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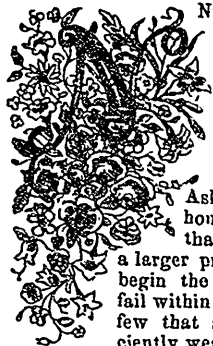
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AGRICULTURAL REVIEW.

JUNE.

CONTENTS:—Editorial.—The wealth of farmers—Improvement in farming—Contrasts in Farming.—Agricultural Literature—Natural science for farmers.—Hints on Agriculture—Contradictory statements.—The Quebec County Agricultural Society, correspondence.—**Our Hables**, on our way to the exhibition of all nations.—Improvement in the next volume of the L. C. Agriculturist—Permanent depot of Agricultural implements, seeds and books.—From Montreal to Quebec on the Grand Trunk line—The farm of Mr. Hebert, M. P. P. of Ste. Sophie, Me., anti-c. Clearing of the forest.—Rotation.—Cattle.—**Operations for June.**—**Farm.**—Beans—Bees—Blades—Bones—Broom corn—Buildings—Calves—Carrots—Cattle—Cranberries—Celars—Clover—Corn—Dairy—Draining—Flax and Hemp—Fences—Grain fields—Grass seed—Hedge rows—Horses—Horse hoes—Limo—Lucerne—Mangle Wurtzel—Manures—Mowings—Oats—Peas—Parsnips—Plowing—Potatoes—Poultry—Provisions—Pumpkins—Sheep soiling—Sorghum—Sugar Beets—Swine—Tobacco—Tools.—**Orchard and Nursery.**—Transplantation of stocks.—Evergreens—Necessary care in transplanting.—Pruning—Insects—Weeds.—**Kitchen and fruit garden.**—Asparagus—Beans—Beets—Borecole—Cabbage—Carrots—Celery—Cistern—Cold frames—Corn—Cucumbers—Egg Plants—Fruit trees—Hot beds—Insects—Kohl-Kabi—Kale—Lettuce—Liquid manure tank—Manure—Melons—Nasturtiums—Okra—Onions—Peas—Pepper—Potatoes—Pumpkins—Radieshes—Rhubarb—Salsafy—Seeds—Squashes—Sweet Potatoes—Tomatoes—Tur-nips—Winter cherry—Blackberries—Cranberries—Currants—Grape trees—Gooseberries—Raspberries—Straw-berries—**Flower Garden and Lawn.**—Amaryllis—Annuals—Bedding plants—Asters—Bore edging—Carnations—Cypress vine—Dahlias—Evergreens—Frames and Pits—Flowering Shrubs—Gladiolus—Grass—Gravel walks—Hedges—Honey suckles—Insects—Lawns—Moulding—Pruning—Roses—Shade Trees—Tuber roses—Green and hot houses—Grape and Orchard-house—Apiary in June—**The dairy.**—About butter-making—Carrying the milk—Setting the milk—Time to skim the milk—Temperature—Churning—Packing the butter—Marketing—About cheese-making—Lecture before the Derbyshire Agricultural Society—Manufacture of Cheshire cheese—**Mar. res.**—Value of meadow muck—Something more about muck—Preparation of bones for use—**The Croix.**—On the cultivation of flax by William Bon of St. Laurent.—Directions by a first prize English grower—The Ruta baga crop—The gin-seng Plant.—Lucerne—**Foreign Review.**—International show of fat stock at Poissy.—The Royal Agricultural society of England—Destruction of small birds causing alarm.—The steam plough.—Cotton for a cold climate.—Tenants and Land-owners.—A hint to the Royal Agricultural Society.—**Cattle department.**—Work bulls in the yoke—Bean meal for Pigs—Substitute for roots and hay—Mauchamp Merino sheep.—Coked cattle and root cutters—Top-dressing grass land in autumn.—Fecundity of hens.—Improving pasture lands.



