouge out every eye or bud, except two or three at the top.

It is necessary to be very particular, for if the eyes are not cleanly gouged out, suckers will rise up to torment you, and in all probability ultimately kill some favorite rose that you have taken great pains with in budding. It has been said that a Manetti which has been divested of all its buds will occasionally throw up suckers; but my experience leads me to a different conclusion. When Manetti stocks send up suckers, it is owing to the operation of cutting out the buds, having been either carelessly or inefficiently performed, as is the case sometimes when the work is entrusted to careless boys.

The next step is to choose a situation for planting the cuttings; when this has been done lay on the garden line, and with the spade throw out some soil, by making a small trench to receive the cuttings, which must be planted so deep as only just to leave out the few eyes at the top; they should be planted about 4 in. asunder, in rather a slanting position. The soil should be trodden firmly when filling it into the trench again. Almost every cutting will grow.

The following year, the cuttings must be carefully lifted with a spade or fork, when it will be found that the stems have rooted for their whole length. The whole of these roots must be cut off carefully, except a few at the bottom of the stem or base, if any spurs or thorns are found, they must all be cut off, so as to leave the stem clean for budding on. Care must be taken during this operation not to let the young roots get dry.

When a few of these rooted cuttings are dressed, it is best to lay them down on the soil, and cover the roots in a temporary way, until you plant them out finally for budding, which is better done at once, or as quickly as time will allow.

When they are finally planted out, the garden line must be laid on, and the rooted cuttings must be carefully planted into a richer soil than for cuttings, but this time only about two in. deep, or very little more, the object being to insert the buds as near the roots as possible. The distance from plant to plant should be about 12 inches, and the rows 3 feet apart, so as to give sufficient room to walk between the rows. Any of the cuttings that have made good growth should have the tops cut into two or three eyes. About July or August your Manetti stocks will be in a fit state to receive the buds, one bud only is to be inserted in each stock. The operation of budding is performed by inserting the bud into the stem or leg of the Manetti, as near to the ground as it is possible to work. There is this difference between budding on the Manetti and the brier, that buds on the Manetti are inserted into the old wood of the main stems, whereas those on the brier are inserted into the young wood of the same season's growth, on lateral shoots, and as close to the main stem as you can get. In order to be successful in Manetti budding, it is necessary to have firm, plump, and well-ripened buds. Many buds that would succeed on a brier would fail to take on a Manetti stock, on account of the buds not being ripe and well developed.

The Manetti stock, on account of its rapid and free-rooting action, is very vigorous and full of sap, so much so, that some varieties of free-growing roses commence growing away soon after the buds are inserted, and unless the shoots ripen, the winter kills them. It is advisable not to bud Manetti stock until August, at which time firm well-grown buds are easily procured.

Early in the spring the dormant buds begin to grow; but, in order to force them to grow freely, the greatest portion of the Manetti shoots growing above the buds must be cut in rather close. When the buds have made about three inches of growth, the heads of the Manetti must be cut away altogether.

Orchard Grass.

A Virginia correspondent of the *Rural New Yorker* eums up an article on the above grass as follows:—

"For pasture it has no equal, for hay, in quantity and quality, it cannot be excelled; and for seed, no other grass is half as profitable as orchard grass.

"Do not be disappointed with it the first year. Like many of our best grasses, it takes two or three years to come to perfection."

The Dairy.

Feed of Dairy Cows.

How Shall we best Keep up a Full and Even Flow of Milk in the Dairy?

The importance of the dairy interest makes the question proposed above one of great importance. Suppose the business as at present conducted barely pays expenses, it is easy to see that if an increase of yield of only ten per cent. could be secured it would afford a margin for profit well worth saving. To obtain the best results, sweet, nutritious pasturage is the first requisite and there is no doubt that the dairy produce of the State could be largely increased by improvement in this particular. But the best pastures fail, sometimes from drought, always in the latter part of the season or after the autumnal frosts. At the best we have only about four months, (a third of the year), in which we may expect a full supply of milk from grass alone. After this, the yield diminishes more or less rapidly until about the first of November. During the change from grass to hay the flow reaches its minimum point and many dairies "dry off" altogether for the season. This is neither necessary, nor as I believe, expedient. Allow me to state what has been my practice. As my acres are few in proportion to my stock, I begin to feed in the barn about the first of August. From this time until the first of October, I use sweet corn planted in the hills and allowed to grow until the ears are large enough to cook. If planted early it will reach this size by August. I use Crosby's Early for first planting, and plant also at the same time Burr's improved Mammoth. About the first of June I make another planting and again the middle of June, and the first of July. This gives me a succession which will last until after the first frosts. I begin with little and feed more freely as the grass fails. From the first of October to the first or the middle of December I rely on cabbages. For this purpose it is not necessary that they should be fully grown or ripe, though, of course, the larger the growth the better. Land from which a crop of clover or early peas or early potatoes has been taken will answer as well as any, provided it is rich enough. The seed need not be sown before the middle of June, or from the first to the middle, and the plants should stand well apart to be stocky. I find they do very well transplanted as late as the first of August, though there is no objection to doing it as early as the middle of July. When the sweet corn is gone, begin on the cabbages, and give fifty pounds a day, feeding them directly after milking in this way I keep the flow of milk almost undiminished through all the autumn months and into the winter. I have a couple of young cows, which, although within three months of calving are still making five pounds each of butter per week, and of a color and quality very nearly equal to that made in June. As a green feed after the supply of grass and corn is gone, I consider them without a rival. I commend them to all who are unacquainted with their merits.—*J. G. Huntington, in Mass Ploughman.*

Determining the Purity of Butter.

An important paper was lately given in the Liverpool and Manchester Medical and Surgical Reports, by Dr. J. Campbell Brown, in reference to the most practical methods of determining the extent and character of the adulterations of butter. The various processes are principally chemical and spectroscopical, but are, to a considerable extent, sufficiently practical to form the basis of very delicate experiments. As a preliminary, an ounce of the sample of butter to be examined is placed in a test tube seven eighths of an inch in diameter, and melted by the immersion of the tube in hot water. A thermometer with a pear-shaped bulb is then to be introduced, so that the bulb shall be in the middle of the fat, about an inch below the surface, after which the whole is allowed to cool spontaneously. If the quantity of water in the butter be large, it will collect in the tube below the fat. Casein will also collect in the lower part of the tube. The temperature is to be carefully noted when solidification commences, and when it is complete.

If the butter is pure the thermometer is obscure between 74° and 68°, and is solid at 61°. An addition of beef dripping causes the thermometer to obscure at 79° and to become solid, at 72°. Mutton obscures the thermometer at about 85° and is solid at 81°. Lard obscures the thermometer at 84°, and is solid at from 79° to 80°, but often remains as soft as butter at a much lower temperature. Mixtures solidify at intermediate temperatures.

If pure butter be examined by the microscope with

a one-fourth or one-fifth object glass, nothing will be seen except the characteristic globules, the granular masses of curd, and the cubical crystals of salt in the butter. The hard fats are present in the globules, in a state of solution, and not recognizable in separate form. The presence, however, of single faciform crystals, or star like aggregations of needle-shaped crystals, indicates that melted fats are present. The microscope will distinguish starch, flour, Irish moss, etc., from butter or fats.—*Live Stock Journal.*

Late Milking and Abortion.

All dairy cows, when practicable, should have a respite from yielding milk from two and a half to three months previous to dropping their young. Nature demands this time for recuperation and the production of healthy offspring. It has been suspected, and apparently with good reason, that the habit of milking cows far into winter and up to within a few weeks of calving, has been one leading cause of abortions now so prevalent in some of the old dairy districts of New York. When it is considered that cows late in fall and during early winter get no extra feed, and are kept upon coarse fodder or hay alone, while this excessive drain on their vitality is going on and especially at a time when they are more or less subjected to cold and the inclemencies of the weather, we may very reasonably conclude that a nature is unequal to the strain, and hence the trouble referred to. It is true some animals are very difficult to be milked of their milk, and are inclined to yield it up to the time of calving. When such cases occur, it should always be a rule to commence early with generous diet, and by no means a low the animal to lose flesh.—*Western Farmer.*

Grass for Calves.

