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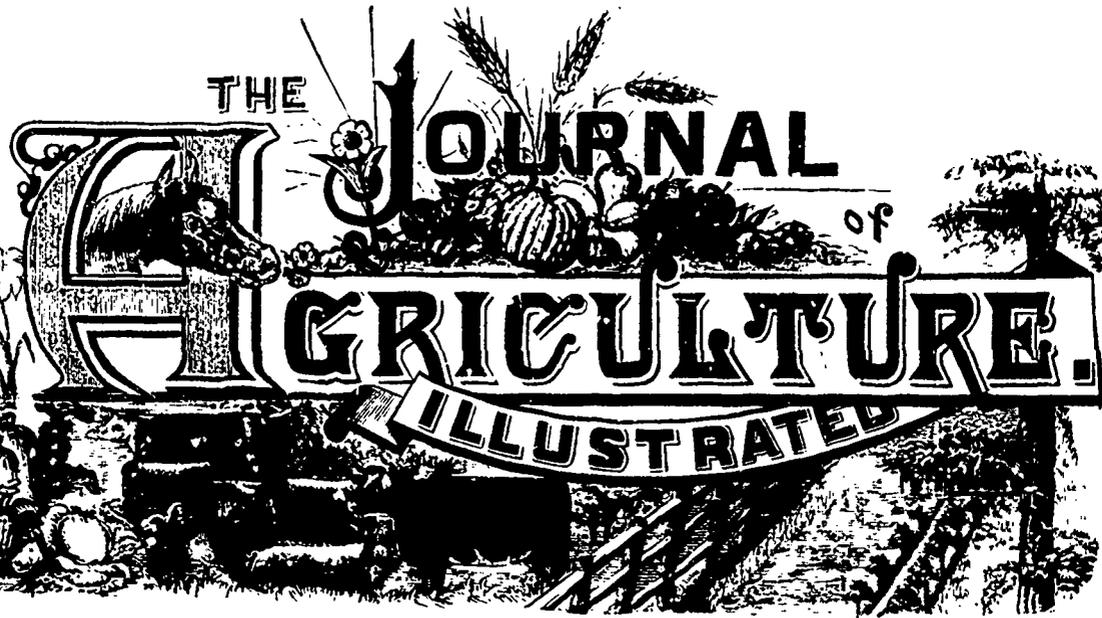
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De Omnibus Rebus.
Lincoln Coll. Farm, Sorel, July 1884.

The Breeder's Gazette of Chicago says, that there is no doubt that the Shorthorn is the favourite dairy-cow of the English farmer. Mr Tisdal, at the Gloucester Conference of Dairymen, declared the Shorthorn cow to be "superior to all others for the purposes of the dairy farmer, and all our leading dairy districts attest this fact by using Shorthorns, more or less purely bred, or native sorts repeatedly crossed with them." Mr Hall and Mr Sheldon held the same language. These men are largely engaged in producing milk for the London market. I recommend this notice to the attention of Mr Couteur, V. S.

Mr Farleo, whoever he may be, is convinced that "roots keep cattle in excellent condition, but make no increase in the flow of milk, while ensilage gives a very perceptible increase in the flow of milk!" What utter nonsense people will put their names to.

Clover-hay.—A correspondent of the Country Gentleman, in giving an account of his method of making clover-hay, says that he passes the tedder over the newly mown clover twice. I am sorry to hear it, for, otherwise, his ideas on the subject are marvellously correct. I have made hundreds of tons of clover-hay within 15 miles of London, where good clover always fetches six or seven dollars a load (18 cwt.) more than any other sort of hay; I have seen my neighbours at work all round me, but I never saw more than one method pursued in carrying on this most difficult job.

Now, to day, July 26th, I was wandering over a neighbouring farm, with a view to its purchase, and I came suddenly on a piece of clover which told its own tale. There had been originally at least 2½ tons to the acre, but the whole had been so luxuriant that it was kneed-down, and not less than one third of the stem remained uncut on the ground. All around were leaves, rotting in heaps, and one saw that all that the barn received was the stalk and the long-ripe flowers; the thing was clear: here then is the reason why clover-hay is almost unsaleable in the province, whereas, in London, as I said, it invariably fetches the highest price in the market.

We will then make our clover-hay in the following fashion. When the majority of heads are out in bloom and the weather seems propitious, cut the crop. The sun and the air having wilted the upper side, turn the swathes gently and carefully, shaking the clover as little as possible. When the freshly exposed surface is dry, get the whole into cocks of a moderate size, raking the ground clean, and when fit, get them into barn, or preferably into stack, as soon as possible. A good sweating in the stack, tho' not in the barn, will do more good than harm. Managed in this way, the hay will be as superior to the usual stuff brought to market as turtle soup is to the mock article; all the leaves will be found adhering to the stem, and the whole mass will have a sticky, gummy feel, quite surprising to the novice. I have seen samples of clover-hay exposed for sale in the Mark Lane market which, barring the colour, were more like plugs of chewing tobacco than anything else. Hay in this condition

will bear out the value attached to it by the chemist's analysis, whereas, as it is usually seen, the ordinary farmer is quite right in esteeming timothy the more valuable food.

A fidgety hay-season, this. Weather catchy and uncomfortable. To-day, a most copious dew, and, at 8.30 a. m., a shower. However, I can't grumble, as I am at my last acre, and all I have carried is as green as grass. My neighbour, M. Vallée tells me, as I am writing, that, in the Sorrel market, clover is unsaleable! Surely, this must soon be altered. Unfortunately, I shall have no clover to cut for two years, so I can't hope to show, practically, the true system of making it; but I will try to make a small quantity of lucerne into hay next year: it, the lucerne, seems a good plant, and as the oats soon with it are nearly ripe, it will have a good chance to profit after their severance. I am doubtful as to the take of the sainfoin.

Shorthorns can't be made to yield a large quantity of milk, can't they? If the Herd book is any evidence, I think the idea is a mistaken one. Mr Willis's, of Bedale, shorthorn cow Eleanor produced thus.

	lbs.	oz
1851, at 3 years old, from 1 week's cream.....	10	0
1854, at 7 years old, from a week's cream.....	21	4
1857, at 9 years old, 1st week after calving.....	24	0
1857, at 9 years old, 2nd week after calving ...	24	8

See Herd-book of shorthorn cattle, vol. X, p. 345.

Old birds are not &c.: rain all round to-day (July 29th), and telegram says: Variable winds, fine, very warm weather! Tho hay shall remain in cock for all that, as the tobacco is absolutely so wet that I can't get a pipe of it to smoke.

Newton's Sower.—This implement put in the rape very badly. Besides sowing much more seed than the indicator showed, it dropped most of it in the middle and hardly any at the sides. Nevertheless, the rape looks well, and, now, 21 days after sowing, hides the ground completely.

If Mr Ville is right in saying that it is necessary that, to be profitable to the manufacturer, beetroot should yield in the laboratory at least 12 0/10 of sugar, for under this amount little more than 4 0/10 can be extracted on a large scale, and at that rate there is no profit, it is not wonderful that our sugar factories are shut up, in spite of the enormous protective duty, 55 0/10 I believe, on foreign sugar.

A good deal of talk lately about the peasant-farming of France; but the fact still remains that the average yield of France in wheat is 14½ bushels to the acre, the yield of England 29 bushels.

I have received daily telegrams from the Meteorological Service of the Dominion of Canada, hoping by pasting them, with a translation into French, on my gate-post to be of service to my neighbours. I regret to say that the warnings have been of no service, as they have invariably failed to predict a change of weather. In one remarkable instance, Sunday, July 20th was to be fine and clear: it rained all day. In fact, my favourite weather-sign, the dryness or moistness of the tobacco I smoke, viz. the "Myrtle Navy" (this is not a puff), has been worth all the prophecies of the Meteorological Service put together. I cut my tobacco myself, and if it sticks to the cutting machine, rain is sure to follow in 12 hours. The only mistake I have made this season was in trusting to the telegram in preference to the tobacco. On Wednesday, July 22nd, the prediction was "fine weather;" the tobacco was damp; I attributed that to a heavy fog; but at 1.15 p. m. it began to rain, and continued to do so all the afternoon and evening! And to-day, I have just received my despatch: "Moderate winds; generally fair, warm weather;" whereas, my tobacco is as wet as muck, and the rain is on

the point of coming down! (And it did come down, too, only at Berthier and not at Sorrel, thank goodness).

Mr Leclerc, of the Council of Agriculture, was kind enough to give me two packets of tobacco seed, of which one was Havana and the other Canadian. Strange to say they have both prematurely run up to seed at once.

Mowing machine.—The mower I am using was furnished by the Messrs. Beauchemin, of Sorrel, and does its work not well, but perfectly. It goes by the name of "The Young Warrior," and one or two recent improvements have added much to the accuracy of its performance. Both those starlings, they are at the oats again; that is all one gains by being in advance of one's neighbours—the oats are the only grain nearly ripe, and in consequence, the birds are collected in flocks round the field, with the same brazen-faced audacity displayed by those winged creatures which devoured the first crop of poor Robinson Crusoe. And the worst of it is, that they don't care two pence about the gun nor does the sight of their slaughtered fellows deter them in the least from pursuing their nefarious work). There is, attached to the cutter-frame of the mower, an elastic spring, which prevents the hay when falling from clogging the small wheel; not being much versed in the technical terms used by mechanics, I can't describe it better, but it certainly saves many a stoppage.

The horse-rake, from the same firm, is as good as can be, in fact, both mowers and rakes seem to have reached perfection.

Pease.—For table use, I have sown three sorts of pease. Bliss's *American Wonder* was the first fit to eat, and, though the produce is but small the quality is all that can be desired. Sown on the 26th April, the crop was gathered on the 26th June. Maclean's "Advancer," sown the same day as the A. W. was not fit till 9 days later. But my great pea is the new "Carter's Stratagem!" I sowed a peck (at a fearful price, I regret to say) on the 29th May, and to-day, July 30th, they are ready for market—such pods! (I'll go and measure them), four and a half inches in length, and containing from eight to ten large peas each! Height, only from 15 to 24 inches. If I can save the seed, I expect to have enough to sow an acre next year; and an acre of such pease ought to pay well.

I have just received a visit from M. Peloquin, of St. Hyacinthe. Starting with a capital of \$300, he has succeeded in establishing a market garden of ten acres in the neighbourhood of that town, where previously none existed, all the vegetables, except a few produced by the farmers, having been imported from Montreal. Mr Peloquin tells me he has 30,000 cabbages and 9,000 plants of celery, all doing well. A large allowance, I should say for so small a town, in which, too, the use of vegetables as a daily food can hardly yet obtain. It is extraordinary, how long a time it takes to induce the general run of French-Canadians to believe in the absolute necessity of eating mixed food—pease and potatoes, with a few onions and garlic, seem to be the only vegetables they consume.

Mr Peloquin and I had a long chat. Generally, we agreed on the principles to be acted on in agricultural matters, but in one thing we differed: he advocated the use of recent manure for cabbages; I, remarking on the dangerous importation of weed-seeds necessarily incurred thereby, held with well-rotted manure for all crops, adding, that whereas on his heavy land green manure would improve the texture of the soil, on my sandy loam it would make it lighter still. I think I had the best of the argument. Just fancy, when the "wild timothy" grows with such luxuriance and produces such an immense quantity of seed, putting unrotted dung on garden-land.