NOTHING is more common than to speak of men in trade realizing much larger sums than are earned by farmers; and no mistake is greater than to suppose that the balance of profit rests with the merchant

Ask the owner of warehouses, and you will find that seven out of ten, if not a larger proportion, of those who begin the business of merchants, fail within the first ten years; the few that succeed are not sufficiently wealthy to enable all their

gains to pay the short-comings of those who have failed. Not so with the farmer; if he adhere to his own business bankruptcy is impossible. It should be remembered, however, that, as a general rule, capital is as necessary to secure the best results in agricultural, as in mercantile pursuits. The farmer should have on hand, on the first day of November, sufficient funds to enable him to purchase the necessary amount of fertilizing materials for spring use; and this should be, not what will simply secure a crop, but the largest amount which can be used with increased profit. He should also be amply able to meet all expenses of hired labor, farm implements, &c., for the current season. Under these circumstances, only gross ignorance, combined with negligence, can prevent his ultimate success, while intelligent farmers have made fortunes in almost every state, county, and township.

We have published within the last five years, several instances of farmers becoming wealthy in the regular pursuit of agriculture, and in this country they are assisted in so doing, by the upward tendency of real estate in value, particularly when improved.

It should be remembered that the entire success of the merchant—we mean his actual success—is dependent upon the commissions, in the form of profit, paid by the farmer on his

supplies, and the direct commissions for selling the products of the farmer. It should be remembered, also, that three-quarters of the taxes paid, are received from farmers and planters; that the same proportion of the real wealth of the country is possessed by the farmers. We will admit that there are more of them, but we claim that while a few merchants, and bankers, and speculators, may acquire fortunes greater than the average of those acquired by farmers, still farmers average greater profits than merchants, from the fact that they always succeed, provided they live within their means, and do not attempt more than they are able to accomplish.

A writer in the *Boston Cultivator*, furnishes some interesting instances, showing that fortunes can be made by farming. "Sixty years ago," he says, "a man came to Western New York, from New England or New Jersey, I am not certain which, his axe and a little loose change, constituting nearly all his property. He worked several years for different farmers, and then bought land for himself. He now has a farm of 600 acres or more, has given two sons each a good farm, and pays taxes on two hundred thousand dollars of personal property. He has never had any business but farming.

"I know another man whose father left him a farm of more than two hundred acres, over 30 years ago, with some encumbrances on it in the shape of legacies to other heirs, who now has over 400 acres of land, and fifty thousand dollars at interest. He, also, has done no business but farming.

"Several men have worked for me, who, though they had nothing when they came, are now well off. A young Scotchman worked for me thirty years ago, who had but three cents when he began; he now has a good farm of 200 acres, well stocked, and is free from debt. He knew how to do the mechanical part of farming, thoroughly, but knew nothing of speculation. I could name others who have acquired fortunes wholly by farming.

"A farmer of small means should be very economical and still very liberal. He should be economical in dress for himself and his fa-

mily, and in his dwelling and furniture; he should be liberal in feeding his stock, manuring his land, and in supplying labor to work his land. I have seen many farmers who were kept always poor by trying to do too much work for the number of laborers employed, whereas if they had hired double the labor, it would have paid abundantly. This is a very common mistake."

Other professions are now crowded to overflowing, and only a few can succeed in them. Show us the city family who has not some dear relative reduced to penury by the late commercial crisis, while even with the present disastrous condition of the country, the farmer is enabled to pursue the even tenor of his way, and if he be distressed at all, it is mainly in his commiseration for the mercantile, manufacturing, and professional classes.

The best proof of the general success of farming, is the fact that young men well educated in scientific agriculture, are sought for at much higher prices than are received by the plodding clerks in banks, counting rooms, &c., and it would be difficult to suppose such a young man unable to procure land to cultivate on his own account, if he desired it. Were it not for our great expanse of country, we should soon find that this most successful of professions, farming, would give the same fictitious condition to the rental of land, as is given to city property by the competition in mercantile matters.

Is Farming Profitable?

This has been so often unanswered, that perhaps our readers will turn away from this article in disgust. But we do not think the subject is yet exhausted. Other men than farmers are entitled to have an opinion respecting it. Any man of common intelligence, especially if he is acquainted with the general condition of farmers, and the details of farm life, may form as correct an opinion on the subject as the farmer himself. By the term "profit," perhaps, we are apt to refer too exclusively to pecuniary results. The great pursuit of man is said to be happiness. But is it wise to measure the amount of happiness by the amount of money which men acquire?