Mr. David A. Hawn, one of my neighbors, turns out his calves to clover, as soon as there is an abundance of feed. He first feeds on sweet milk, then on warmed sour milk with a little meal or shorts, and in turnips, but continues the milk alone for a short time, lessening the quantity gradually. The calves are then left in the field by themselves, getting only a little salt, till the clover is out. Finer calves than this it is hard to find. One of the important points in raising calves is, in the earliest stage, to gradually change from one diet to another. A change from hay to grass, if the grass is the first tender growth, and the calf a late one, is often followed by the scours, the same as when cold (sour) milk is given where the habit was to have it warmed.

Grass can be fed to calves in winter as summer. Clover, when cut about the time of blossoming, or when the heads begin to color, and well cured, differs from pasture grass only in the quantity of water, and affords the finest of early spring feed, making the calves less great from hay—the usual rather ripe product—to grass. Some prefer alfalfa, both are excellent. Give them either of these or both, and when towards grass time they have well taken to it, as early calves may be made to do, they need but little milk, middings, or hay meal. But if the usual common hay is fed, more concentrated food must be given, for a calf should have all the food it can use to be made to grow with a constant and steady progress.—*Live Stock Journal.*

Cheese at New York.

During 1873 there were received at New York City 1,997,776 boxes of cheese, exported 1,569,500. In 1872 the receipts were 1,665,070, exports 1,211,415. These figures not only show the magnitude of the business done—the receipts for the year certainly exceeding 160,000,000 pounds—but also a gratifying increase. The receipts are about 15 per cent. larger than those of 1872, which are about 12 per cent. greater than those of 1871. It is thought the cheese product of New York was less rather than greater than in 1872, so that the increase has come from the newer dairy regions—largely the Northwest.

The smallest receipts in any one week were 3,959 boxes for week ending Jan. 4, the smallest for any month were 27,680 in April. The largest in any week were 115,433 for week ending Aug. 2; largest for any month 389,166 for August.

The highest price quoted was 17 cents from Feb. 15 to April 5. The highest price when cheese had fallen lowest was 12½ cents in July. In 1872 the highest price was 19½; the lowest 11.

In New York there have been a number of unfavorable circumstances, in the Northwest but few. The general outlook for the trade is good. The present indications are that the stock of cheese in the country will be closely used up before the new make comes in.—*Western Farmer.*

Veterinary Department.

Colds and Rheumatism in Horses.

The damp, thick, foggy weather, the low temperature, and low barometric pressure of the second week of December, have greatly increased the number of colds and chest complaints alike amongst men and animals. The cold raw air irritated the mucous surfaces, induced congestion, and impaired secretion, shortly followed by increased and unnatural discharge. The air largely laden with moisture seriously interfered with skin transpiration. Horses even at moderate work speedily become overheated, perspiring, and distressed. From impairment of the skin secretions, a large amount of waste deleterious matters are retained within the body, becoming a likely source of febrile and other complaints. Somewhat in this manner have been recently produced, especially amongst hard-worked horses in towns, a large number of cases of disease of the respiratory organs.

Many rheumatic cases also crop up, some of them coming on very suddenly, and producing often great stiffness and lameness. Two typical cases will illustrate the progress of these rheumatic attacks. A bay carriage horse, six years old, left at night apparently perfectly well, was found in the morning lying in his stall, in considerable pain, unable to get up, and so tender on the off quarter and thigh that the coachman fancied the animal must have received some serious external injury. Raised with considerable difficulty, the off hind limb appeared almost as useless as if fractured; there were no marks of any injury, and the swelling which gradually appeared involving most of the muscles of the haunch very distinctly indicated the rheumatic nature of the attack. There was little fever, no impairment of appetite, and no change in the excretions; but for fully a week the affected muscles stood out very prominently, and the patient was unable to use his limb. From the first onset of the seizure, hot fomentations were applied for half an hour several times daily; soap liniment and mustard embrocations were occasionally rubbed in. A small dose of aloes was at first administered, followed up by daily doses of Epsom salt, ammonium acetate solution, and turpentine. The symptoms gradually abated, but a fortnight elapsed before the horse was fit even for gentle work.

An aged grey cob, with a long coat and in poor condition, had a large swelling on the side of the shoulder, involving the serratus magnus and adjacent muscles, and causing great lameness. Examined two days after it is stated to have appeared, the swelling is as large as a cocoa-nut, is tolerably firm, extends along the course of the muscles, exhibits neither heat nor tenderness, remains unred and for fully ten days, although diligently fomented and frequently stimulated. Salves, including Epsom salt and potassium chlorate, with turpentine, are given two daily. There is no tendency, as in so many rheumatic cases, to the swelling and lameness shifting from its first seat, and attacking other parts.

A good many cases of navicular disease, as pointed out by Professor Williams, in his "Principles and Practice of Veterinary Surgery," are connected with rheumatism. Several horses we know, in certain unfavorable states of the weather, go quite short and stumpy. Seen in brighter, better weather they would pass perfectly sound. Occasionally the lameness will come and go very suddenly. It will show itself after the horse has stood a few minutes uncovered in the cold. It is often worse when the horse first leaves his stable, and wears off as he warms in his work.—*North British Agriculturist*

Eruptions About the Legs of Horses.

In addition to other kinds of inflammation of the skin, there is a form which seizes the parts behind and upon the sides of the fetlocks. The practice of trimming the legs has much to do with its production, from which the cold and wet gain water power. The skin swells, and the joint becomes rounded and puffy, as well as very tender, being a great amount of stiffness. Shortly small and eminences form in great numbers, the hairs stand erect from the skin, and afterwards pustules form and burst, several uniting to form a large sore. The disease is not speedily subdued, and means employed to prevent its reappearance, chronic states, such as gaping cracks and sores with hardened edges are left which do not heal, and give rise to much inconvenience. Neglect and continuance of exposure engender grease, and possibly also cause such a vi-

tiated state of the system that farcy or glanders may result.

The most suitable treatment at the outset is to apply a poultice, which is best done as follows: Procure a piece of strong material known as "wrapping," and make a case for the leg, long enough to reach from the top of the foot to a little below the hock, and wide enough to accommodate at least 2 inches in thickness of bran all round. Secure it at the bottom, round the pastern, by a leather strap and buckle—a soft hame strap answers well—then pack in the bran soaked in hot water (118 deg. Fah.), and fasten round the shank by another strap, not too tightly, and bind a long bandage carefully over the whole. This should be pursued until the wounds are no longer red and angry looking, which may require two or three days; in addition also some fever medicine may be given. Afterwards, apply the ovide of zinc ointment, or the glycerine and carbolic acid mixture for four or five days, and finish by using the alum and tincture lotion, recommended for cracked heels; taking care to give each day a dose of nitre in the food, say half an ounce, but not more, and for not longer than four or five days without an interval of rest.—*Farmer (Eng.)*

What ails the Horse.

A correspondent writes us:—"I have a two year old colt that has something ailing him that is not understood by my neighbors or myself. He commenced to fail when weaned, and has remained poor in spite of good feed, of which he has had a plentiful supply, boiled oats, cracked barley, bran and potatoes, in the stable; and when on grass, barley or bran once a day. In fact, he will eat anything, but all will not put on flesh. Last spring I drenched him with bitter aloes thinking that pinworms were the cause, but saw nothing discharged but two or three dozen pinworms and half a dozen bots. I never knew of a similar case but one, viz., another colt from the same horse not far from here. If you know of anything that will do good by inserting in CANADA FARMER you will much oblige."

[NOTE BY VET. ED.—We would recommend subscriber to feed his colt on three quarts of good oats morning and noon, and at night give him three quarts of oats, and one quart of barley, the oats and barley to be carefully boiled together. Mix with the boiled food, every second night, one half drachm of powdered gentian and one drachm of the sesquicarbonate of soda. Continue the medicine until he has got twenty doses.]

The Horse and his Owner.

I have always imagined I could read in the conduct of the horse a certain measure of the character of the owner, as you can see the man in the empty hat which sits upon the table, you cannot tell why. When I was a boy, I used to estimate the condition of my neighbors by the looks and conduct of their horses. When I saw a venerable pair seated in a rickety waggon drawn by a low-headed, ewe-necked, ring-boned mare, by jerks along the road, I always pictured to myself the establishment from which that venerable pair came out. When I saw the village doctor jogging about with rusty harness, dilapidated vehicle, and melancholy horse, I drew my inference, and instituted a comparison at once between this man and his rival, who, without ostentation, kept his equipage in order, and drove well the horse which he had selected well. Upon the box of a market waggon, drawn by a well-matched even working pair of solid bays, I always found seated a contented and thriving farmer.