OUR ENGRAVINGS.

English Shire-Horse, Honest Tom.—This magnificent beast, bred by and the property of Mr Miller, Singleton Park, Poulton, Fylde, Lancashire, is eighteen years old, stands 17½ hands high, and weighs 2,200 lbs. He has won six first prizes at the R. A. Society's Shows; his winnings being in value \$2,600. The hair about his legs is not a blemish, but a most useful protection on the heavy clay soils on which he and his progeny chiefly work.

Trotting Stallion Phallus; record 2.15½. This animal's pedigree combines in direct lines the blood of three famous families of trotters—the Hambletonians, Mambrino Chiefs, and American Stars.

Filipail Second.—A perfect milk-cow. She is now 3 years and 4½ months old, and produced 16 lbs. 14½ oz. of butter in a week at 3 years old. I prefer her udder to the Devons exaggerated one in our engraving.

Devon Cow, Wisconsin Belle, and her calf.—Bred by and the property of Geo. Baker and Son, Hustisford, Wis. U. S. A. Through the month of June, she averaged 48 lbs of milk a day on grass alone, and from 50 lbs of her milk 2 lbs 2 oz. of butter was made. I have often remarked in the Journal that the Devons are as useful a breed of cattle for the middling soils of this province as can be found. Their milk is rich, they give a fair quantity of it, and when they come to the butcher their meat is of first-rate quality.

A. R. J. F.

La Major is a small, even very small, Canadian cow, perfect in shape, and black in colour. She weighs about 650 lbs or 700 lbs, and gives, in spite of her age of thirteen years, fifty five pounds of milk a day at three milking—5 gallons and a half, imperial measure! M. Gérin, the curé of St. Justin, her owner, has refused seventy dollars for the cow.

D. C. EMILE ROY.

Applying Pyrethrum.

Please give instructions in your paper as to the amount of Pyrethrum necessary for an acre of cabbages, and mode of applying it. R. H. [Mix a tablespoonful of the powder with a common pail of water, and apply it by finely spraying. If a watering pot is used, it should have a very fine rose. If the powder is fresh and unadulterated, this will be strong enough for the young larvæ, but as they become older greater strength may be necessary. This may be easily seen by observing whether it kills them. Experience is necessary to ascertain the best strength. The quantity for an acre of cabbage will depend much on the size of the plants, the abundance and age of the worms, and the management of the operator, but a very few pounds would do in any case if the powder is fresh and pure.]

THE WIRE-WORM.—A good deal of damage has been done this season to the barley crop in the neighbourhood of Sorrel by the wire-worm. The plant has recovered to a certain extent, but the yield will be shorter than usual—it is always short enough—We will give a cut of the creature in its various stages next month.

The *clater lineatus*, or wire-worm, attacks all sorts of crops, potatoes as well as wheat, and any means of getting rid of the pest would be very welcome to the farmer. I know of only two cures, and one of those is only of temporary effect—heavy rolling, and rape-cake. The rolling—with a Cambridge or a Crosskill clod-crusher, as a smooth roller is of little use—by compressing the surface of the ground, prevents the wire-worm from travelling about; the rape-cake—broken into pieces as small as a nut—is so favourite a food, that the worm gorges itself, and dies of repletion. Cotton-seed cake

should have the same effect, and it is well worth trying, on newly broken up pastures, especially; as where the land has lain long in grass, the wire-worm, as well as all other noxious insects, has had an unlimited chance of multiplying unchecked.

Mr Charnook, now of Milby, Lennoxville, was the first to bring the rape-cake-cure prominently before the public. As to the roller-cure, I myself, some 35 years ago, having a six acre piece of oats suffering from the ravages of the wire-worm, sent to Mr Crosskill, of Beverley, Eng., for one of his largest-sized clod crushers; and upon rolling the oats with it twice, I had the satisfaction of seeing a complete stop put to the assaults of the insect.

PERENNIAL RYEGRASS.—Our best pastures in England contain a large proportion of this grass. In a celebrated fattening pasture in Leicestershire, Sir John Lawes detected from 75 to 80 0/10 of *lobium perenne*, or common ryegrass, the field of 14 acres carrying at the time sixteen large oxen, and twenty-one sheep. Now, a *large ox*, in England, means a beast that when slaughtered will yield a carcass weighing more than 1200 pounds. I think we are given to neglect this grass in Canada. I do not recommend its use where the grass is only meant to lie two or three years, but for land intended for longer duration in meadow or pasture, it should find its place. The production of a pasture is the result of a great variety of forces, some of which, as soil and climate, are beyond our control; while others, such as the selection of manure, and the treatment of the crop—whether by mowing or feeding—we can regulate as we please. In the production of permanent grass from an ordinary arable soil, potash and nitrogen are the two substances most likely to be deficient, and their application, either in the form of food for cattle or in manures, may be considered to be essential.

THE WEATHER IN JULY.—Here, at Sorrel, the weather in July was very changeable. We had fifteen days on which rain, more or less, fell, but on the whole, with a little care and foresight, the hay suffered hardly any damage. Hungarian grass, sown on the 5th June, was nearly ready to cut at the end of July, having made such rapid progress on the Lincoln College Farm, that it attracted great attention, and many acres of it will be sown next year.

Mr Barnard, Director of Agriculture for the Province of Quebec, did me the honour of paying me a visit on August 1st. I do not think he was disappointed with the progress made on the farm under my care.

AMMONIA.—The real value of sulphate of ammonia in Montreal to-day is \$50 a ton of 2000 lbs. The selling price is another thing. Two years ago sulphate of ammonia was fetching in England £21. 10 a ton of 2240 lbs; the same is now selling there for £15! As the product of our gas-works goes to England, the calculation is easy to make. At \$50 a ton, the expenditure of 150 pounds on an acre of grain does not seem very awful: \$3 75 ought not to frighten any one; and as a general thing, I am sure it would add twelve bushels to the yield of each acre of oats, to say nothing of an immense increase in the amount of straw.

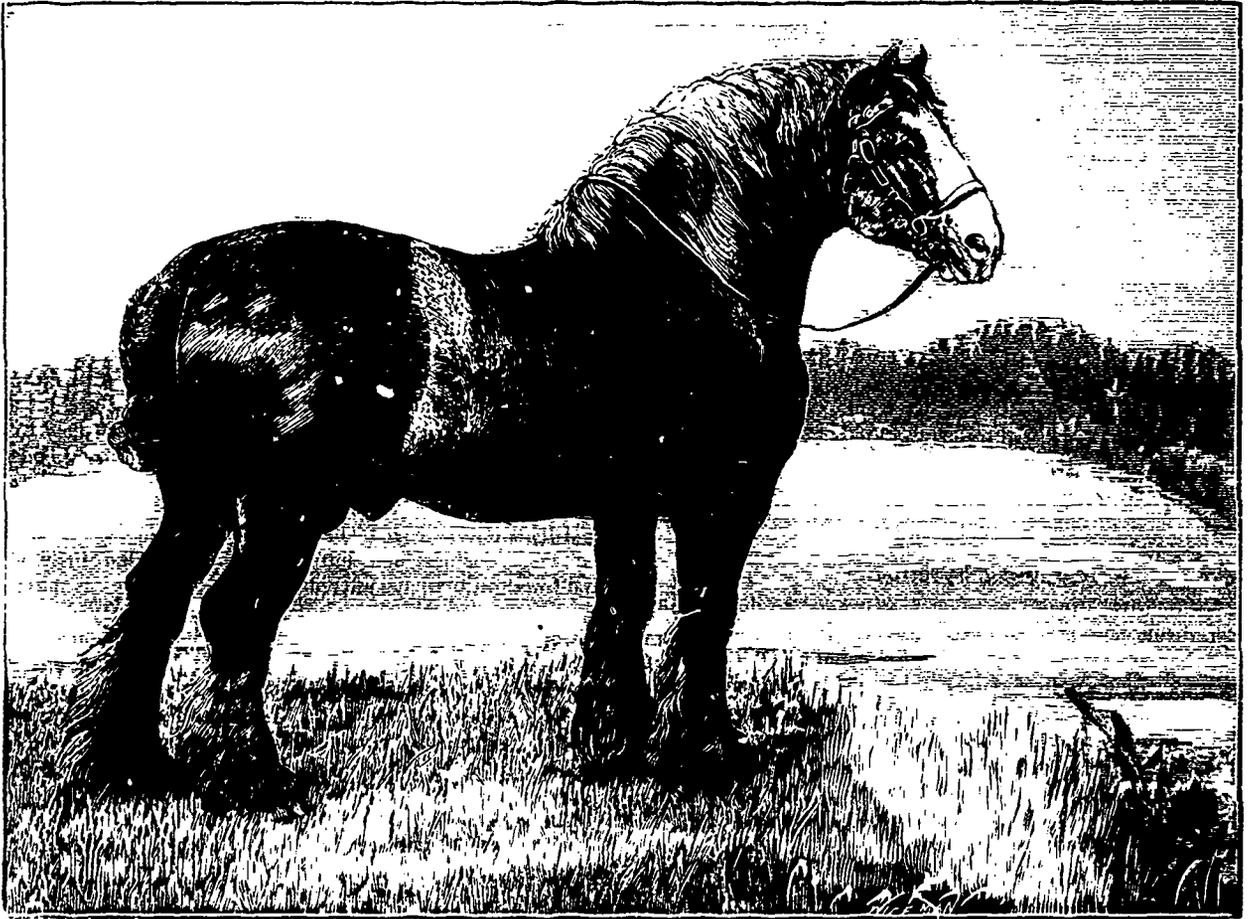
BROADSHARE.—Having an awful field, that has been in *couch-grass* for four years, to attack, I have tried to make a contrivance to undercut the mat of grass without going to any great expense about it. Taking a common plough, I fastened to the share a wing of steel, extending 14 inches from the land-side of the plough. Behind the blade, I fixed the small wheel that regulates the depth of the horse-hoe. At three inches in depth the roots of the grass are all undercut, the land pared bare, and when the Randall harrow has screwed its queer path over and through the sod, I anticipate but little trouble in killing the enemy. It is a serious job, and I wish it was over—so do the horses, too, I suspect.

MARKETS.—Queer things are market-prices here! by August 1st new potatoes were selling at 35c a bushel in the Montreal retail market, and on the following day 70c was the price at Sorel.

CLOVER-HAY.—M. Crépeau, a highly respectable farmer and dealer, informs me that on his farm, near Sorel, he has tried the plan of cutting clover when first in bloom, and it answered so well, that he will never, unless let or hindered by the weather, pursue any other method. Three years ago, having a piece of clover in bloom on the 15th June, and fearing, from its luxuriance, that it would go down and rot, he, much to the astonishment of his neighbours, cut it, and the next day, after breaking it out, got it into cock, carrying it

STARLINGS.—A plague of these birds, *vulgo*, black birds, is upon us. They divide their favours pretty equally between my cats and my neighbour's wheat, both of which crops are nearly ripe. In fact, the wheat is quite fit to out, but the hay is not finished, and I fear the poor wheat will have to wait until the bran is twice as thick as it ought to be before it is cut. I gathered a few ears, with the whole length of straw, on Sunday, August 3rd, and when the wheat is supposed to be fit for the scythe, I shall rub out some grain and compare the quality with that I have reserved.