Do observation and experience prove that the former is necessarily or uniformly in proportion to the latter? Although a certain amount of wealth undoubtedly contributes to our happiness, yet other elements must be taken into the account. Health, longevity and independence, certainty, freedom from exhausting care and anxiety, and various other circumstances must be considered in estimating the profitability of any business. In the first place, we think it will not be doubted that farmers, as a body, enjoy a greater measure of health than any other class of men. They are stronger and more robust and retain their strength and vigor to a greater age than other men. They live longer on an average than any other class of men, which proves not only that their course of life is conducive to health, but that their labor is of a less exhausting character. Labor in the open air is always more healthy than labor in the shop, the counting-room or the

study. Many other men who live and labor in the open air, as the hunter and the sailor, are subject to greater vicissitudes, exposures and dangers than the farmer, which often exhaust their health and cut short their lives. The circumstances under which the farmer labors in the spring, the songs of the birds, the fragrance and beauty of the flowers, the vigorous growth of the spring crops, and in the summer and autumn, the consciousness that he is reaping the reward of his labor, all tend to promote cheerfulness, hope and satisfaction.

The farmer's life is more uniform than that of most other men, and when the labors of the day are ended, he sleeps quietly in his bed, secure from danger and the inclemencies of the weather. He is not subject, like the traveller and the sailor, to changes of climate and temperature. He is accustomed to the climate in which he lives. His diet is plain and substantial. It is rare that he is required to make unusual efforts, or, like the soldier on the march or in battle, to make extraordinary drafts upon his strength and powers of endurance. Hence, as might be expected, statistics show that the farmer lives to a greater age than most other men.

Farming is safer than any other business. The navigator, the fisherman, the trader pay large sums for insurance. Indeed, so great are their risks that they cannot afford to carry on their business without insurance. But the farmer can afford to be his own underwriter. With reasonable skill and diligence, he is sure of the ordinary results of his business. It has been stated, on good authority, that ninety out of a hundred who engage in trade in our cities fail in their business. On the other hand, observing farmers have estimated that not more than five per cent. of those engaged in farming ever fail. Many of our young men enter upon the business of farming heavily in debt. If they take the homestead, they have to pay legacies to their brothers and sisters. If they purchase a farm, they pay a part, and take the balance on credit. Yet in most cases they work out of debt, and in a few years own their lands free of incumbrance. Is not here sufficient proof of the safety and certainty of the business of farming?

We are acquainted with a farmer less than forty years old, who is very apt to complain of the unprofitableness of farming. Now let us look at the facts in his case.

He inherited less than \$2000, and married a wife who had about \$2000. He purchased a farm for \$2000. Built a house which cost, say \$1800. Built a barn which cost as much more. Here was an outlay of \$5,600. He has now his house well furnished, 16 cows worth \$25 each, a yoke of oxen worth \$100, two horses worth \$100, a carriage worth \$100, a good stock of wagons, carts and other farm implements, worth say \$300—making his farm stock worth \$1000. He has dug ditches, laid walls, reclaimed swamp lands, and in various ways improved his farm, until it is now worth, say \$8000. He has paid his debts and is now free from incumbrance. Here is a man who has doubled the value of his property, has an excellent wife and four promising children—has

maintained himself and his family well—has a permanent business, knows the capabilities of his farm, and is annually increasing his products. He has become skilful in his business, has good health, and the respect and confidence of his neighbors, and he is not yet forty years old! Has not this man's business been profitable? And when he compares the results he has achieved with those achieved by men in other vocations around him, has he any reason to grumble at his want of success?

The farmer is more independent of fashion than others. He can live and dress as he pleases, while the minister, the doctor, the lawyer and the merchant must dress and live in a more expensive manner, or they will at once lose caste in the community. They must expend more money in visiting and receiving company, in travelling, in sustaining societies, lectures and other institutions of the day, in books, furniture and in various other ways, in obedience to the demands of custom.