The minister of my native town, a large-hearted, kindly, sympathizing pastor, and a sensible preacher of the Gospel of Christ, always drove an elegant horse, and drove him well; so that in his two-wheeled chaise or when mounted erect in the saddle, the people respected him, and did not forget their respect when he had dismounted.—*Dr. Loring, in the "Perfect Horse."*

AGE OF HORSES.—A correspondent, in the *Field*, referring to this subject writes:—A friend of mine bought an old pony (a mare), and after using it for several years gave it to me. This pony was believed to be about 39 years of age when it was given to me, but I cannot now ascertain its exact age. Whilst in my possession it gave birth to two good foals, and was shot at about the age of 47 years, because it had no teeth enough to eat with. The legs and feet were sound and clean to the last. This pony had an unusually large and handsome cres.

Entomological Department.

The Milch-Cows of the Ants.

The above title, which forms the subject-matter of the present article, is one that has claimed the attention of the most eminent naturalists of all time. Although much has been said and written upon the subject, still there is room for more. As science advances in its onward march, new facts are developed; some of these have a tendency to subvert long established principles, others to confirm pre-existent notions.

It is well known to naturalists and others that the aphides secrete, or rather excrete a sweet, viscid fluid, which affords a rich repast for various species of ants. Ordinarily these little creatures are visited by the ants upon the tender branchlets and leaves of plants; but it has been asserted that they even keep them as human beings do cows. By many this has been deemed partly imaginary.

Formerly I was disposed to drift with the popular opinion in this particular, but latterly some few facts, which accidentally fell under my notice while searching for carabs, have confirmed me in the opinion that such is the case in at least one species of *Formica*.

While exploring a neighboring thicket lately, I was led to raise every stone that lay across or on the side of my path, as experience had taught me that the objects of my search were generally to be found in such concealed places. It was on one of these occasions that I noticed a nest of *Formica sanguinea*. Disturbed by this unexpected intrusion, the colony soon presented a scene of activity. My interest being at once excited, I decided to change my occupation for the time, and instantly scated myself down upon a slight mound where I could command a view of the nest, and observe the minutest details of ant life. I was not long in perceiving that the community consisted of full-grown neuters, larvæ in various stages of development, and a small species of white aphid that is ordinarily found adherent to the roots of plants. Not a single male or female was to be seen, they doubtless were occupying at the time the subterranean galleries. The working portion of the community was evidently divided into three classes, each having a separate and distinct part to perform. The first class had the exclusive care of the more matured larvæ; the second the comparatively feeble, and the third the charge of the herds. On the disturbance alluded to, each class immediately set to work in the discharge of its prescribed duty. But as it is to the third class that I shall particularly call attention, I shall be compelled to pass over the two preceding classes, referring your readers to the forthcoming Proceedings of the Philadelphia Academy of Natural Sciences, where their habits will be found minutely detailed.

But now to the third class. When the disturbance took place, its individual members were so intent upon soliciting by their caresses the much coveted sweet, most likely to be used as food for the young larvæ (but thus I could not determine at the time), that they did not seem to notice the invasion of their jurisdiction. When fully aware of the fact instead of leaving their flocks at the mercy of the invader, and seeking their own personal safety by flight, each manifested the deepest concern for the little creatures who pandered so willingly to their temporal welfare. As if conscious of the debt of gratitude which they owed to them, they carried them down into their underground dwellings, where they found them comfortable quarters. Here it is plain that these tender creatures receive as much, if not infinitely more, care and attention than man is apt to bestow upon his flocks. Whether they bring the food to them or not it is not my province to say; but this I do affirm, that the galleries of *F. sanguinea*, whenever I have observed plant-lice therein, have always been constructed where these little creatures can find an ample supply of natural food. It may be probable that the lice are carried to the food; but that they are escorted to it by the ants is highly certain, as the slightest disposition to stray away by the more roving ones, is instantly checked. But on the whole, it cannot be denied that under the rule of their peaceful masters—the ants—they lead happy and prosperous lives.—*G. T. Gentry, in the Canadian Entomologist*

The Apiary.

Italian Bees.

Joseph Barlow of Blackheath, Ont., asks:—"What is your opinion of the Italian bees? Are they more profitable than the common or black bees? Some say they are and some say they are not. I have the common bees, but if the Italians are better, I should like to get them."

The unanimous opinion of all beekeepers competent to judge, is that the Italians are vastly superior, in several important respects, to the common or black bees.

1. They are better honey-gatherers. This is the main excellence to secure in bees. We keep them for the stores they will collect, and our profits come from the excess of what they treasure up after supplying their own wants. What percentage more of honey they will gather, or more above the average of what the black bees will do, has never been ascertained, but it has been sufficiently demonstrated, that they are more active and energetic workers, that they will go out on foraging expeditions during weather which confines black bees to the hive, and that they will gather honey from sources not accessible to the black bee.

2. They are more quiet and peaceable. This is a very important point, inasmuch as it is essential to the best success in bee-keeping, that the bees should be freely handled. Artificial swarming, change of queens, extracting honey, putting on and taking off boxes, and a variety of other occupations, necessitate access to the interior of the hive, and render it desirable to have bees to deal with, that do not easily become irritated and infuriated. It is frankly admitted that the Italians when once made angry, fare worse to contend with than the common bees, but there is no need to enrage them, and they are not easily provoked. When a hive is opened, the common bees incline to rush out pell-mell, while the Italians cling to the comb, and remain quiet. With care, an Italian stock can be handled as well without smoke, as common bees with it. The utmost gentleness is requisite at all times in doing anything among bees, and if this is practised, it is remarkable how amiably the Italians will behave. Occasionally things will happen calculated to try the temper of the most peaceably inclined bees, just as the gentlest of human beings will sometimes be exposed to provocation. But, under ordinary circumstances, the Italians will be found much more pacific than the common bees.

3. They are less liable to be infested with the moth. For some reason or other, the black bees more readily succumb to this insect pest, than the Italians. Possibly it is because of the untiring energy and resolute determination of the Italians. The moth is a stealthy, insidious enemy, burrowing in secret, and worming itself into possession of the sheets of comb, but an Italian colony of average strength, will hunt them out and prevent their making headway. Many beekeepers who, when they kept the common bees, were greatly pestered with the moth, testify that on substituting the Italians, this annoyance came to an end.

4. They are more handsome. It would be foolish to sacrifice more substantial qualities for mere beauty, but, other things being equal, it is natural and proper to prefer that which is beautiful to that which is plain and homely. The Italian bee is a more genteel and shapely insect than the common bee, while its golden-banded jacket looks very attractive, whether glittering in the sun, or covering the sheets of comb. The queens of this breed are often very beautiful. Just as our best breeds of horses, cattle, sheep, swine and poultry are better looking than the common varieties, and please the eye more, while their nobler qualities commend themselves to the judgment, so it is with the Italian as compared with the common bee.

For these reasons, we certainly advise our correspondent to get the Italians. As a change of breeding stock only, they are worth the trifling outlay necessary to obtain them. There has naturally been very close breeding "in-and-in," as it is termed, among bees, and analogy suggests that this cannot fail to be detrimental. The importation of Italian bees has been worth all it has cost to the bee-keepers of this continent, in this view of the matter alone. The pioneers in this direction were at considerable cost, and have not reaped so rich a return, as those who are indebted to them for bringing this valuable breed of bees within general reach. Five dollars per queen, the average price, is by no means a large sum, when the possible benefits are taken into account. By judicious management, a single queen may be made to Italianize a moderately sized apiary in the course of one season, thereby doubling the value of every hive it contains.

While on the subject, we may as well mention, for the information of the novice in bee-keeping, and the general reader, how the process of Italianizing is accomplished. As all the eggs in a hive are laid by a single queen, it is only necessary to substitute an Italian queen for the common one, to accomplish the change of breed. It is usual to remove the common queen a week before her successor is introduced, by which time, queen cells will be far advanced. By cutting these out, all possibility of the bees rearing another black queen is destroyed. They will then more readily accept a strange queen. There are various ways of introducing queens, but the safest, especially for beginners, is to cage the queen about thirty hours, and fix the cage so that the bees can have free access to it. They will soon get reconciled to her, acquainted with her, and will feed her. After about the length of time specified, it will be quite safe to liberate her. When there are several hives to Italianize, the new queen must raise a supply of drones, and the black ones must either be destroyed or confined to their hives to prevent their mating with the young queens. This is the great difficulty in transforming stocks and keeping them pure. As bees mate when on the wing, there is a constant liability of the queens meeting common drones. A single hive is soon and easily Italianized. Bees in the summer time are very short-lived. Within three months after the introduction of an Italian queen, scarcely a black bee will be seen in the hive. Italianizing several stocks with one queen, is a work of more time and difficulty.