OATS.—Strange to say, the English white Tartar oats I imported this spring are not in ear, but the black Tartars from Montreal, my main crop, are out in full ear! Both



ENGLISH SHIRE-HORSE. HONEST TOM.

into the barn on the third day. On this hay, some of the grain-crop was put, so that it did not come into use until the spring, but when it was offered to the animals, they were enchanted with its flavour, and appeared disgusted with their old friend, timothy.

As I said before, I do not agree with those who shake out clover however green it may be, on account of the danger of losing the leaf; but in every other respect, M. Crépeau's performance has my unqualified approval.

COLORADO BEETLE.—This abomination has let us off very easily this year. There were a good many at first, but one good dressing of Paris green (one dessert spoonful to 2½ gallons of water) had the effect of putting a stop to their appetites. A few remain, but their work is insignificant, and the potatoes are too far advanced to be much injured by them.

sorts sown the same day, in the same field, which makes it still more wonderful.

BUCKWHEAT.—This crop looks very bad—short and in bloom prematurely. The seed was evidently damaged by heating, and I was a fool to sow it.

ARTHUR R. JENNER FOST.

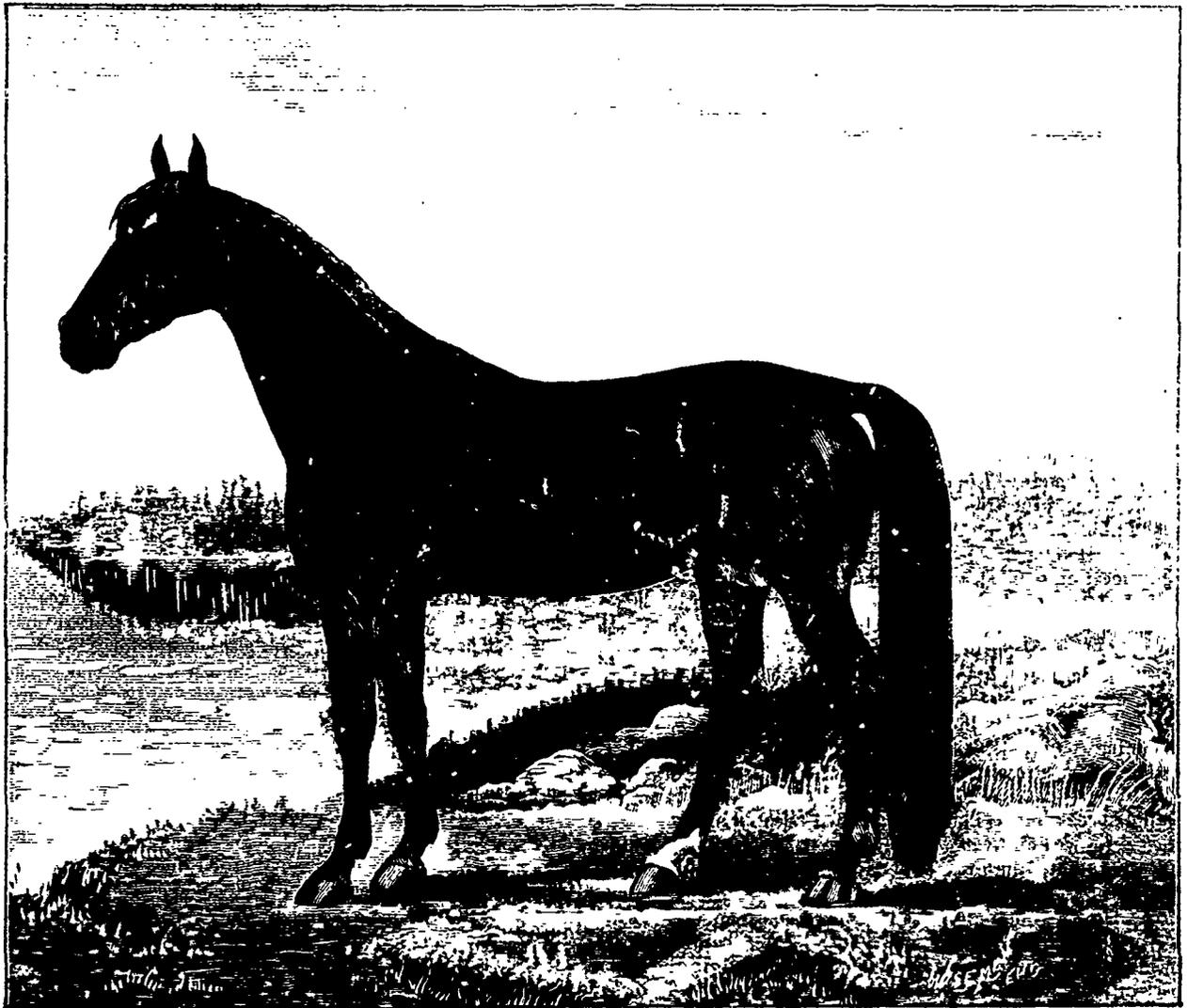
Cheap Sheep Barn.

Can you inform me as to the best way to build a shed for housing about 300 sheep—I do not want to put up a permanent building, but something only temporary for the winter? J. S. W. Philadelphia, Pa. [This inquiry is too indefinite for us to give a distinct plan. If you wish the cheapest kind of shelter, and have the materials at hand, you may set posts two feet deep and six feet apart, on which to nail

horizontal boards. Sloping poles may be used for rafters two feet apart, resting on large poles as plates on the posts, and these may be covered with a foot or two of straw, laid "shingling" to turn rain. Better and more expensive buildings may be made with board and battened roofs. If there is a loft above for fodder, a still better and more expensive structure must be made. It may be in one building, long and narrow, properly divided into compartments, or in more than one building, according to local circumstances and convenience.]—*Rural N. Y.*

vantage, by him who must live by his industry, in the production of fruit for market.

Yet, even the latter may follow somewhat expensive methods, where he has the markets of a great and wealthy city accessible to him. Though in America the market is now supplied for some six months in the year with this fruit, first, in March, from Florida, and last in August, from Nova Scotia and New Brunswick, still, home-grown fruit, forced with care and skill for the early supply, or grown with special attention to the out-of-door crop, will always bring the high



TROTTING STALLION PHALLAS.

STRAWBERRY CULTURE.

By T. H. Hoskins, M. D.

(For the Journal of Agriculture.)

In this article I shall speak of strawberry culture from the commercial point of view. The amateur grower of strawberries has a pleasant task in experimenting with many varieties—in trying all, even the most expensive methods of cultivation, and in producing the finest, largest and most delicate fruit, even though at the highest cost. His results are often interesting, and sometimes instructive to the commercial grower, but his practice can rarely be followed with ad-

est prices, so that one dollar and upwards per quart is often paid in New York for choice native strawberries, in the very height of the home season.

For us in Northern New England and Canada such opportunities are not offered. The most of us must be content with the price we can get in the local markets, sometimes not very remunerative, but usually, in the long run, as profitable as any other crop open to us for market cultivation. This profit will depend, in great measure, upon the experience and skill of the grower, who may easily make a difference of 200 per cent in the returns of his crop by understanding and applying properly the best way of growing, gathering, and sell-

ing his fruit. As a rule, the markets of the smaller cities and larger villages are better for the grower of all but "fancy" berries, than that of the large cities. In fact these smaller places are generally so ill supplied that much of the fruit sold in them is obtained by the dealers from the large cities, and the expressage and retailer's profit has to be added in the price to the consumer. As one instance, I am told that Sherbrooke is mainly supplied with strawberries from Montreal; and a grower at Fitch Bay, on Lake Memphremagog, lately told me that his berries sent 20 miles by rail to Sherbrooke netted him 15 cents a quart. At this price, in average years, strawberry growing pays a handsome profit. An average crop may be set down at 2,000 quarts to the acre, (though it will often reach 3000 quarts) and a net gain of \$300, in addition to the cost of labor and other charges for marketing, is such as would satisfy most people who must otherwise be content with what may be gained by ordinary farming.

I have been growing berries for market at the south end of Lake Memphremagog for 16 years and though the strawberry is not year by year my most profitable crop, yet it works in well with others, and helps to give an income covering the whole season. The chief hindrance to a uniform profit arises from injury to the plants from open and thawy winters, with little snow—These irregular winters a ways have their thaws followed by "cold snaps," which are very destructive to the strawberry plants. I find little advantage by protection with straw mulch, which will not protect the plants from cold unless laid on so thick as to endanger them from smothering. Where evergreen protection, using hemlock, fir, spruce, or cedar boughs, (which lie light and do not smother the plants) can be had handily, I believe that even in these open and changeable winters the strawberry plants may be carried through safely; but I have not been able to try this.

The first thing to be done to insure success is to choose the right location for a strawberry plantation. The best is a spot which can be irrigated. The ability to throw water in streams through the alleys of your strawberry beds will in many seasons double the value of the crop. (1) There are in New-England and Canada, many brooks which in their course pass through level, or nearly level spots, of from a few rods to an acre or more in extent. By levelling and draining these spots, and damming the brook at the head of each, a most excellent location for a strawberry plantation is secured. An almost equally good place is a level spot at the foot of a hill where springs break out. These spots, when selected and prepared, should be well cultivated in potatoes, cabbages, or some other hoed crop until the grass is subdued, and weeds no longer appear in great numbers. It is not very necessary to have these beds near the house, because strawberries are not very available prey for fruit-thieves. The ripe berries being carefully picked every morning, leave none to be stolen in the latter part of the day, and strawberry picking by night off is very little inducement to the plunderer. They should, however, be well fenced against stock.

When thus prepared, before setting the plants the soil should be thoroughly enriched. For this purpose stable manure that has been allowed to heat thoroughly several times, with intermediate shovelling-over, so as to destroy all seeds, is very desirable. In addition, a liberal dressing of unleached wood ashes is excellent; and if ground bone is to be had, it is well worth even \$50 a ton for this use. I will not say how much of these fertilizers should be used, except "the more the better" of the manure and bone, and at least 50 bushels of ashes to the acre.

Next comes the selection of profitable varieties. There are but few sorts profitable to grow for the general market. For

a long time, chief among these has been, and is, Wilson's Albany Seedling.—generally called Wilson. This must still be the leading kind, for it is the only profitable sort with a perfect flower. Even, therefore, if the other productive sorts I shall name are grown for the main crop, the Wilson must be grown with them to fertilize the bloom, for the others are all "pistillates," that is, they have imperfect stamens, and will not produce a crop unless plants with perfect stamens are grown near them. The only other kinds I can recommend, after many trials and tests, are Crescent, Windsor Chief, and Manchester. These four, properly grown, will secure such a succession as will give the strawberry season a full month. The Crescent and Wilson are early, the Windsor Chief and Manchester are late. All four, in good soil, are profusely productive, large, handsome, and good enough to sell anywhere. None of them rank among the choicest berries in flavor, but none of those unfortunately, are especially productive to be profitable in ordinary culture, or ordinary markets. In buying plants, do not be guided by cheapness alone. Many mixed and weak plants from weedy and carelessly managed plantations, are off red cheap, that would be dear if given away. Try and get your supply from some well known and well reputed grower, who has some reputation at stake, and pay his price, which is never unreasonable for well established sorts.

Before setting out the plants, (which is best done in May or June), the plat of ground should be levelled, and this should be done with special care if it is to be irrigated, a slight slope being given to it, so that when the water is let on between the rows it will flow slowly among the plants, and reach the roots of all of them so as to give them a good soaking. This will double the crop in almost any season, and quadruple it in a dry one.