Let us compare the results of farming with the results of other vocations in our own community. Our town has been settled more than two hundred years; upon inquiry, we can hear of but one physician who became wealthy by his profession during that period, and yet we have had many men of learning and talents who have worked thirty or forty years harder than any farmer among us—have been more exposed by day and night to the inclemency of the weather—have lost more sleep and undergone more anxiety. We have now an intelligent physician who has labored more than forty years most indefatigably among us. His labors have been most abundant by day and night, in season and out of season—and he has the confidence of the community to as great a degree as any man in the country.

Has his business been more profitable to him, in a pecuniary view, than that of many of our farmers? How is it with physicians of our acquaintance in other towns? Have they grown rich by their profession? How is it in our cities? A few, eminent by talent, or peculiarly favored by fortune, have grown wealthy by their professional labors. But not more than one in ten does more than gain a comfortable livelihood. We must judge, not by exceptional cases, but by average results. Who ever heard of a Protestant clergyman becoming rich by his salary? In former times, when clergymen were settled for life, many of them owned small farms, and labored with their hands to eke out their salaries. As these farms were generally situated in villages, some of them realized profit from the increased value of their lands. Some have married wealth. But we have yet to hear of a clergyman who has grown even moderately wealthy, by his profession alone.

A few men of superior talents do most of the legal business. Some of these grow rich by their professional business alone. But is it so with the majority of our lawyers? Are not most of them eager to engage in extra professional business? They become agents of corporations. They seek public offices. They engage in speculations. Some of them even become farmers. Probably not more than ten per cent. become wealthy by their profession.

Most mechanics work early and late. They generally obtain a comfortable living. Some accumulate property by extraordinary skill or diligence, but I think they do not in general exceed farmers in this respect.

The manufacturer sometimes acquires wealth for a time with great rapidity. But lo! there comes a change. The kind of goods which he is making goes out of fashion; the raw material rises in value. Some new machine is invented which will produce the same goods at a much cheaper rate, and in order to sustain himself, he must have an entire new set of machinery. The tariff is changed, and foreign goods undersell him. If he did not make money rapidly between the crises that so frequently occur, he could not carry on his business at all. When business is good, he must put on all his force, and drive day and night. Now think of the care and anxiety to which he is subject. And the operatives—how often are they thrown out of work, and left in an anxious and starving condition? What farmer who owns his hundred acres, with comfortable buildings and a decent stock of cattle, would exchange situations with the employer or employed in manufacturing life?

Farming, then, tends to promote health and longevity. It is a safe and certain business when compared with any other vocation, and its pecuniary results compare favorably with the results of any other business. All these elements should be taken into estimation in making up the profit and loss account. Should not the farmer, then, be contented with his lot?

Improvement in Farming.

Before us we have an inquiry the substance of which is:—"How can I improve in my system of farming, so as to raise larger crops, or in some way to make farming more profitable? I think I do as well as most of my neighbors, and have no desire, and no particular reason to complain, yet I barely earn a respectable living, as the reward of hard labor and constant care, and I have many times thought that the same amount of capital and energy in any other kind of business would yield more satisfactory results."

He who earns a respectable living in these times has certainly *no particular reason to complain*, and then the *care* of the farmer is nothing compared with that of men in other pursuits. His thought is only just enough to keep the brain in tone, and he knows nothing of the harassing, desponding care,—the life-consuming anxiety,—that makes existence almost a burden. Then, few farmers know how much they obtain from their farms. As a general thing, agriculturists are not very skilful accountants. If a merchant makes three thousand dollars a year in business, and expends for family support, &c., twenty five hundred, he gives his business credit for the full three thousand. If he keeps horses, and rides at pleasure and convenience, he knows this and other luxuries cost money. The farmer lives on the products of his farm, rides to church and to fairs, and on pleasure excursions, possesses every convenience for comfort and pleasure, and enjoys most of the luxuries of life; in