Questions and Answers about Bee-keeping.

Can anything be done to keep ants from bees? In the spring they are extremely troublesome about our hives—indeed, they are perfect pests. I have tried many remedies.

We never could see that the ants did any harm, except the annoyance they cause to the person opening the hives. They seem to creep into and cluster about the hive for warmth only. We used to take great pains to keep them away and succeeded best by placing ashes or crude coppers around the bottom boards; now, we take no trouble on their account.

I have twenty stands of bees in my cellar, half of which I fear need feeding. How shall I do it?

If you are careful you can feed them with syrup made of sugar, but we advise you to try candy made of sugar. Dissolve sugar in water, then boil until it is candy; cool in thin sheets, and put them in between the combs among the bees. We have wintered colonies from December till March, with one dollar's worth of this candy. If there is a good candy manufactory near you, it is quite as cheap to buy plain sugar candy.

How do you prefer to have hives faced? or do you deem it of importance how they face. I would like to know. Last year my hives faced north, and I have not thought it wise to have them so.

We prefer to have the hives face east, when we can choose regarding it, for this reason: The morning sun in summer strikes them not unpleasantly, and in spring the bees seem to enjoy it. Any one can see a difference between the hives that have the rays of the morning sun upon them and those that are facing north. The former appear to begin work two hours sooner. In hot afternoons it is also better to have no sun strike the entrance.

I am a beginner in bee-keeping, but am anxious to be successful. I need the money I hope to make, and I want to show, also, to some doubting friends that bees may be made to pay. I have 10 colonies now that are seemingly in good order. They are black bees. Will it pay me to invest in Italians and

try to rear queens for sale? or, had I best stick to the honey business? It would seem to me as if there were more money made by the sale of queens. I sold from six colonies this season 510 pounds of box honey. That was not up to the average made by Ginn or Hosmer, yet it paid me for all the time I gave my bees. I would like to branch out a little another season if I thought it would pay me.

The Italians will pay you *all the time*, whether you intend to rear queens, or depend upon honey for the prospects. We think but few will ever succeed in making queen-rearing pay well. It takes a long time to be ready to sell queens, and unless you are some distance from other bees, or take pains to fertilize in confinement, you cannot warrant purity. There are many trials, too, attending the rearing of queens for sale that you cannot appreciate unless you share in them. If you can obtain as large an average every year from hives as you have this, we think you will do no better by selling queens.—Mrs. TURREL.

Michigan Bee-keepers.

The bee-keepers of Michigan, held their annual meeting at Grand Rapids, and had a spirited discussion on the merits of one and two story hives. The secretary's report, which is published in the *Michigan Farmer* of the 9th inst., says, that H. A. Burch uses a one story hive, increasing capacity by horizontal extension, claiming that by so doing, he induced breeding to the utmost possible extent, thus securing a large yield of honey. On the contrary, Mr. J. Heddon piles his hives one on the top of another—two story hives at that—and by changing frames from one part to another of the sections, he gets the queen to deposit eggs in all parts of the hive, filling every part with brood. He had 16 swarms in the spring, has now 33, and obtained 400 lbs. of honey. He filled his hives in the beginning with comb, from which the honey had been extracted, thus making his bees spend their whole time in gathering honey. Mr. H. Palmer uses single story hives, of from 2,000 to 6,000 cubic inches. In 1872, he commenced with 11 swarms; did not allow any swarming, and got over 3,000 lbs. of extracted honey. In 1873 he commenced with 6 swarms; had increased them to 25, and at the same time got about 1,000 lbs. of surplus honey. There is plenty of basswood in his locality. Mr. Tomlinson uses a one story hive, with frames only six inches in width. He has during the past summer, increased his swarms from 5 to 20, and took 400 lbs. box honey.

On the question of wintering bees, Mr. A. C. Balch thought they needed very little ventilation; uniformity of temperature is the great requisite. Mr. Palmer puts about three inches of straw around his bees, inside of the hive, separated from the bees by canvas, then buries them deeply in the snow, giving very little ventilation, having good success. Mr. Porter places his hives in a long row, about 8 inches apart, packing straw around between them, leaving only the front open. He fills the caps with straw, and chaff, holding them in place by one thickness of cotton cloth. His bees wintered well, while his neighbors lost nearly all. But in spring some of his bees left their hives, thus reducing the number from 17 to 10. Mr. Heddon put some of his bees in the cellar, left some out, buried some in snow, and put straw, and chaff around some, but could discover no perceptible difference in result. Mr. Knapp's only difficulty was with the disease called "dysentery." Mr. Bingham took his bees into a warm room during long-protracted cold weather, heated up to 106°. The bees had a "fly," voided their faeces, and settled down again quietly. It seemed to do them good.—*Country Gentleman.*

Candy for Winter Feeding.

Should any one be so unfortunate as to have bees destitute of adequate food for winter when this reaches them, we should advise using plain candy. Mr. Wilken, of Cadiz, Ohio, has just paid us a visit, and among valuable items given us he mentioned that he had frequently saved colonies, even in mid-winter, under circumstances like the following: An old Quaker had two colonies in December that had stores insufficient to last them a month, and had left them to their fate, as he couldn't "tuss to feed them." As Mr. W. was not pressed for time, he proposed to save both, for one of them as payment in the spring, which proposition was readily accepted. We think a dollar's worth of candy was purchased, the hives were inverted, and the stocks pushed beneath the combs, the two colonies being placed in the cellar, of course. Our friend saw no more of them until the following summer, when he found both had swarmed, and all were doing well.—*Novice's Gleanings.*

Profitable Bees.

We started in our home apiary last spring with five colonies of bees, which we increased to twenty, and procured 600 pounds of surplus honey in small glass drawers and globes.

By 15 colonies of bees, at \$15 each.....\$225 00
By 600 pounds of honey, at 30c..... 180 00
\$405 00

Averaging \$81 per colony.
The swarms are all in good condition for winter.
We use the Keystone and Langstroth Movable Comb Hive, and practice artificial swarming, and keep none but Italian bees. White clover and silver-hulled buckwheat was our main dependence for honey.
S. HOAGLAND.

Pennsylvania, Nov. 10th.

He may be regarded as a master in bee-culture who knows how to winter his stocks in a healthy condition, with the least loss of bees, the smallest consumption of stores, and with the combs unsoiled.

The average weight of workers is 4850 to a pound, avordupois. 1600 drones weigh about the same.

As a supply for the winter, a strong stock should, on the first of November, contain at least one pound of honey for every thousand bees; and a weak stock should then have a pound and a half for every thousand bees.

In a favorable year an acre of buckwheat in blossom can furnish 25 lbs. of honey daily; and a strong stock of bees, not having over half a mile to fly, can carry from six to eight pounds a day.

A large natural swarm of bees carries with it four or five pounds of honey when leaving.

Poetry.

The Old Barn.

BY ALFRED B. STREET.

The ghostly old barn, with its weather-stained frame,
How often it rises to view!
In its narrow green lane cut in parallel tracks,
Where the heavy farm wagon rolled through.
Its broad folding doors and the stable door next,
And the roof soaring upward in gloom,
Save the net-work of light from the knot-holes and chinks,
Which scarce could the darkness illumine.

The hay mow, how fragrant and welcome its scent!
How soft and elastic the hay!
The nooks, what safe coverts for "hide-and-go-seek!"
The floor, what a platform for play!
On the floor, like the beat of a pulse, went the flail;
And the huskers, the corn how they hulled!
And when ceased the husking, how merry the dance
Till the stars in the day break were dulled!

Next the yellow-brimmed oat-bin the straw-cutter stood,
The barrel of chaff by its side;
And a cast-away plough broken off at the top,
With clay stains all over it dyed.
A space, a cleft grindstone, a buck-saw a cask,
With a brace of bright pitchforks stood near;
And I envied the strength that the loads to the loft
With their crescent-bent handles could rear.

The old barn is gone, like the past with its'dreams,
Which crowded, chaotic, my brain;
All are gone—all are gone! and yet I often wish
I could live in that Eden again,
Though the barn, low and dark, is a dwelling of mark,
And the lane is a street, wide and bright,
Yet I long to go back to that paradise track,
All flashing and living with light.