The rows of a strawberry bed should be four feet apart, and the plants set in the rows according to the habit of the variety in making runners. The Wilson, which makes comparatively few new plants, may be set one foot apart in the rows. The same distance will also answer for Manchester. The Crescent and the Windsor Chief will both make plenty of plants when set one and a half or even two feet apart in the rows. The plants should be prepared for planting by having the old runners cut off, all the leaves removed except the last that grew, and the flower buds pinched out. They should be laid down evenly in bunches, and when a handful has been thus prepared it should be taken up and the roots cut off evenly, about 4 inches long. They are then ready to set out, which should be by a garden line, drawn tight and straight. A broad, spade-like dibble should be used for planting, and the plants set much the same as cabbages, care being taken to spread the roots as much as possible. The plants, after being trimmed, should be placed in pans half full of water, and these served to the planters as required. The depth at which the plants are set should be as near as possible the same as before they were dug. A skilled man will set strawberry plants very fast, but speed is less important than good work. If the plants were good, and the preparation and setting careful, they will begin growth at once, and suffer little check. I regard as particularly important the removal of all but the last grown leaf, and of the flower buds, and also the cutting of the roots to an equal length of about 4 inches. The last is of great advantage to the setters. The removal of the old leaves prevents any draft upon the roots until they get hold of the soil. The pinching out of the flower buds is even more important, for every berry grown on the plants the first season is at the cost of at least a pint the second season.

In order to get some profit out of the land the first season, to pay for cultivation, I am in the habit of growing a crop of

1) See my remarks on irrigation, p. 10 of this vol. A R J F

early cabbages, beans, or early sweet-corn between the strawberry rows. Every weed should be kept out, and the ground be kept mellow with the hoe. The cabbages and the corn-stalks, when removed, should be cut off beneath the surface with a sharp spade, so as to leave no stumps or stubble. The beans should not be picked green, as this causes too much travel between the rows. If all goes well, there will be a good growth of young plants between the rows. In the spring a good many of these can and should be removed with a transplanting trowel, either for new planting, or for sale. The plants should not finally stand nearer than 6 to 8 inches apart, with a path 18 inches wide in the middle, between the planted rows, for convenience in gathering. Late in the previous fall, a thin covering of straw (preferably cut about 6 inches long) should be spread over the beds. The plants come through this cover in the spring, and the straw keeps the fruit from being soiled. I should have said that, in selecting the site of a strawberry plantation, a spot should be chosen where the snow lies well in winter. This is very essential. As a rule, the valleys of brooks, otherwise preferable, are preferable in this respect also.

If strawberries must be grown in an open field, I would advise that currants and gooseberries be grown with them. They should be set in rows 30 feet apart, and 4 or 5 feet a sunder in the rows. These, which may be set out when the sod is first broken, should be 3 years planted when the strawberries are set. I do not find any profit in taking more than one crop from each setting of strawberry plants. After picking is over, I mow the tops and plow the beds under, generally getting a good crop of English turnips from the ground, by the aid of a little superphosphate. The next spring, the land is heavily fertilized again, and re-planted to strawberries as before. One row in five should always be of the Wilson, to furnish pollen for the rest. When grown between rows of currants or gooseberries, as above advised, I set the row of Wilsons in the middle of the bed, with 2 rows of pistillate plants on each side, and keep the runners clipped so as not to allow the plants to intermix. It answers equally well, when there are no bushes grown between, to plant a bed of two rows of Wilson, with beds of 5 or 6 rows of a pistillate sort on each side.

The proper gathering and marketing of strawberries is an important part of the business. Here, at Newport, we have two large factories of berry baskets, which are sold for the best full quarts, at about \$6 per thousand. These full quarts are the most profitable, always. They should be well heaped in picking, so that when they reach market they will be at least level-full. A slack filled basket is very hard to sell, and often stays on hand until the fruit spoils on the dealer's hands. A short-measure basket is avoided by all, if those of full measure can be found. A good, strong crate holding 32 quarts is the most popular, though some are using a crate of 24 quarts, as easier to handle and less likely to be broken.

In gathering the berries, it is best to begin early in the morning, and dew, unless very heavy, need not be regarded: yet we must not begin picking after a rain until the wet is well dried off. Care should be taken that every ripe berry is picked, but none that are not ripe. Each berry should be picked singly, with finger and thumb, without bruising, and as carefully placed in the basket. Where the business is carried on on a large scale, the picker has a belt with a catch to which he (or she) can attach the basket, leaving both hands free for picking. A little stand is given to each picker, holding four baskets, and when this is filled it is carried to the packing shed, where four more empty baskets are supplied, and a ticket given for the four full ones. Settlements are made either every Saturday or at the end of the season. The latter is the best way. The person who puts up the baskets

in the crates should do so carefully, and attend also to the addressing them and preparing them for shipment. He, or a field superintendent, should also see that the pickers do their duty in properly filling the baskets. To do this he must occasionally reverse a basket, as it is brought in, into another, to see that no tricks are played. Many other points in the management of a large strawberry plantation will be suggested by experience, and much of this is recorded, from time to time, in the horticultural press, of which every fruit-grower should be a student.

Newport, Vt.

Keeping Sheep for Profit.

EDS. COUNTRY GENTLEMAN—Farmers who keep sheep are greatly troubled, just as wheat growers are, by the competition of the Western producers whose land costs less per acre than the annual interest on the cost of a farm. But the shepherd has a very great advantage over the wheat grower upon high valued farms, and is not nearly so squeezed by the competition. It is a fact, quite plain to every one who can understand figures, that the Western and North-western wheat growers have reduced the price of wheat all over the world, so that the wretched ryot of the East Indies is severely taxed to live in competition with the wheat growers of Minnesota, Dakota, and California.

By somewhat similar circumstances, sheep owners of the farming States from the Missouri river to the Atlantic, are just now compelled to consider whether or not they are to suffer from an equally severe competition, and to produce wool at a loss or abandon their flocks. I know from experience that wool can be produced on the Plains, and on land that is all purchased and owned and provided with every convenience for keeping sheep, for 12 cents a pound; the charges against the wool including every expense, even to a 10 per cent. charge for deterioration of plant and other perishable property, and estimating that the ewes are kept until they die, and are then lost. This leaves the sheep ranchman a handsome profit when he sells his wool for 20 cents, and gets a fleece of $4\frac{1}{2}$ pounds on an average from his improved sheep. The New-Mexico ranchmen can do better than this, selling their wool for 12 cents a pound, and getting with one-fourth of the outlay a profit equal to that of the Kansas shepherd, or by percentage about double. Now can a farmer keep sheep and live in competition with these Western producers, or in other words, at what cost can he produce wool east of the Missouri river?

It is very clear that the farmer cannot keep a flock profitably on pasture in the summer, and hay and grain in the winter, and compete successfully with the Western shepherd. It will occur to some readers, just here that the farmer has the advantage of a good market for mutton; but the largest proportion of wool produced is grown upon sheep that have a very small value for mutton, and this cannot be taken into account excepting as an incidental advantage in some cases. But even this is offset by many extra expenses which nearly always sweep away any advantage which may exist. It is simply a question of wool and increase of flock.

It can scarcely require figures to show that a farmer cannot keep sheep with profit on land worth \$40 an acre, when 2 acres are required to carry 5 sheep through the year. This estimate is made on the basis that one acre of pasture, and one acre of crops will support 5 sheep. The return from $2\frac{1}{2}$ sheep per acre would amount to \$3.75 for wool, taking 5 lbs. for the fleece and 30 cents for the price, and \$5 for two lambs, equal to 80 per cent. increase. Against this \$380 would meet interest and other charges on the land &c., and \$500 is a small allowance for other expenses. The account, thus im-

perfect, and all in favor of the farmer, shows that the wool costs 30 cents a pound at least. In fact, if a close account were kept, this cost would run up to more nearly 40 than 30 cents. This method is therefore wholly impracticable. But such a system could only be suggested by an inexperienced man on account of its obvious disadvantages, but yet occasionally there are persons who are green to the business proposing such a system.

A practicable system of keeping sheep on farms, must include high culture of the land at least, and the doubling of the stock per acre; that is, five sheep should be kept for each acre of land, by something like the soiling system used by dairymen. It is the winter feeding which so greatly increases

crops, 40 or 50 acres would still be left for pasture, and in very many cases 10 acres of barley, a crop which matures in three months, might be crowded in between two green fodder crops, as rye in the early spring and millet in the fall, and add still more to the salable products.

There does not seem to be any reason for sheep-owners to despair and think of sacrificing their flocks because just now wool is low and dull of sale. It is this want of perseverance which makes sheep-keeping always a poor business. Instead of shutting down on the sheep, and going into some other business at every unfavorable turn, sheep-men should work the harder (with their brains) at such periods, and discover how much more cheaply they can produce their wool. It is very



LA MAJOR, CANADIAN COW.

the cost of keeping sheep on farms. Grain and hay are the most expensive foods. Ten acres of turnips or mangolds will carry 500 sheep through a winter season of twenty weeks, with the straw and fodder from ten acres each of corn, wheat and oats. The corn ground, sown with rye at the last cultivation, will afford a good deal of late pasture in the fall and some early feed in the spring, and would be worth more than the cost of the plowing and seed, for the manure left on the ground. By the high culture, possible with such a system of feeding sheep, 40 bushels of wheat might be produced per acre, which would be sold for as much as would purchase a large quantity of bran or oil-cake, by which that proportion of the flock fed yearly for sale would bring in a large additional profit, over and above that of the ordinary method, and would add something, certainly 10 per cent., to the weight of the fleeces. By growing 10 or 20 acres of green fodder

certain that while we are importing in wool, and its equivalent, about 40 per cent. of our own yearly product, there will always be a way for us to make money out of our sheep, without any regard to the question of mutton, which, by the way will serve to equalize the burdens of the sheep farmer upon still more costly lands with those of the class I have specially referred to.

For the profitable production of wool on farms, it is clear to me that the flock must be an incident in the system of farming, rather than the main business of it; just as it has been made in England a means of high culture of the land, and a result of this as well. The manure made by a large flock makes high culture, with large crops, possible, and the high culture enables the farmer to support a large flock with greater ease than he formerly kept a small one.

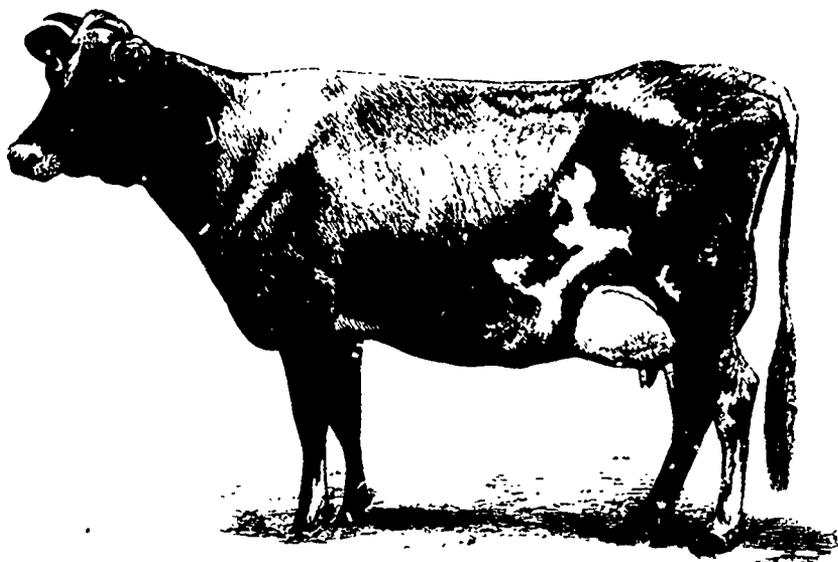
H. STEWART.