fact, obtains a support that in some of our large cities would cost three or four thousand dollars a year. At the end of the year, when he sells off produce, stock, &c., he has but a few hundred dollars left, and then he concludes that farming is unprofitable and won't afford much over a decent living. He has heard of acquaintances, perhaps merchants, making three or four thousands, or more in a year, and feels dissatisfied at his small gains; but forgets to inquire how much of this is saved, or how much was lost last year, or the last panic, and what security there exists in regard to the future. Business men know what value to place upon safe and permanent investments. Any wise capitalist would rather invest at three per cent. interest when there was no doubt in regard to safety, than run great risks at three times this rate. In this respect, the farmer has the advantage over all other classes. Seed-time and harvest never fail, for they are controlled by a higher law, and not subject to the caprice of man. The agriculturist may well congratulate himself on the safety of his position, for though his gains are not rapid, they are sure; and though he meets with losses, they are not great nor embarrassing. The wheat midge or the rust may injure the grain, the rot destroy the potatoes—some seasons are very dry and others extremely wet, and crops suffer—but these losses are only partial, and usually confined to one of many crops upon which he depends for profit. The loss, too, is one of anticipated profit, and not of capital invested, for under the most unfavorable circumstances, enough is annually saved to pay for the outlay of money and labor. Then the causes which injure his crops affect those of his neighbors also, and generally over a large district of country, and the natural consequence is an increase of price, which makes up to some extent for the diminution in quantity. The loss may be inconvenient, or even annoying, but it brings no crushing calamity that destroys hope and darkens a whole life.

The inquiry, *how can I improve in my system of farming*, is the most important that the farmer can make, and one which he should keep constantly before his mind. He who does so can hardly fail to make constant progress. A knowledge of a disease is said to be a half cure, and a mind alive to the necessity of improvement, will rest satisfied with nothing short of the good for which it craves. We could not of course specify in what way our correspondent could improve in his system of farming, without more knowledge of his present practice, but we can give a few general rules, that may be useful to him and others. The farmer conducts his business, not for pleasure, or honour, but for profit. That system which yields the best returns for the capital and labor invested, is the best system, no matter whether it corresponds with the practices of others or the teachings of books, or not. If for every day's labor, costing seventy-five cents, a dollar's worth of corn, or wheat, or meat, can be produced, of course the more labor used the better. If enough can be thus employed, the farmer may fold his arms and live on the profit, notwithstanding the old maxim about holding or driv-

ing. The farmer's head, if he has a good one and makes good use of it, is of more value than his hands. Of course there is no objection to the farmer working as hard as any man on the farm, if in doing so he does not neglect the necessary head work, by not giving himself time to think. A man can be hired to do as much labor for a dollar a day as any owner of a farm can do, but at what price can he get his *thinking* done? Who can he hire to do his *managing*, and at what price? He who tries the experiment will find it a very costly operation. Many a man prides himself on the amount of labor he does, who perhaps by his excessive toil incapacitates himself for a wise and judicious management of his business, and thus loses much more than he gains. What would be thought of the wisdom of the merchant who, to save the wages of a porter, spent nearly the whole of his time and strength in hauling boxes and bales. Many soldiers in the ranks can no doubt fight as bravely and successfully in that position as Gen. Beaugard, and yet the General, in his position, is of more value, no doubt, to the army, than a dozen or perhaps a hundred regiments. How ridiculous then would it be for the general to give up his position and take a place in the ranks, or to waste the greater part of his time in doing work that ten thousand other men could do just as well. The farmer is the general in command of every living thing on the farm. He must marshal his forces for a successful struggle for large and profitable crops. He will meet with many enemies to be conquered, many difficulties to be overcome, but by a wise and skilful generalship he will conquer, and peace and plenty reward his efforts. Next number we will continue the subject, and show where Canadian farming as a general thing, needs improvement.

Contrasts in Farming.

A trip over what used to be the main thoroughfare for travel between Northern Vermont and New Hampshire to Boston, enabled us to see something of the farmers and their farms; and, as we have nothing better to do just now, we will venture to write down a few observations about them.