All are gone—all are gone! the soft pictures I saw,
Not one has Time's cruelty spared.
All are gone; and I wonder and smile to myself
That for such things I never have cared.
Yet, somehow they bear in their presence a glow
That the present can never display;
Tis the light of the urn alabaster of youth
That soon fades forever away.

And in that sweet light the heart grows pure and bright,
In the paradise smiling around;
And we wish over and over, we were children once more,
And roaming that magical ground
Its scenes, how grotesque, and how trivial and tame!
And yet, as upon it we dwell,
Like the pool of Bethesda, it freshens the heart,
And brightens our thoughts with a spell.

Horse-Talk to Men and Boys.

Up the hill, whip me not;
Down the hill, hurry me not;
In the stable, forget me not,
Of hay and corn, rob me not.
With sponge and brush, neglect me not,
Or soft, dry bed, deprive me not;
With bit or reins, jerk me not,
And when you are angry, strike me not.

Agricultural Intelligence.

Meeting of Hamilton Township Farmers' Club.

At the last meeting of the Township of Hamilton Farmers' Club, held at Cobourg, on the 27th December—Alex. McDonald, Esq., President, in the chair, Mr. James Russell opened the subject of discussion on "Implements for stirring the soil," by a few introductory remarks on the rude nature of the tools used in early husbandry, and observing that he should confine his remarks to the improvements that have been made, said, "The first plough that I can remember anything about (and that is well nigh forty years ago), was one with one still, or handle, and, I think, the mould-board was made of wood, with a pin through the handle of it. It had this recommendation, that you could hold the plough with one hand, and the whip [with the other, and that was very convenient for driving the oxen. The next one that we used was the old Polly plough, made in this town. It did very well for breaking up new land. It turned a good broad furrow, and laid it very flat. Then we used one called the Norton plough, but did not like it very well, as it did not press the furrows enough. Latterly we have used the Hill ploughs, and, in my opinion, they are far the best ploughs we have yet had. You all know how much Hill improved his ploughs. What a difference between the heavy, clumsy wheel-plough that he first got up, and the neat, handy plough of his that we now have in use amongst us.

I need not describe the various kinds of harrows that are, or have been used amongst us. For my part, I think the old double four-billed harrows by far the best. They do their work well, and are durable when properly made. In regard to cultivators, there certainly has been a great improvement in this class, both in drill, and field cultivators, they are greatly ahead of those we used to have about twenty years ago. I need not describe them to you. There is an iron one soid in town by Collins, that I like as well as any I have seen.

I intended to have said something about our smaller implements, such as manure, and hay forks, rakes, spades, hoes, &c., but to describe them would take up too much time. I will simply ask those of you, who can look back, say thirty years, to compare the great, heavy, unsightly implements that we had then, with the beautiful, light, neat, and durable ones we use now. That is, I think, all that is required to convince any one of the vast improvement that has been made in all our agricultural implements during that time."

Mr. McEvers said, that within his recollection, when they wanted a new plough, they went to the woods and looked up a twisted maple tree, and from it they split out a mould-board, then they picked a crooked oak, and from that they made the beam; any straight pole did for a handle. These ploughs answered very well where the ground was smooth, but if you struck a root or stone, they were very apt to kick up and strike you, perhaps on the nose. The first improvement in ploughs, that he recollected, was a two-handled one, made in the township, by the late Mr. Wallace. This was the light a wonderful fine plough at the time, and used (when it could be got), to be borrowed all over the neighborhood. No doubt there had been great improvements since then, from which we derived the benefit, but we had to pay for all the improvements. The implements then did not cost near so much, in fact, some of the implements we use now cost more than our farms were then worth.

Mr. Phillips said, that where he came from, he had seen some pretty rude specimens of ploughs—no iron about them except the coulter, and the share; the mould-board, and all the other parts wood. His father imported the first iron Scotch ploughs that

were used in that neighborhood. He thought that at our shows we ought to go a little farther than looking at them, and test their working, and draught. He had used what they called the shifting, or double plough (called here the side hill plough). They did not work well, but great improvements had been made upon them since he tried them.

Mr. T. A. Pratt said, that he could not go back like Mr. McEvers, thirty or forty years, as that was before his time. The plough that he had chiefly used was the Hill plough. He had used the lap-furrow plough. It would do more work than the Hill plough, but it would not do it so well; yet he thought it could be beat by one he saw at the Provincial Ploughing Match this fall. It had been imported by Mr. Rennie, of Toronto, and he thought it made the best work of any plough he had ever seen. He did not agree with Mr. Russell about harrows. No doubt the harrow mentioned was a good one, but he thought that a set of iron harrows he got last spring was far superior to them, as they did far better work. The only cultivator he had ever used was one got up by Mr. Carruthers, on the Front Road, and he thought it did as good, or rather better work, than any other he had ever seen.

Mr. Carruthers said, that though no doubt their pioneer fathers had many, and great difficulties to contend with, it seemed that they got their ploughs cheaper, and easier, than we now get them. He had used several kinds of ploughs. The first he used was the Norton plough; then he wrought with the Dawson plough; after it he tried the lap furrow, and now he used the Hill plough, which, he thought, was vastly superior to any of the others that he had used. It did very good work. He had seen the plough mentioned by Mr. Pratt. This, he thought, would be better than the Hill plough, but he had not tried it; had seen the wheel plough at the Provincial Match, and thought it did good work; it was not to be compared with the other plough. Improvement in our agricultural implements was making rapid strides. Many of our farm implements would do credit to any country. The makers of them deserved great praise for their enterprise in bringing them to such perfection. He preferred what they called the Scotch angle harrow to the iron ones. No doubt the iron ones did good work where the land was smooth, and free from stones, but they were not suitable for rough, stony ground. He could say very little about cultivators. He once borrowed one, and broke it going across the field the first time with it; believed them very useful on land free from fast stones, as they made a very good seed bed on fall ploughed land.

Mr. Toms said, that he did not think their English implements were any improvement on our Canadian ones. The implements in use here were made much lighter than theirs. He had used a wheel plough called "Davy's patent." It was a double furrow plough (that is, turned the furrow to either side). It was rather an expensive plough, costing equal to forty dollars here. He was rather surprised to see so much of our ploughing done with single furrow-ploughs, that would only turn the furrow to one side, as he had seen double-furrow ploughs that would do as good work as any single-furrow plough would do. When the ground was ploughed with these double-furrow ploughs it was level, with no furrows left in it. Their land was mostly under-drained. He had seen a two moulded plough, drawn by three horses. On the land on which he saw it tried, two horses would have worked it well enough. He thought there would be difficulty in turning it, and the land would need to be clean, and clear of stones, for it to work in. He had seen a three-wheeled iron plough, two wheels before, and one behind. Two good horses could plough three acres a day with it; but it was heavy, and costly. He had used a seed drill, and thought it a great improvement. It was

especially beneficial in a dry season. It deposited the seed all at the same depth ; it needed less seed ; the crop came up at all the same time, and it ripened evenly ; the crop was more equal, and the sample better ; but the ground needed to be clean to allow of their use. He thought that on our light land a heavy roller would be a very good thing ; though we could not work our land too much if we rolled it afterwards.

Mr Black said, he had used several kinds of ploughs—the Norton, the improved Norton, the Scotch Canadian, and now he used the Hill plough. He preferred it for all sorts of ploughing, to any other he had seen around here. He preferred the eight billed (Scotch) harrow, to the iron ones ; did not like the six billed harrows, as they would not break their track right.

Mr D. McKinley said, he had used the Hulbert plough mostly, but did not think it a very good sod plough. He had never tried the Hill plough. He liked the Scotch Diamond harrows best.

Mr P. Tenant said, that we had no such good ploughs here as used in the West. The Hill plough was the best that we had. He used a cultivator, and found it very useful. It did as much good as a ploughing in the spring of the year.