Live Stock at the Royal Show.

We condense below, chiefly from the London Agricultural Gazette, an account of the display of the different breeds at the Show of the Royal Agricultural Society of England, just held at Shrewsbury:

SHORT HORNS.—If the r class full beh'nd (as they aid) the corresponding classes of Herefords, the younger ones did not. And even adult bulls and cows were not discreditible, although there was not one good typical male specimen present, and not many of the females substantial and milk giving. The two old white bulls are frequent rivals; but as it would seem, the difference in age is often overlooked. Bright Helm is considerably the younger. But, then Hovingham has in his son, Self Esteem 2nd, the best claim to distinction at a breeding stock show, as Snowflake has in her udder and her little daughter 492. Mr. W. Handley sends three entries (Hovingham, his half-brother Royal Ingram, and the dairy cow Delight), and carries away three first prizes. Mr. T. H. Hutchinson's Gratia, Lady Pamela, and Lady Primrose are

which won in the calf class at the Essex show, has now repeated its victory on a larger scale at Shrewsbury. This (like Mr. Brierley's Empress 18th) goes back to old Lincolnshire blood, which has recently been crossed with Bates bulls. In its present stage, Havering Nonpareil is a model. Its dam was bred at Burghley, from a daughter and by a son of old Tuemachus. The second prize in the same class went to a till more noted inheritrix of Kirklevington fame. This was Sir H. Allsopp's Duchess 123, the great grand daughter of Lord Dunmore's Duchess 97, which he re-imported from America, whither Colonel Gunter had sold her, upon pledge she never should return. But, by permission, she did return, and proved to be, through her son Duke of Hillhurst, not only granddam of Duke of Connaught, but of the animal for which the largest offer ever made for a Short-Horn was tendered. Sir H. Allsopp has conferred a favor on a number of breeders in letting them see, side by side with other Short Horns of like age, this characteristic specimen of the famous tribe. Nor is Mr. G. Fox's Red Rose of Tees



FILLPAIL SECOND.

of his well-known and properly appreciated type, yet there is not one among the three which looks a milker. * * *

Perhaps the most noteworthy thing about the Shrewsbury Short-Horns was the distinction won (and deservedly won) for tribes which have of late been "in the cold shade." Who has heard of recent years anything of the Lake district or the Cornwall Short-Horns? Yet at Shrewsbury—as at Carlisle—specimens come from these herds to equal as show cattle the best from the best Yorkshire and Durham breeders. There are no Short-Horns which do this breed more credit than Mr. R. Thompson's, Mr. W. H. Wakefield's, Mr. W. Handley's, Mr. Trethewy's, or Messrs. Hosken's. Yet one and all have been bred from dams whose pedigrees would carry little more meaning to ordinary Short-Horn breeders trained in the ways of the last ten years, than if they had been cut out of a scrap book. What inherent worth the breed must have which—with recent sires as widely apart in blood as the pastures they feed on—can send up the pair of heifers which won in Class 58, and Mr. Trethewy's young bull Star of Cornwall, and Mr. Handley's and Mr. Wakefield's young beasts from Westmoreland. * * *

Mrs. Macintosh's Havering Nonpareil, the pretty roan

(third prize in class 56) less interesting. She is the best representative of Mr. A. Renick's famous Kentucky herd yet sent to an English show of breeding stock. But space would fail to treat all the noteworthy animals of this serviceable breed. But the mention of those named, Mr. Trethewy's young bull, Star of Cornwall, and the two animals of Stratton descent (Maid of Glamorgan and Duke of Cornwall), combined with Mr. Fielden's Heouha heifers (No. 508) and Mr. Thompson's Beau Benedict and his heavily fleshed family, will serve to show what a wide range of Short-Horn pedigrees was represented this year at the Royal.

HEREFORDS.—These were in great force. No bull in the yard equalled Mr. A. Rogers Archibald, who was equally distinguished at Reading Royal. Whether, as a sire, he will ever equal Horace, Lord Wilton, or the Grove 3d, or even Conjuror and Merry Monarch is uncertain; but nothing like his show form has been seen recently. It is curious that the first prize cow, the Golden Treasure, a very compact and somewhat small animal, should be the daughter of Giantess, which stood nearly 16 hands high, and had a live weight of above a ton. Mr. Tudge's Rosebud tribe was in good force. It furnished not only Mr. Arkwright's Rose Cross and his own

Prince Rose and Leimthall (each winner of third prize in strong classes), but Roseleaf herself was sent into the Dairy class in order that she might repeat a triumph gained at Worcester, and win over Short Horns as a milker. Whether she deserved to win here, nobody knows, for the milk of the rival cows was not reported; but certainly the judges gave her nothing, not even the good word which was certainly her due. Mr. R. W. Hall sent Lovely and her famous twins, Theodora and Dorothea, each with a calf at foot. One wonders, seeing Lovely and Mr. Arkwright's Pearl 3d—standing as they did, side by side—which type of horn is right for a Hereford cow. One had up-turned horns, such as Sussex cows display, the other horns which recall Bakewell's breed. It was curious to see how previous verdicts about cows were upset. Mr. H. W. Taylor's Modesty (first at York and first at Reading) was here third. His Adelate (second at York) is now highly commended, but his young bull, Maidstone, repeated his earlier successes of the season, and was first once more; as was Rosamond, in Class 66, with a son and daughter at her heels. Lord Coventry's herd showed well. If Old Fisherman had to walk behind Archibald in his own class, his son Good Boy, and his daughters, Plum Jam and Lady Love, showed well where all were good. The executors of Mr. Cardarine had a lot of young stock—second to no one breeder's, if taken as a whole. One of the Sir Bartle Frere heifers, in the pair, 646, seemed the most perfect young Hereford on the ground.

Mr. John Price was very strong among the groups; whilst, as single specimens, Mr. A. E. Hughes' Washington and Sunflower were conspicuously fine. Her Majesty the Queen was commended for a pair of heifers, of which one was a beauty, and both had been "better done" than any of the Royal Short-Horns, which, however kindly the exhibition of them was meant, did not cause the face of breeders of this variety to shine before the men of Hereford.

OTHER BREEDS.—Devons were far better represented than could have been expected. The Sussex came in great force, and, as beefmakers, this breed has deservedly climbed very high in the ladder of comparative merit. Long-Horns were of unusual size and weight, and the elder cows had all the show for milk for which this breed has enjoyed the reputation. Unlike the Hereford and Short-Horn, the young stock of this variety make a poor show. Breeders of Red Polls, stimulated by the foreign demand, entered above 40 head more than were sent to York, and the average merit was even higher than it was there. Like the Short-Horn and Hereford, the young classes were particularly good. Of Jerseys, there were 28 bulls and 52 cows and heifers, a smaller number than at some recent exhibitions, but showing an exceptionally high average of merit, and sufficiently large to testify to an increasing interest in the breed.

SHEEP—This is the most remarkable section of the whole exhibition. Leicesters are represented by several admirable flocks, although the exhibitors are not this year more numerous than they usually are. Cotswolds are also shown by but few exhibitors. Here we have the largest frame and the longest wool united with admirable form and great strength and great hardihood of constitution. The Lincoln breed is very well represented, although so far from home; but here, too, only a few exhibitors appear upon the ground. The Oxfordshire-Downs are very admirably shown. The best breeders have done their best; and where Mr. Treadwell, Mr. Albert Brassey, Mr. Charles Howard, Messrs. J. & F. Howard, Mr. Frederick Street, and Mr. George Adams compete, there can be no want of merit. Mr. Treadwell takes the front rank, as he generally does when he chooses to exhibit.

The Shropshires constitute, however, the great feature of the Show, as was to be expected at the county town. There

are three dozen old rams and 101 younger sheep, and no less than 33 pens of 5 shearling rams of the same flock, and 13 pens of 10 ram lambs, and 14 pens of 10 ewe lambs, and 41 pens of 5 shearling ewes, and 11 pens of 10 breeding ewes that have bred lambs this year—on the ground—a much larger number than all the sheep of all the other breeds put together. More than one bench of judges was needed to deal with this enormous number.

South-Downs are very creditably represented, Lord Walsingham standing second to Mr. Chapman in the older ram class, and taking first and third prizes in the shearlings, to Mr. Chapman's second. There was rather a small show of Hampshires, but very good.

PIGS.—Of this department, the Live Stock Journal says that it was one of the most disappointing in the show: "A very great many of the pens are empty, and among the classes for white pigs we find many animals which cannot certainly be in their proper classes. The black pigs are not numerous, but of equal merit, and more uniform in character than is sometimes seen. The Berk-hires are about an average, but nothing like so good as at the Reading Royal two years since."

THE EXHIBITION.

We observe that the sub-committee of the permanent exhibition committee has agreed to shorten the time of the detention of the cattle at the Mile-End grounds. The cattle will come upon the grounds on Friday Sept. 6th, and may be removed by their owners on the following Friday. This must be highly satisfactory to all intending exhibitors, and will, we believe, be the rule in all future years.

Feeding Cows to Produce Butter.

EDS. COUNTRY GENTLEMAN.—We are an eminently practical people, and in almost all the affairs of life, the first question that arises is, "Will it pay?" It is well known that two great butter cows of the Jersey race, while making their large tests, consumed immense amounts of food; and I have seen calculations to show that it does not pay to produce butter at such a cost. It has occurred to me to see how my 3 year old Signal cow, Fadette of Verna 3d, will stand this test with her yield of 22 lbs. 8½ ozs. of butter in 7 days—unprecedented, considering her age and with second calf. As nearly as I can figure, she ate, during the test, beside grass at pasture, 30 pounds of ground feed a day, of which 10 pounds were oil meal and 20 pounds ground corn and oats, in the proportion of one-third corn and two thirds oats. This daily ration cost 45 cents; pasture is worth with us one dollar a week. She was in poor condition when preparing for the test, and she improved wonderfully in appearance and flesh during the test, so that the butter or cream product should not properly be charged with more than 20 pounds of the concentrated food daily; in fact she was so reduced at time of calving, occasioned by being obliged to starve her dry, that with her improved condition she would now, I think, acquit herself equally well on 20 pounds of ground feed a day; but charging the whole cost of food against the product, she cost me for keep \$4.15 per week. (1) I get 45 cents a pound for my butter, but put it say at 40 cents (and there is no trouble in selling such butter at that price in reasonable quantities near large towns in summer), she paid me a profit of \$4.85 a week. I also sell a good deal of pure cream to an ice cream saloon at 20 cents a quart. Fadette's milk for the week

(1) Yes, but how about the interest on the value (?) of the cow? I should prefer a cow like Mr. Drummond's, which made 18 lbs. of butter in seven days—on grass! A. R. J. F.

yielded 49 quarts of cream; so from the sale of the cream she shows a profit of \$5.65 for the week.

This is a pretty good showing, from the economic standpoint, of production of cream and butter. But I hold this is not the true view to take of the value of a great butter cow of a pure bred race. An excessively large butter-producing Jersey of a family that is in the habit of producing butter largely, must be considered as something more than a mere butter machine. She has, latent in her organization, possibilities of establishing in her descendants traits and qualities that will make them capable of producing fifty to a hundred per cent. more butter than is produced by what are known as "good Jerseys," on the same diet. In breeding we are striving to develop qualities that, through the influence of heredity, will appear in future generations. If we are breeding Jerseys we strive to secure in the animal an impressive habit of large butter yield. Now a not insignificant factor in this problem is the power of digesting and assimilating large quantities of food, and converting it into rich blood, from which is manufactured rich milk. The idea that rich milk and three pounds of butter a day can be made from the consumption of corn stalks, bog hay and poor pasture, is absurd. Yet it must be borne in mind that the power merely to consume and digest a large quantity of food is not sufficient. The great butter cow must also have the faculty of using her food for the purpose of making milk. It is commonly believed (at least the assertion is frequently made), that it is the strong feed that is the secret of a great yield, and the remark is not uncommon: "If I were disposed to risk my cow or push her, I have a cow that would make a big record." Heavy feeding is undoubtedly risky with a cow that is not a large milker or butter maker, and as to the latter part of the remark, I have sometime suspected that such cows have been privately pushed—*off their feed*—and then the owner made up his mind he would not push her further or risk her. I owned a cow that on the same amount of concentrated food that I fed Fadette, made but 11 pounds a week and we expected she would make a good record.

A neighbor of mine, who owns two cows that he says have each made 16 pounds, called at my farm during Fadette's test and said that either of his cows would make as a good record, if he fed as strong. I was to polite to tell him I did not believe it, but I happen to know that he is a very heavy feeder, and his cows are hog-fat and doubtless have reached their best capacity. The common notion that a good milch cow ought to be poor in flesh is not sound. She is poor because she does not get food enough to supply the waste of tissue from the heavy drafts made on her system. The wear and tear on a large milker is tremendous, and I am satisfied that a large milker will last longer and be productive, both as a milker and a breeder, for a longer period on a large, generous diet, than on ordinary fare. It is time that the fallacy, that we must carry our cows through the winter as cheaply as possible, was exposed. They should be well fed at all times, and when doing the heavy work of large milking be fed increased rations. It is not only beneficial to the animal, but it is economical. A certain amount of food is necessary to sustain the vital foundations, and what is produced beyond that, in the nature of beef or milk, is where the profit lies. If we feed just enough to keep the animal alive, we are losing money; if we feed sufficient to enable a cow not only to sustain life, but to produce milk, butter or beef, we are then in the way of showing a profit on her keep.

If you will visit the farms of the large milk producers on the line of the Harlem railroad, within a distance of one hundred miles of New-York, you will find they are heavy feeders, and they see a profit in it. Just how much we

should feed, can only be discovered by experiment. What one cow could readily digest and thrive on, would upset the digestion of another. If I am correct then, in the theory that the large producer and the correspondingly large consumer is the profitable animal, we should aim to breed such animals. The owner of one of the great cows of the day assure me that his cow has become a professional glutton. In my judgment that is a very valuable trait, and one that, if possible, should be perpetuated in her descendants, provided the gratification of the appetite tends to the production of milk and not fat. I do not know that I have made the point clear, but what I desire to convey is, that an excessive appetite for food with a tendency to make milk and not lay on flesh, is a quality that we should aim to have handed down as equally desirable as the actual production of butter. Of course this can only be predicated of strong constitution and vigor of health, but as I have before given your readers my views on this point I will not now enlarge on it.

Beside the mathematical criticisms of the great cows, there have been others, both in public and private, that reflect less credit on the authors than damage to the owners of the cows. One of the silliest was that expressed to me, with reference to a noted cow whose milk was churned with the cream, that the product was not butter but more of the nature of cheese, and that by that process the yield per week of so-called butter could be increased three or four pounds per cow. To this I replied that I had once bid a very large price for a cow of that family, because she had produced more than 21 pounds in a week and belonged to a butter family, and if the gentleman would produce some such cows that would make three pounds a day for a week or longer, of such stuff as was generally called butter, but which he would probably call oleaginous cheese, I would take them off his hands at very large prices. He knew my address and it is a year since the conversation occurred, but I have not heard from him.

But what caps the climax, however, is what I am advised is the statement of a learned professor, who "does the agricultural" for a New York city weekly newspaper. I understand he says that good butter cannot be made from the milk of a cow whose best butter capacity exceeds one pound a day; that the butter of a large yielder abounds in tallow and objectionable secretions of the kidneys! What next, I wonder, shall we hear from a professor's chair? Probably he will tell us that wheat of a yield of 10 bushels to the acre, is much superior in quality to that of a crop of 25 bushels to the acre. If he should tell his butter theory to my customers, they would think it the invention of my late manager, who is vainly trying to get their custom away from me. Many of them assure me that they had been taking butter for years past from the best farmers in the neighborhood, who doubtless had cows of the professor's standard, and they never knew before what good butter was. I certainly have no cows of so low a standard.

To all the over-zealous critics of cows with reputed large yields, let me say just one word, go thou and do likewise—feed as you please, and as much as you please, only produce your big butter yielder. The excuse that you are afraid you will hurt your cow, will never give her a reputation as a great butter maker. Unless your experience is different from that of the majority of breeders, your suspected great cow will be apt to prove a delusion.

G. W. FARLEE.

Trenton, N. J.

BEE-KEEPING FOR FARMERS.

UPON looking over one of our bee publications not long ago, I noted these words; "There are very few farmers wh

do not keep hogs, sheep, cattle, horses and poultry. All these seem necessary to use up the products of the farm and to make the occupation safe and certain. The addition of the apiary is just as important as the keeping of any of the varieties of stock mentioned, and the farm is hardly complete without it." If the above is the truth—and I believe it is—the question arises why is it that not one farmer in 20 keeps even one colony of bees to secure the honey allowed to go to waste from not having the bees to gather it? Is it not just as bad to let this honey secreted by the abundant flora of the farm go to waste, as it would be to allow a field of pasture to thus waste for want of stock to consume it? I believe it so to be, yet how eagerly we see the farmer gathering every ear of grain, securing stock enough to consume the grass from his pasture, and husbanding all the products accruing from the farm except the honey, which is allowed to go to waste as far as he is concerned. Each farmer might keep bees enough at least to supply his own table with this luscious sweet, but there are very few who do it. The reason of all this neglect, in my opinion, is that farmers as a class are not willing to bestow upon the bees the time they require; hence a failure is almost certain. These failures being known in the neighborhood, others are deterred from making a trial.

How patiently we see the average farmer care for his stock, feeding his cows three times a day for seven months out of the year, and milking the same twice a day for nearly ten months, getting little more for his butter and milk than he could have got for the produce the cow consumed if it had been disposed of in the shape of hay and grain sold or pasture rented. But let this same person buy a swarm of bees which is capable of giving as good as, if not greater returns than a cow, if given the same care and attention, and ten chances to one he will put it in some out-of-the-way place, not go near it once a month, let it go into winter quarters with little or no prospect of its surviving, and then declare bee-keeping does not pay. Others who have a little more thought regarding them will partially attend to their wants till the hurry of harvest comes on, and then, just when the bees need the most care, neglect them entirely, allowing swarms to go to the woods and the bees to lie idle for want of surplus receptacles in which to store the honey which is being secreted plentifully at the time. But no matter how much the hurry or how great the pressure of business, the hogs are fed, and the cows are milked, while the poor bees are left to care for themselves. I wish we might see a new era dawning among our farmers regarding this branch of rural industry, seeing it placed where it should be upon an equal footing with any other branch of farming. To show the possibilities of bee-keeping where as thoroughly conducted as most farmers conduct the raising of grain, stock, etc., I will mention the case of Mrs. S. J. Axtell, Roseville, Ill., who secured 39,000 pounds of honey the past season from 170 colonies of bees, which netted her upwards of \$5,000; that being an average of nearly \$30 per colony. Where is the dairy of 170 cows that will give that amount of clear profit. The dear reader, if you have any desire toward bee-keeping, resolve that you will give each colony as much care during the season as you do each of your cows, and see if my words do not prove true, that bee-keeping is one of the most profitable and fascinating of all the different branches of farming.

Borodino, N. Y.

G. M. DOOLITTLE.

BEE-HIVES.

THOSE who have been the most interested in the keeping of bees have for years been trying to invent a hive that would

be equally well adapted to the cold of our winters and to the heat of midsummers. I saw in the *RURAL* a short time ago an article upon the subject of bee-hives, which was illustrated, but the writer did not touch upon the question of a summer and Winter home for the bees. Many a winter hive has been invented, but, as a general thing, apiarians have given no thought to the comfort of the bees in the long, hot summer days, except by boring a few holes in the hive for ventilation.

I have always thought that the hot rays of the sun in June, and August were unhealthy for the bees in the hive, the heat blistering clear through the wood and making the inner part of the hive so hot that the industrious little fellows cannot work with any degree of comfort. Then, in addition to the sun's heat, there is the animal heat of the bees! What a hot place must the interior of the hive be for so much industry.

Now I am opposed to placing the hives in the shade. The bees need the sunshine upon the outside, but not upon the inside of the hive. They are early risers. They are up, dressed, have breakfast and are at work early when the morning sun glistens upon the dew drops in front of their mansion. In the State of New-York the bee has no time to wait for the sun to warm the damp air beneath the thick branches of some moist, moss-covered apple tree. Therefore I put my bees in what I choose to call my summer-and-winter hive then set them out in God's sunshine to enjoy themselves as they work.

THE APIARY.

Several Inquiries Answered.

EDS. COUNTRY GENTLEMAN—A man writes to me that late one season he fed some bees, in the open air, sixty or seventy pounds of honey, but "could not perceive that the boxes had any more honey in them after the feeding, and cannot imagine whither the honey went." He asks what I can say about it. In reply I will say that if there were many colonies in the yard, the amount carried into a single hive would be very small; and, as it was late in the season, a large share of it was probably stored in the brood combs.

Another correspondent asks as to best size of hive for bees to work in. If he has reference to the size necessary for a brood nest, I should say that 12 by 12 by 14 inches is large enough. The one I use is a trifle smaller, being 11½ by 10 by 18¼ inches, and I would sooner have it smaller than larger. If he has reference to the surplus apartment, I would say that its size should be varied with the season. When the honey harvest first opens it should be smaller, as the season advances and the colony becomes more populous, its capacity should be increased, and as the season draws to a close, it should be contracted.

Another asks why bees do not work so readily in sections placed on the side of the hive as when placed on top. The shape of the frame used has much to do with this. With shallow frames the bees more readily store their honey above while with tall frames they would probably commence work sooner in boxes placed at the side of the brood nest. To another inquirer I will say that basswood, white clover and buckwheat are the principal kinds of honey obtained in this vicinity. The greatest amount is secured from basswood, and the least from buckwheat. Its consistency when gathered depends upon the season.