Mr. McDonald, the President, said, he was highly pleased with the discussion ; it was very interesting to have our ploughs described for more than forty years back. For his part, he thought different soils required different kinds of ploughs. A plough that would be very suitable on a fine, loamy, light soil, would not answer so well on a stiff, heavy clay. The Hill was a very good green sod plough, but he did not like it so well for stubble, or summer-fallow ploughing ; it was very easily choked out on rough stubble. He thought our ploughs were lighter, of easier draught, and did as good work as the Old Country ones did. He had mostly used the Scotch harrows, and found them to answer very well. He believed the iron harrow was a good harrow, and did good work where the land was not stony. He found the cultivator very useful for crossing fall-ploughed land in the spring of the year—thus breaking the crust, pulverizing the soil, and mixing fine manure in it. They were also very useful on summer fallows. He thought that we were greatly indebted to our mechanics for the great improvement they have made in our agricultural implements of all kinds. Though we might not yet be at the top of the tree in that respect, he was sure our implements would bear a favorable comparison with those of any other country. He approved of making all our tools and implements as light as was consistent with sufficient strength, as we require to husband our own strength all we can during our short, warm summers.

Great Corn Crop.

We copy from the Westminster Advocate, the following account of a great corn crop grown last year by Mr. John W. Murray, of Hampstead District, Carroll County, Md., with the mode of cultivation. Mr. Murray says :

"I will give you the amount of corn produced, and the mode of cultivating the same. The land is low, and is overflowed by the washings from the hill, and from my barn-yard, and was in grass for nine years prior to the spring of 1872 ; then plowed and planted in corn, and yielded 26½ barrels per acre. This was the same piece of ground that I used last year. The stubble was left until I had planted all the rest of my corn. On May 16th, 1873, I plowed the ground very deep, harrowed it the same day, and rolled it on the 17th. I sowed 300 lbs fine bone, and harrowed it again the same day. I marked it off 32 inches one way, and sowed 200 lbs Rhode's superphosphate in the rows, and dropped the corn 10 inches apart, one and two grains in a hill. On the 4th of June it was badly missing ; dragged the ground and replanted ; 10th of June ploughed, and still some missing ; 17th of June ploughed and hoed, and plastered the weak spots ; 30th of June dragged, plowed and thinned it ; 4th of July killed it with a potato plough, as deep as one horse could pull, and

kept thinning as I thought it required, until shooting time. The variety of corn was the Chester County Mammoth Yellow.

"In regard to the yield - the ground was surveyed by a practical sworn surveyor, cut off by two sworn men, and measured by a sworn man, in the presence of many others, and measured 29.9-10 barrels, and the same measured at the cattle scales in Baltimore, made 30½ barrels, for which I hold receipt which is annexed. If any persons doubt the yield let them come forward, and they can be accommodated with a bet from one hundred to a thousand dollars. I am not a one acre farmer, but cultivate forty acres, with myself and three boys, or perhaps I could have given the one acre more attention, and had a larger yield, which I believe could have been done."

Another Big Crop.

We see from the Washington (Pa) Reporter, that a committee of the Washington County (Pa) Agricultural Society reports that James W. Dickey, of that county, raised on fifteen acres (actual measurement) the enormous aggregate of twenty five hundred and thirty five and three fourth bushels of shelled corn—or one hundred and sixty nine bushels of shelled corn to the acre. This beats friend Murray's crop about 16½ bushels.—Maryland Farmer.

Birmingham Poultry Show.

This great Exhibition of poultry and pigeons took place in December, and was in many respects in advance of previous years, the classes, as a rule, were filled with good specimens, and there were fewer inferior birds than usual in so large a collection. The total number of poultry exhibited was not so great as last year, but the pigeons were in excess of the previous year so that the total entries were nearly the same in number. Total number of entries in 1872 was 2,385 ; in 1873, 2,341.

The follow shows the weights of the birds for the respective years of 1872 and 1873

Weights of Prize Turkeys.

	1872		1873	
	Prize	1st. 2d.	Prize	1st. 2d.
Old birds, single cocks.	35 6	35 10	35 6	35 10
Pairs of hens.	23 8	23 8	23 8	23 8
Bred this year single cock	29 0	24 12	29 0	24 12
Pair of hens.	23 10	23 4	23 10	23 4
	31 0	31 0	31 0	31 0
	30 10	23 14	30 10	23 14

Weights of Pairs of Prize Geese.

	1872		1873	
	Prize	1st. 2d.	Prize	1st. 2d.
White old birds.	51 12	50 0	51 12	50 0
Goslings.	60 12	40 0	60 12	40 0
Grey old birds.	55 0	52 0	55 0	52 0
Goslings.	47 8	42 12	47 8	42 12
	46 12	42 0	46 12	42 0

Weights of the Pairs of Prize Ducks—Ayloshbury Ducks.

	1872		1873.	
	1st. 2d.	1st. 2d.	1st. 2d.	1st. 2d.
First Prize.	18 12	17 6	18 12	17 6
Second Prize.	17 4	16 14	17 4	16 14
Third Prize.	16 14	16 14	16 14	16 14
Fourth Prize.	16 14	16 14	16 14	16 14

Rouen Ducks.

	1872.		1873.	
	1st. 2d.	1st. 2d.	1st. 2d.	1st. 2d.
First Prize.	19 12	19 12	19 12	19 12
Second Prize.	18 12	18 12	18 12	18 12
Third Prize.	18 12	18 12	18 12	18 12
Fourth Prize.	18 12	18 12	18 12	18 12
Fifth Prize.	18 12	18 12	18 12	18 12
Sixth Prize.	21 0	21 0	21 0	21 0

Potatoes in the United States.

According to the last decennial census, New York is the "Banner State" in the amount of Irish potatoes produced, returning the enormous yield of twenty-eight million bushels ; Pennsylvania follows with nearly thirteen million, Ohio with eleven million, Illinois and Michigan each with ten million, Maine with nearly eight million, Wisconsin with six million, Iowa, Indiana and Vermont each with ap- proximately five million, and New Jersey and New Hampshire with more than four and one-half million bushels. The particular parts of the country which yield the most according to the area cultivated are Maine, New Hampshire, Vermont, and Northern New York. The best potatoes also come from these States, as the millions of bushels shipped to the Southern States each year will attest.

The twentieth volume of the English Herd-Book, now published, contains the pedigrees of 2,551 bulls, beginning with 30348 and ending with 32593. The cows and their produce number nearly 6,600.

The Prince of Wales has accepted the presidency of the Smithfield Club for the year 1875.

WHAT is true of the rose, is true of any flour ; by any other name it would smell as wheat.

The practice of giving a general warranty in the sale of horses is becoming much discredited in England, and before long there will be a radical change in the law relating to these cases.

A SERIES of experiments is now being conducted in Paris, under the direction of a committee of the Academy, with regard to the preserving meat by cold. The experiments are being made on the premises of M. Teller, at Auteuil.

A sale of the once celebrated breed of Upton Long horns, took place on the 17th of December last. No high prices were realized—fifty guineas being the highest bid for any animal. Nearly all the breeders of this class of cattle of any note were present or represented.

MACHINERY must take the place of hand labor ; but machinery, however perfect, needs a man of intelligence to keep it in order, and to manage it to the best advantage. Machinery does not do away with the necessity for labor ; it merely changes its character. It demands brains rather than muscle.

ROBINS NESTING IN DECEMBER.—As a sign of the extraordinary mildness of the season in England, a writer in the Field says that on the 8th December, while some workmen were in the act of felling a tree on the rectory farm at Elvington, North Yorkshire, they discovered a robin's nest containing two eggs.—Both the thrush and the blackbird have frequently been heard singing in the North Riding during the past fortnight.

LARGE TROUT IN THE AVON.—A splendid trout of the extraordinary weight of 17½ lbs., was recently caught in the River Avon, at Stratford-sub-Castle, about two miles above Salisbury. It was a male fish, the dimensions of which were as follows :—Length, 2ft. 9in., circumference, 1ft. 8in., and width of tail, 9½in. It was unfortunately so injured in the net, and although immediately placed in a stream, it very shortly died. The river was being dragged for jack.

A SUCCESSFUL test as to the freshness of Canadian meat is reported from the Alexandra hotel. Canadian beef, mutton, and turkeys, were served up for the guests. The joints of beef and mutton were roasted, and a unanimous opinion was expressed that the viands were equal to first-class English meat. The mutton was small, and fat, resembling Welsh mutton, the flavor being excellent. The turkeys were remarkable for fineness of flavor and richness of fat. All the meat was about fourteen days killed. Allowing for the cost of transit, &c., it is computed that the meat bought at 3d per lb. in Canada, could be sold profitably here for about 6d. per lb.