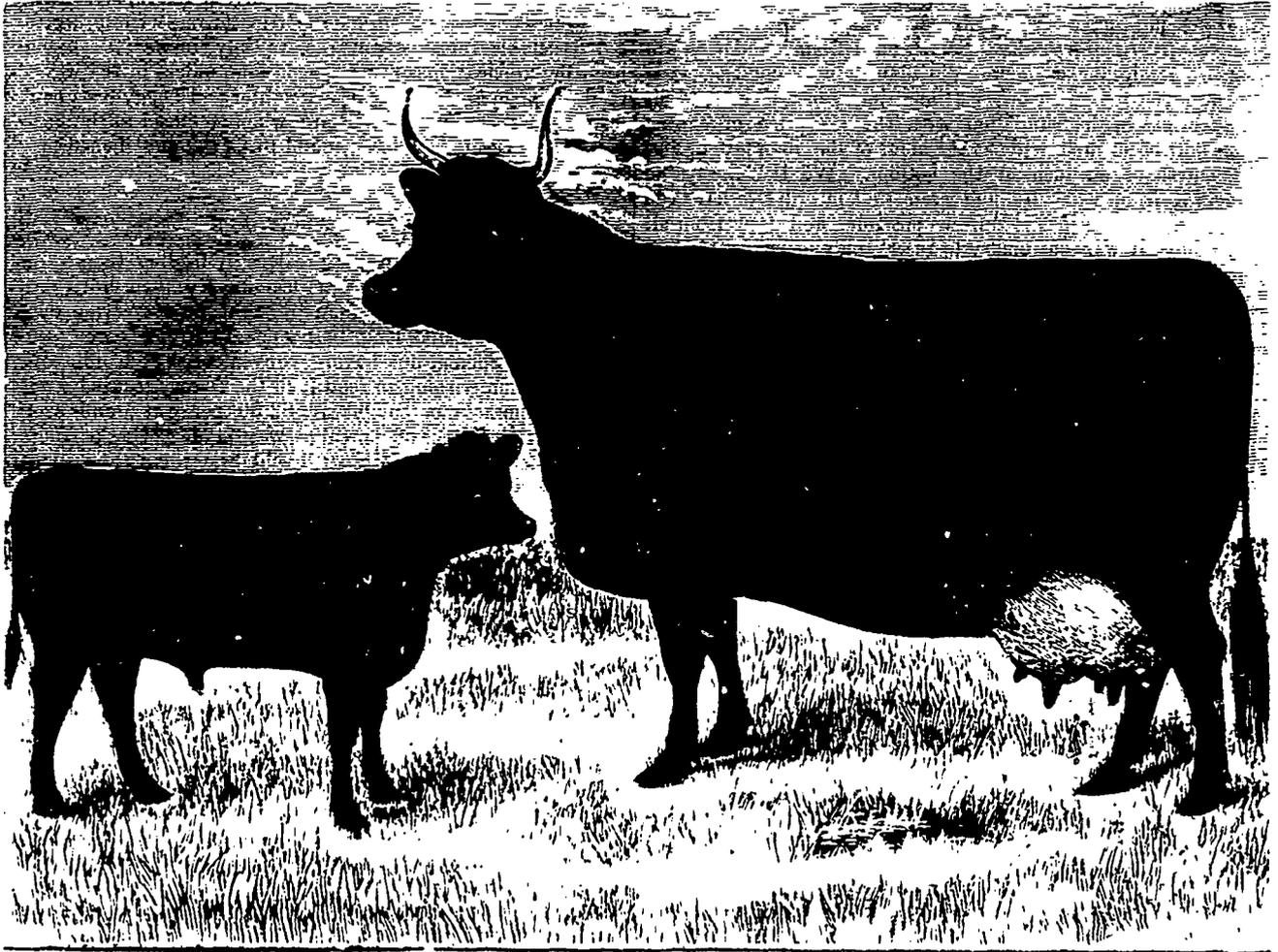
Another asks how many colonies I have, where I winter them, and if out-of-doors, if I give them any protection. I commenced the winter with eighty-five colonies. Fifty-seven colonies were buried in a "clump," thirteen were put into the

cellar, and fifteen left out-of-doors. Ten of those left out-of-doors were packed in boxes with sawdust and chaff, and five were left unprotected. Those in the cellar are in fine condition, as are those that were protected out-of-doors. Three of those left without protection are dead. I have for several years left a few colonies without protection, but in only one winter—a mild one—did they winter as well as those that had protection, and in that winter they wintered no better. I am in favor of protection, but that will not always save the bees; the character of the stores must be looked after as well.

One apiarian writes that he can go into the local market at any time and see section honey so nice that it retails at from

them. The source from which honey is gathered, and the variety of the bees that store it, determine the appearance. Black bees leave a space underneath the capping, which gives the honey a whiter appearance than that stored by Italians.

Another writes that he has heard it said that "the worker bees of the season do not live until another season; if so, why not destroy all of the bees that are in the honey boxes that are removed in the fall, unless they are needed to keep up the animal heat during the winter?" "The bees that are hatched in the fall live all winter, and do some work in the spring, rearing the bees that become the workers of that season. I do not think there is any advantage in abnormally populous



DEVON COW, WISCONSIN BELLE, AND HER CALF.

30 to 45 cents a pound, and there is not a particle of wax stuck on the edges of the sections, and he wants me to tell him why his sections, "when taken from the hive, are waxed thick on the edges, and around the entrances from the main hive." All sections, when first taken from the hive, are more or less covered with propolis around the edges. The bees always put propolis where two surfaces meet. Before being put upon the market, all propolis should be carefully scraped from the sections, which was probably the case with those that so aroused the admiration of my correspondent. Some apiarians, myself included, use sections made from white poplar, a very white wood, which is quite hard, when seasoned. I know of no method of bleaching the combs; the fumes of burning sulphur would turn them to a greenish tinge, rather than whiten

colonies, and, if rightly managed, I do not think many colonies will become so. During the winter, the oldest bees die; if these could have been killed in the fall, there might be a slight gain, but it would be very slight indeed, as not much honey is consumed until breeding is commenced in the spring.

Putting section boxes on before swarming will retard, but seldom prevent it. I use lighter foundation for sections than for brood frames. In reply to an inquiry, I will state that I own and live upon a small farm, but do not work it myself, devoting my entire attention to bee culture; selling the honey almost entirely in my home market. I have never shipped honey to New-York, but could ship it there safely if necessary.

On page 215, current volume, W. D. A. asks if, "in order

to dispense with the separators, it is necessary to fill the entire sections." It is not absolutely necessary, but it is desirable. If the section is filled with foundation, the cells near the wood are drawn out to full length, and the combs are securely fastened to the wood; while, if the section is not filled full, the bees are quite apt to shorten the cells as they approach the wood, and, finally, when the wood is reached the comb is very thin. It is in fact, what bee-keepers call a "brace-comb," and it is easily broken. At a time when honey is coming in very plentifully the bees cannot build natural combs rapidly enough to store the honey, but when furnished with foundation they can draw it out even faster than it is needed. The use of foundation also prevents the consumption of honey that becomes necessary in order that wax may be secreted for the construction of combs. Combs built from foundation are usually straighter and more even than natural combs. It is the usual custom, with at least the majority of apiarians, to fill the sections with foundation with the exception of a space one-eighth of an inch wide at the sides of the foundation, and one-fourth of an inch at the bottom. W. D. A. says he thought, from what he had read, that in order to have the honey in the sections as pure as possible, and free from all objections, it was customary to insert only a narrow strip of foundation as a guide. It is true that when foundation was first introduced, considerable was said about the "fish-bone" to be found in the honey when it was used. Improvements, however, have given us foundation with the base of the cells even thinner than that found in the natural comb, and the side walls so soft that the bees very easily draw them out and thus form the combs, while the heat necessary to its manufacture very thoroughly purifies the wax.

Another person inquires by personal letter about the "controllable hive," advertised in some papers by a person living in Maine, and also about the Kidder hive, made in Vermont. The proprietors of both hives are unfavorably known to apiarians.

W. Z. HUTCHINSON.

Genesee County, Mich.

Securing Comb Honey.

I would ask, through the columns of your paper, for practical instructions in bee-keeping. I have about twenty colonies, mostly in movable comb frame hives (Langstroth's patent), and would like to have one colony or swarm for each hive, and have them devote their energies to storing surplus honey, rather than to sending out second and third swarms. How can I accomplish this? R. D. B.

Ground Limestone as a fertilizer.

J. W. R., and several others, inquire as to the value of ground limestone, as a fertilizer.

ANS—Limestone is the name given to all rocks which are principally composed of carbonate of lime, and so abundant is it among the strata that compose the crust of the earth that it is supposed to constitute about one-half their substance. Carbonate of lime is composed of carbonic acid and lime. In the process of burning the carbonic acid is expelled and the lime, or oxide of calcium, remains. This is known as quicklime. The change in the composition causes also a change in the properties. Limestone, or carbonate of lime, is mild in its alkaline properties, while burnt lime is caustic. Applied to the soil the latter is a powerful agent in decomposing the inert and inactive vegetable matters in it, making them available as plant food. Moreover, it acts beneficially on the silicates of potash and soda combining with the silica, forming silicate of lime, and liberating the soda and potash. The latter is an essential element of plant food and one that

is seldom found in large quantities in soluble form, in the soil, and is, therefore soon exhausted. Ground limestone, often called "raw" limestone is insoluble or nearly so, and therefore can have no such effect. Where "free" carbonic acid is present its solubility is increased. Where the soil is destitute of lime in sufficient quantities to supply what is needed for plant food the effects of powdered limestone are good, but this is rarely the case. Its action is in all cases slow, and its effects more lasting than those of burnt lime. Where fuel is scarce and limestone or marble abundant, the stone may be cheaply ground and be thus economically prepared for improving those soils which are deficient in lime; but neither lands in which calcareous matter naturally abound, nor those containing a large proportion of imperfectly decomposed vegetable remains can receive any immediate benefit from the application of unburned lime, unless in the way of rendering clay soils mechanically lighter and boggy ones more firm. On poor sandy soils, and when reduced to the finest powder, its effects have been found to be the most beneficial.

RAISING CALVES.

FORMERLY I used to raise calves by feeding them skimmed milk twice a day, and I usually fed them until they were five or six months old and thought, on comparing them with others not fed as long, that it paid extremely well to do so; but last Spring, not having conveniences to handle milk profitably, and wishing to send it to the factory, I tried a new plan. Oilmeal was bought at \$2.50 per cwt., and every morning a kettleful of porridge was made. One porringer was used, wet up in a pan with cold water and then stirred into the boiling water. The kettle held about a pailful. This made a feed for ten calves both morning and night. The meal swelled so when wet that it made the porridge sufficiently thick. When dipped into the pails to be fed about a quart of skimmed milk was added for each calf, which amount of milk was decreased, and at last none was given as the calves got older. After a while a sup of middlings was used with the oil-meal.

This kind of feeding was begun after the calves had been fed new milk until they were about four weeks old, and was kept up until they were five or six months old. Care was taken when this kind of feeding was begun not to overdo it at first, and they were accustomed to the new feed by degrees. The result has been all and more than was expected; the calves grew and thrived in a way that did credit to their feed. They were kept in a pasture where they had grass and fresh water and went into the winter in good condition, as good as any calves that we ever raised, entirely on skimmed milk.

A VOLUNTEER.

THE POULTRY-YARD.

Arrangement of Perches.