—The Winter show of fat cattle, farm produce, and manufactures, which is now open in the Agricultural Hall of the Royal Dublin Society is the best which has ever been held in that city, both as regards numbers and the quality of the stock. The Society boasts especially of the display of horned cattle, and confidently challenges comparison with the best specimens exhibited at other shows. There is also a large and good collection of sheep and swine. It is satisfactory to notice the excellent condition of the animals and the evidence which they present of care and enterprise in providing the best blood. There is a display of roots and other agricultural produce, such as it would be difficult to equal out of Ireland.

SHORT-HORN STEERS.—In the 7th Vol. American Short-horn Herd Book J. G. Eun, of Ohio, gives an account of 20 steers sold by him Dec. 28, 1865. Six were thorough bred short horns, the rest from three-fourths to fifteen sixteenths Short-horn, chiefly of the higher grade. Except four or five, they were three years old in spring of 1865, the four or five were four years old in summer of 1865. They were given a quart of the milk of their dams, when calves, and afterwards fed out of doors on hay, straw and corn-stalks. In the spring of 1865 they were fed shock-corn for about two months, estimated to amount to 20 bushels each. They had no other rain at any time. They were sold Dec. 28, 1865, at which time they weighed 34,553 pounds, an average of 1,727 pounds each. They were sold at 8½ cents per pound, live weight—about \$146.75 each.

Miscellaneous.

Medicines and Poisons.

It has been well observed that medicines and poisons differ only in doses, but experience proves that quantity is not the only point of distinction between the two. Recent communications from correspondents respecting the fatal effects of carbolic acid and santonine on dogs, would seem to suggest that the same agents, in precisely the same quantities, applied in exactly the same manner, produce very different effects. But, in justice to the authorities under whose sanction or by whose recommendations certain potent agents are used medicinally, we are bound to call attention to the fact that the ill results always occur in the experience of amateurs. We do not mean that amateur medical experiments always fail, but when a startling discrepancy does present itself between science and practice, the mistake of most of them is invariably in the experience of the non-professional man. These reflections have been forced to us again and again, and once more recently in reference to the action of carbolic acid and santonine.

Take the first agent to begin with. We have used carbolic acid (pure) and the liquid residue (terebene) as a remedy for skin diseases, and for the destruction of parasites, for years without a mishap. A solution of one part in forty parts of water has been employed repeatedly as a dip for the purpose of destroying fleas infesting pet dogs, and the little animals have been immersed in the fluid up to their eyes without injury. Sheep have been dipped in a mixture of one in twenty, and have not suffered in consequence. Further investigation proved that more diluted solutions are equally effectual, but in our early experiments we used them without a single accident.

Cases of fatal results from the employment of carbolic acid mixtures of one in fifty, and even of higher dilution, have been reported on many occasions since carbolic acid came into favor as an anti-parasitic remedy. Some of the cases have been investigated, and in each instance some error has been detected. One of our correspondents admits that the mixture which injured his dog was made by his man, for whose scrupulous care he pledges himself. We confess to the utter absence of any such faith in the conscientious exactitude of men who have the charge of animals generally. On the contrary, we know that there is a wide-spread popular belief in the efficacy of strong doses; if a small quantity of the agent prescribed fails to produce the expected results, a considerable addition will be made to the next dose which is given; and while the attendant's respect for the truth is satisfied by the statement that he gave the exact dose, he does not always feel bound to mention the little addition which he subsequently made on his own responsibility. One candid individual, under whose hands a dog had died after a dressing of carbolic acid mixture, admitted that he found the first dilution which was ordered so beneficial, that he could not resist the temptation to obtain a still more decided advantage by using a much stronger mixture on the following day.

Irrespective, however, of such intentional variations as those to which we have alluded, the strength of a compound may be accidentally altered, owing to some slight change in the conditions which are indispensable to a perfect mixture. Some time ago we had to inquire into the causes of the death of sheep from dipping in a mixture of carbolic acid, which had been used for many weeks previously without accident. In this case very little investigation was required. It was apparent at once that the combination of the active ingredients with the water used to dilute them was imperfect; and, instead of a uniform mixture being produced, the acid separated from the other constituents, and floated on the surface as a brown scum. The first few sheep which were dipped in the fluid were in contact with the undiluted acid, and succumbed accordingly to its energetic action. The addition of a little common soda to the water at once had the effect of causing a perfect and intimate mixture of the carbolic acid with the water, and no more difficulty was experienced. Nevertheless, it is easy to understand that a person using the agent for the first time, with the results above stated, would be inclined to place carbolic acid among the deadly poisons, and to so speak and write of it in future.

In reference to the action of santonine, it is not so easy to explain the different effects which have been observed. But the rule still obtains that the fatal cases have occurred in the experience of amateurs; while professional observers do not record any instances of injury arising from its use.

Quite recently the action of santonine has been tested on three dogs, each of which took a consider-

able dose without suffering any serious inconvenience. One small puppy had five grains to commence with, and, as far as could be seen, without any result. Ten grains given to the same animal on the following day produced the effect. Another dog had ten grains without effect, but another dose of twelve grains was followed by symptoms of cerebral disturbance, which soon passed off. Another dog manifested similar symptoms after a dose of twelve grains; this animal also quickly recovered from the effect of the drug, and is now quite well. These experiments prove that santonine may be safely given to the dog in considerable doses. It is impossible to specify all the conditions which may modify the influence of the medicine and lead to the development of poisonous action. Purity of the agent is the first essential; the dose, it appears, may be varied within certain limits without risk; but a professional man would hesitate to give even a small quantity of santonine to an animal which gave any indications of cerebral derangement. We are strongly inclined to believe that, in the cases referred to by our correspondent of death from a single grain of santonine, there was some radical mistake, which, if detected, would explain the result without reference to santonine at all.—*Field*.

Ironing Sleighs.

A too common error in the ironing of sleighs is the loading of them with scrolls and ornamental iron-work for the purpose of improving their appearance and increasing the strength. So far as the appearance is concerned, the scroll work is not recognized as being of any advantage, while the extra weight imposed fails to add to the durability of the vehicle. The main iron-work should be that of the under side of the beams and knees; the most perfect manner of constructing this is to plate the lower end of the latter a little more than half their length with half round iron of the full width; from the top of this a brace of round iron should be welded on, extending up to the beam to a point about two inches short of the centre; from the point where the brace is attached there should be welded a piece of flat half-oval iron the full width of the knee; this should extend to the top of the latter and be turned with a heavy corner, and should reach to the centre of the beam, and be welded to the brace at its point of contact; this secures a strong brace to the knee and beam. The bottom end of the knee-plate must have the T head to attach it to the runners, but this head should not be less than six inches long, and be secured by four rivets or bolts; the T heads to the front knees should be still longer, the lower branch extending beyond the bend of the runners, with the upper one high enough up to protect the runner from injuries received forward of the knees. The side stays need not be as heavy as they are generally made; as their principal use is to prevent the knees from being drawn forward, they should, in all cases, be perfectly straight, as when bent they have no value as braces over the weight required to bend the iron. The front iron-work for the shafts and jack heads should be as light as possible, the front, under any circumstances, being much more heavily ironed than the other portion, and the tendency to run on the nose thereby increased. The position of the draft-eye is dependent entirely upon the height of knee and bend of runner and shafts, and requires more skill on the part of the blacksmith to properly locate it than any other one thing in connection with the iron-work.—*Carriage Journal*.

A Floral Ornament for Drawing-Rooms.

Last August a lady friend of mine gathered a handful of the world renowned flowers of Forget-me-not (*Myosotis palustris*), and to preserve them as long a period as possible, they were put in a large soup-plate filled with rain water. The flowers were placed near the window, so as to enjoy the advantages resulting from an abundance of light and air, and the water was replenished when needed. In a surprisingly short space of time—three weeks, I believe—white, thread-like roots were emitted from the portion of the flower-stalks in the water, and they ultimately formed a thick net-work over the plate. The flowers remained quite fresh, excepting a few of the most advanced when gathered, and, as soon as the roots began to run in the water, the buds began to expand, to take the place of those which faded, and up to the middle of November the bouquet—if it may be so called—was a dense mass of flowers, and a more beautiful or chaste ornament for the indoor apartment cannot be imagined.—*Thomas W. Tinsley, in Gardener's Magazine*.

English Farming.

The writer of "Ogden Farm Papers" in the *American Agriculturist*, says in reference to English farming—"As a whole, the farming of England is the best in the world. The farms are usually large, and the farmers men of intelligence and of large capital. More attention is paid there than anywhere else to the making of manure; grain is largely grown, and the system of a regular rotation of crops, to maintain the fertility of the soil, is almost universal. Over a large part of the country the cash profit of farming is secured by the sale of grain, but the fertility of the land, the ability to produce grain, is kept up by the feeding of a heavy stock of cattle or sheep, which are kept mainly for the sake of the manure they make and which are largely fed on purchased food—in great part oil-cake and Indian corn imported from America. Such a complete system could hardly be carried out on so large a scale on many farms in this country, for few of our farmers have the necessary capital, but it is, after all, the system toward which we should work and to which we must look for the permanent future of our agriculture. Our farming can never be perfect, nor anything like it, until we shall have reached the point of a constant improvement of the soil. A constant deterioration has been a necessary consequence of the rapid spread of population over the whole breadth of the land, but it must before long be followed by a wave of better farming, which alone can enable such a population to be self-supporting. Happily the improvement already made on farms at the East which were considered to have been exhausted, shows that the injury was not deep, and that the pioneers who have been tempted westward by a virgin soil have left behind them a fair field for the establishment of the better agriculture that an older and denser community demands and makes possible.

How to Succeed.

The young man who thinks he can carry his boyish pranks into the serious business of life is not a man, and defrauds himself and his employer. "After work, play." That should satisfy the most sanguine. "Business before pleasure," is the motto of the prudent man whose guide is experience, and it is sufficient for the novice in active life.

But it is despicable to see the young man just starting in life so wedded to his former enjoyments as to place them above present duties. Yet this is often the case. The young man, who, to steer his own bark, launches forth on the sea of life, too often looks back on the pleasures he leaves behind, and, forgetful of present duties, steers back to past enjoyments. There is no royal road to success any more than to knowledge. He who would succeed must work; and after all there is more real enjoyment in work, which has a worthy object, than in play or pleasure, intended to kill time. We remarked a few days ago to a business man whose present means are amply sufficient, but who worked really harder than any of his numerous employees, that he ought to "take it easy." Said he: "I am never so happy as when I have more than I can do. I may wear out in working, but I dread to rust out in idling." He was right. His work was a part of himself, a part of his life, and it was always faithfully done. To apprentices, especially, this earnestness and interest in their work is necessary, if success is ever to be attained.

WASTE LANDS IN IRELAND.—*Saunders', Freeman, Belfast Newsletter*, and other Irish contemporaries, liberal, and conservative, advocate the improvement of the waste lands of Ireland, by the Government purchasing, draining, road-making, and then selling, or leasing in lots. They say that out of four and a half millions of acres of waste lands—bogs, moors, swamps, and heather, at least two millions would be improveable, and that the average annual value of these would be one shilling per acre, or, if purchased by the State, the cost would be about thirty shillings. The reasons they give for State interference, and purchase, are that the estates are very large; that since 1845, Government has offered loans, repayable in twenty-two years, principal, and interest, at 6½ per cent., and in thirty-five years at 5 per cent., to induce the proprietors to improve, which they have not done; that when Acts of Parliament enable railways to acquire land when wanted for the public interest, so should they with waste lands, when the owners are unwilling to do their duty. We still think many would be willing to sell to the State. The surplus church funds would be sufficient for these, and other Irish reproductive works. If our Government requires an example, the Netherlands have set it in the drainage, reclamation, and improvement of Haarlem Mere, which they afterwards sold in estates of 40, up to 600 acres.

Confessions of an Agricultural Writer.

Mr. Harris, so well known to the readers of the American Agriculturist, says, in the last number of that journal:

"I have now lived for ten years on this farm, and have written 'Walks and Talks' every month during this time. I feel somewhat ashamed to think how much of my purely personal matters I have presented to the public. I commenced to write without thinking; I told precisely what happened. Unfortunately, what happened proved to be largely mistakes and failures. I sent to Gregory, of Marblehead, for some seed of his best variety of onion, and sowed it on land that I should now think too poor to raise white beans and too weedy to sow to buckwheat. You can imagine the result. My first crop of oats was eight bushels per acre, and of barley twelve bushels. Farming is slow work. I have not yet got my land anything like as clean as I want it. I keep working and hoping." "Yes," says the Deacon, "and walking and talking."—Precisely. That is what I want to get at. I have told of so many disappointments and discouragements that while, as I said before, I commenced this series of articles little thinking that I should continue to write them so long, yet I do not know how to stop. I believe in farming, and feel sure that it can be made not only a pleasant but a profitable business. And if my land is getting cleaner and richer and my crops larger and more profitable I hope to be excused for saying so. I have told of my failures and the reasons for them. I want to tell of my successes—if I ever have any. I think the readers of Agricultural papers do not need information so much as exhortation. What we need is encouragement. We want to believe that good farming will pay—and it most certainly will. Or, if it does not, no other business in the community can long continue to prosper."

Vegetable Instinct.

If a pan of water be placed within six inches of either side of the stem of a pumpkin or vegetable marrow, it will in the course of the night approach it, and will be found in the morning with one of the leaves in the water. This experiment may continue nightly until the plant begins to fruit. If a prop be placed within six inches of a young convolvulus, or scarlet runner, it will find it, although the prop may be shifted daily. If, after it has twined some distance up the prop, it be unwound and twined in the opposite direction it will return to its original position or die in the attempt, yet, notwithstanding, if two of these plants grow near each other, and have no stake around which they can entwine, one of them will alter the direction of the spiral, and they will twine around each other.

Duhamel placed some kidney beans in a cylinder of moist earth; after a short time they commenced to germinate, of course sending the plume upward to the light, and the root down into the soil. After a few days the cylinder was turned one fourth around, and again and again this was repeated, until an entire revolution of the cylinder was completed. The beans were then taken out of the earth, and it was found that both the plume and the radicle had bent to accommodate themselves at every revolution, and the one in its efforts to ascend perpendicularly, and the other to descend, had formed a perfect spiral. But although the natural tendency of the roots is downward, if the soil beneath be dry, and any damp substances be above it, the roots will ascend to reach it.

Mr. Tupper of Round Hill, Annapolis County, N. S., and Mr. Starratt of Paradise, showed bull calves at the Annapolis Agricultural Society, that were under seven months old, and weighed respectively 636 and 664 lbs.

There are some people who believe that gilt-edged butter can be made from the cream of any well-fed cow—if one knows how to do it. There are others who believe it can only be made from the milk of Jersey cows; these latter have Jersey cows for sale.

INDIANS AS FARMERS.—It is said that the Indians of Bad River secured fine crops last year, and the following will show the amount raised: oats, 3,000 bushels; corn, 1,000 bushels; potatoes, 5,000 bushels; hay, 300 tons; ruta bagas, 2,000 bushels, besides getting 1,000 bushels of cranberries and two tons of wild rice.

An unfavorable year should always be a profitable one for a good farmer; then he is to make money, if ever. In favorable years crops are abundant and prices are low. With rich, deep-ploughed land, drought need not be feared, and average crops can be grown, which will bring two prices. It is the good farmer only who ever makes money.

CHARCOAL FOR HOGS is frequently prescribed in agricultural papers, without any directions as to quantity. It should not be given carelessly and at random. Good fresh charcoal, properly pulverized may be given at the rate of one teaspoonful for every hundred pounds of animal, whatever its size may be, and at this rate will do no harm nor hurt the animals, and may be often very useful.—Country Gentleman.

A NEW MALADY—An editor says, "We have lately heard of the diagnosis of a new disease discovered by our associate editor, Dr. S., not long since. A lady of remarkable conversational powers approached our medical friend with—"Dr. S., I have a very sore tongue." "Let me look at it," says the doctor. The unruly member was duly protruded. "It is sun-burnt, madam, sun-burnt," remarked the doctor, who suddenly recollected that his professional services were wanted in another direction.

DEER IN THE ROYAL PARKS.—The number of deer kept in Windsor Great Park, on an average of the last ten years, is 1655, as appears from a return just issued; the number killed is 128, and 16 are annually required for the Royal Hunt. The net cost is estimated as under £1,500 a year. In Richmond Park, Hampton Court Park, Bushey Park, and Greenwich Park, the number of deer kept is 2,889; the number killed per year, 372; the estimated cost annually, £1,894. At Phoenix Park, Dublin, 730 are annually kept, 106 annually killed, of which 30 are given to the poor, and 24 sold; the remainder for distribution in Her Majesty's service. The average net annual cost is £203.

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