EDS. COUNTRY GENTLEMAN—The perches for roosting should not be too large or too small, as in either case they are injurious to the breasts of fowls while young. A three-inch round pole is sufficiently large for any age. When first commencing to roost, smaller perches are better, as the young birds can cling to them and thus learn to balance the body. Flat perches should not be allowed, when first beginning to roost, as the fowls in this position press the whole weight on the breast bone, which has a tendency to flatten or curve the tender cartilaginous bone. A flat perch is different from

(i) The addition of a little pease meal would be an improvement
A. R. J. F

a board, as it admits of only one position for the fowl. Chicks should be led up to roost as soon as they can cling well. Thus they are kept more cleanly, and there is less danger from vermin. But the age depends much on breed, some being feathered earlier than others.

Chicks that roost in coops have little regard to position, frequently when in deep repose lying with outstretched limbs. When in coops they have to be guarded from outside depredators. For this reason it is well to lead them to roost as early as they can endure it. They thrive better in secure coop if it is cleaned out every day or two, and fresh litter scattered over the bottom to catch the droppings. The chicks are better contented until the promptings of nature teaches them to seek high roosts. I prefer low perches, all on a level. When one perch is above another, it is the strife of each bird to get at the top. The fowls when alighting from lofty perches strike on the soles of the feet, which in the case of heavy birds is the occasion of "bumble foot."

In the arrangement of perches, there should be some care taken to place them in the darkest and most comfortable portion of the building, as the fowls suffer most from colds when in repose. When accustomed to it, fowls are just as well satisfied with a low perch as a high one, so long as there is not one above them. Young chicks should not be put to roost with old, quarrelsome fowls, but have a place devoted to their sole occupation, where the older fowls cannot gain admittance.

C. B.

Duchess County, N. Y.

Keeping Fowls Confined.

EDS COUNTRY GENTLEMAN—Your regular contributor, C. B., concludes an article on page 213, with the following sound remarks: "I am an advocate of the confinement of fowls at all seasons of the year. They are more comfortable, less trouble and more profitable. All varieties will accommodate themselves to it, and may be made profitable or not, according to the expenditure of care and feeding."

It is with the hen much as it is with the cow; care and kind treatment, with comfortable quarters, favor contentment, without which hens will not be profitable. Domesticity is to be encouraged. With sufficient good food (which means less corn than is usually fed, and more of other grains, particularly wheat), and the proper variety, such as vegetables and scraps from the table, which a fowl loves and thrives upon, a small number of hens will afford as many eggs as twice and sometimes thrice the number usually kept. A hen loves a quiet life, and is opposed to disturbance of all kinds. She wants to feel safe and at home. Such a condition disposes to laying. Less space is required with such treatment, and with the necessary care in guarding against vermin the same quarters may be continuously occupied both winter and summer. A range attached, with grass and fresh air in summer, has more effect upon the imagination of the projector than upon the laying disposition of the fowl; not that a fowl will not do well under such circumstances, proper attention otherwise being given, but if ignorant of them, and satisfied with its snug, comfortable quarters—the only ones it knows, and which are its home—it will do equally well, or, as C. B. has it, "much better."

It is the cheapest and easiest way to keep fowls, and realizes the most profit on the outlay. Hence it is adapted to families who require only a few hens, as is very common in the outskirts of the village here, and invariably with success where the proper attention is given, and is invariably unsuccessful when the fowls are neglected, however much they may be fed. For a small family, ten or a dozen hens are usually kept. In one instance 6 hens furnished all the eggs needed

—and they were freely used—during the year by a family of two. But the fowls received intelligent treatment, and were accustomed to their quarters from chickenhood up, making it a home for them, which was not allowed to be disturbed, the fowls being attended to by the mistress of the house. F. G.

Fort Plain, N. Y.

Drinking Fountain for Chickens.

As my plan of supplying water for little chickens may be new to many of your readers, I give it for all to try who may like. Take a tight can (an empty 5-gallon kerosene can is just the thing), punch half a dozen holes near the bottom on one side of it and have a tinker solder on to the bottom a strip, say five inches wide and the length of one side of the can, turn up two inches of the outer edge and the same on each end (which should be left much longer). Solder the corner, and it will make a vessel $2\frac{1}{2}$ inches wide and 2 inches high on one side of the can, which will always keep full of water so long as there is any left in the can.

To fill the can with water, turn it part on one side and pour into the trough at the bottom; or, better still, if you have a tub or trough full of water, hold your can under till it fills. Then set it up and there will enough run out to fill the vessel at the bottom above the holes in the can. It will always keep so full as long as there is any water left in the can, which must be air tight.

D. D. G.

Richland, Cal.

Summer Care of Fowls.

Too little attention is, in a majority of cases, given the summer care of fowls. Farmers, as a rule, turn them loose in the spring, and permit them to roam at large over the farm. They are not housed and fed until winter sets in, and even then usually in a very imperfect manner. Little can be expected from fowls thus treated.

We propose, in this article, to give a few hints concerning the summer treatment of poultry and, at the outset, would say that no other season of the year is so trying to fowls confined within limited space. Shade and good water are two very important requisites. The birds should be protected from the burning summer's sun, and this may be accomplished in various ways. Perhaps the best plan is to plant grapevines so that they will trail over a portion of the yard, thus combining two profits—the increased health and lying capacity of the fowls, and the grapes, which (being nourished by their droppings) will grow and produce better than if planted elsewhere. But it takes some time for grapevines to become large enough to afford very much shade, and so it would be a good idea to plant something that grows rapidly, like the pumpkin or squash, the first year, in connection with the grapes.

It is of the utmost importance to have plenty of pure running water for the fowls to drink and bathe in. Nothing contributes more to the health and vigor of the birds than good, pure water, and nothing relating to their care and management is, perhaps, more neglected. If a stream is not accessible, then fresh water should be supplied in shallow tanks, replenished at least three times daily. The principal cause of cholera and many other diseases is stagnant water coupled with unclean quarters.

Much care should be exercised in the summer feeding of fowls. They should not be stuffed all the time, but lightly fed at regular intervals, and it would be well to give them a variety of food every day—say corn in the morning, Indian meal boiled with or without potatoes at noon, and oats or

some other grain at night. Green food, too, should be supplied at least once a day. Plenty of fine gravel, crushed shells and coal ashes should also stand before them all the while, and a suitable dust bath ought to be provided. A very good way to make the latter is to keep a small portion of the yard often freshly spaded and pulverized.

Keeping the house and yards, as well as the fowls, free from vermin is a matter which should receive very careful attention. If vermin is permitted to get into a henery it is often very difficult to dislodge. The henery should, consequently, be thoroughly white washed twice a year, the nests and roosts smeared with kerosene oil, and the yards treated in the same manner. It is well to remember that lice and other insects prefer dirty fowls, and if the birds are kept clean and healthy, they are not apt to be troubled with them. Sulphur—a table-spoonful to each dozen hens—mixed with meal, has a beneficial effect in preventing the multiplication of insects, and also improves the general health of the fowls.

Diseases and their Remedies

A writer in the Chicago Poultry Keeper discusses certain complaints and the difficulties as follows.

ROUP.

Whenever you have a northeast storm, with damp, chilly, disagreeable weather, look out for the roup. Roup is to the fowls what heavy colds are to human individuals, and as we may have cold in the head, cold on the bowels, sore throat, and other disturbances from cold, the term "roup" covers them all. Roup in some forms is contagious, while in other shapes it may exist in a flock without affecting any but those of weak constitutions. The first thing to do with the affected fowl is to clean out the nostrils, and every breeder should have on hand a small syringe, which should be put to use early. Roup, when malignant, makes known its presence by a peculiar, disagreeable odor. The sick fowl looks droopy, and a slight pressure on the nostrils causes a discharge, which is very offensive in smell. Make a solution of copperas water, and with the syringe inject some of it into the nostrils, and also down the throat. If the bird is no better in a few hours, try a severer remedy, which is the injection of a mixture of coal oil and carbolic acid. Add ten drops of carbolic acid to a table-spoonful of coal oil and force a small quantity into each nostril. This will cure when all other remedies fail. Night and morning give roup pills (or powder) either in the food or by forcing it down the throat. Add some, also, to the food of those that are well.

How to make roup pills is what most persons desire to know. The basis of all roup pills or powders is asafetida. This is combined with tonics and cathartics. Here is the method, and by which a large quantity may be made at a small cost. Take one teaspoonful each of tincture of iron, red pepper, ginger, saffron, chlorate of potash, salt and powdered rhubarb; mix them intimately. After thoroughly mixing add three table-spoonfuls of hyposulphite of soda, and mix together well. Incorporate this with one ounce of asafetida, working it together until the whole is completely mingled, occasionally softening it, whenever necessary, with castor oil. This can be made into pills, or when dry, into a powder. It is of the same composition as many of the roup pills which are sold at 50 cents a box.

CONDITION POWDERS.

There are many suggestions for making hens lay, but their

virtues depend upon stimulating the fowls and supplying them with materials for producing eggs. Here is a recipe, which is a good one (much better than the majority), the cost of the ingredients of which is but very little. Take of bone meal, ground meat and parched wheat (ground), two pound each, linseed meal, common salt, ground oyster shells and charcoal, one pound each; sulphur, copperas, common bread soda and fenugreek, half pound each; saffron, red pepper, ginger and hyposulphite of soda, one-quarter pound each. Have all the ingredients in a fine condition, mix them together thoroughly, and you will have about thirteen pounds of condition powder, at a cost of less than five cents per pound, and which is not only egg food, but a preventive and cure for many diseases. Give a heaping table-spoonful once a day to every ten fowls, in the soft food.

LICE

This is not a disease, but is not out of place here. To be rid of them provide a dust bath, dust the fowls with Persian insect powder, clean out the poultry houses and coops, rub the roosts with coal oil, and whitewash the buildings inside and out with hot whitewash to which carbolic acid has been added.

SCURVY LEGS

Rub the legs two or three times (once a week) with lard and sulphur, to which a few drops of carbolic acid have been added, or with a mixture of lard and coal oil; but do not grease sitting hens in any manner, as it injures the eggs.

TONIC FOR FOWLS.

Iron in any shape is beneficial to fowls. Copperas is sulphate of iron, and if a little copperas is added to the drinking water, or ground fine and mixed with their food, the benefit will soon be seen in the reddened combs and healthy look. If an old iron pot is used in which to keep the drinking water, the gradual oxidation of the iron by the water will cause particles of oxide of iron to be given off, which will be taken up by the fowls when drinking. A handful of nails, or old pieces of refuse iron, iron filings, or even iron cinders, if placed in the vessel containing the water, will more or less afford iron to the poultry. Iron is invigorating, stimulating, and assists in guarding the system from disease. Iron is in the blood of every living creature, and any deficiency thereof causes weakness or debility. The use of copperas is beneficial in another respect. It is a remedy for a great many diseases, is a good disinfectant, and a sure remedy against contagions of a certain character. Do not be afraid to use it. A table-spoonful of a solution of copperas in the drinking water for a dozen fowls is sufficient, and as it is cheap in price, the expense of its use is but a trifle.

MOULTING.

Moulting is simply shedding old feathers. Feed liberally, giving both the egg food and tonic. Warmth is one of the best remedies for all diseases, especially roup. Pip, or a thickening of the membrane of the tongue near the tip impedes breathing and sometimes suffocates, especially chicks. Clip off the end with a pair of scissors, if an extreme case, and give the bird a good mouthful of butter or lard, to which a few drops of coal oil are added. Bowel diseases other than cholera may be treated in this manner. Use castor oil for constipation, and castor oil with a drop or two of laudanum for diarrhoea. Always give clean water, free from filth.