Within a few years, the general appearance of the farms, in those sections of New Hampshire and Massachusetts through which we passed, has improved very much. Neatly painted houses, and substantial, well finished barns, have taken the places in many instances of those much less so; and unmistakably prove that farming is not always "a losing business." But, O, the fences!

In speaking of houses, why do not more of our farmers, who are about to build new ones, avail themselves of the modern improvements in house architecture? Neat, tasteful and convenient houses, like some of those designed for the *Farmer*, can be built at about the same cost as the square, old-fashioned structures of a former age. There is still in this enlightened age, and in our own Canada, a great prejudice against "book farming," and, in passing along one need not greatly err in guessing where farmers on this stamp live. The out-of-door as well as in-door indications that they *don't* afford to

take agricultural papers, are too apparent to be mistaken. Look at exhausted fields, and the scanty yield of grain and grass, and near by, immense deposits of muck untouched. Look at the rich swamp lands which only need thorough drainage to make them equal the prairies of the West. Look at the thousands of brooks and rivulets, whose babbling waters might be made to irrigate tens of thousands of acres, now parched and withered by every summer's sun, which, with a little knowledge and a little labor, might be made to yield ten-fold.

The scarcity of public houses upon the road made it necessary to make the acquaintance of one of this class of farmers, where we stopped to get oats for our horse. The great "barny" house was situated close to the road, and, after an unwelcome salutation from a great surly dog, and a "get out" from his surly master, we ventured within. Our "first impressions" of the dog and his master and their home, were not very favorable. Although he treated us kindly "get out" was written all over his hard solid face. His history of "hard times, poor crops, hired man gone to the wars, sons to California," was in perfect keeping with the out-door embellishments of broken carts, plows, &c., which lay scattered about. An almanac, an old account-book, and a newspaper of doubtful loyalty, were the only evidences of a library, or of reading we could discern. Not a shrub, not a tree was visible to look upon, or break off the glare of the noon-day's sun from his cheerless home. A beautiful maple, spared by the woodman of another age, he had cut down because "the plaguy birds built their nests in its branches, and it prevented him from seeing the cows when they got into the corn." From youth to manhood and old age, here is no improvement, and no more hopes of any than in a Bedouin Arab. With another growl from the dog, and another "get out" from the master, (which our self-respect, and respect for human nature, makes us think was intended for the dog, and not for us,) we bade him good-bye.

In striking contrast with this were the home and character of another farmer. The neat and tasteful cottage situated well back from the road, the beautiful lawn, the well-kept walks and driveways, the well-built and convenient barn, the flourishing orchard, the garden, with fruits and flowers, and the work-shop and library, were the outward tokens of an intelligent farmer. The single expression, "I cannot bear to be idle," explains it all. The stranger, visitors, friends and kindred find within neatness, order, elegance and refinement with true politeness which springs only from a kind and genial spirit. The birds find in him a friend, and build their nests close up to his very door, and childhood, mute as to words, expresses its consciousness of being loved, in the outbursts of a joyous nature. Here is everything, thought we, to make life happy, but, ah, not everything. That priceless blessing, sound, robust health, has been denied him.

An educated, working farmer, with the moral and social qualities duly cultivated, is the noblest type of manhood. Such a man writes his history on every thing about him, and its bright pages will be read long after he

has passed away from the living. North or South, such men are never bigots or traitors; and their example is much safer and worthier of imitation than his whose footsteps are followed by the tramp of armies.

Farmers, "take the papers." Read, study and experiment. "Let us improve the mind and the soil," and the world will be better for our having lived in it.

Agricultural Literature.

"It is evident," says the North British Agriculturist in its review,—"that the farmers are now bestowing more attention on Agricultural Literature." Our contemporary affords some testimony to the truth of the statement, in its own enlarged pages and typographical improvements. We have read the *North British* with growing interest for a number of years past, and see it most being tiring upon 1863 with new zeal, as well as in more convenient form for its readers. The *Scottish Farmer* also commences a new Volume—its second, with the current month. We noticed this journal on first receiving it last spring, and may now add that the promise of its earlier numbers has been well borne out during the year just concluded. The agriculture of Scotland could not well have better exponents than these two periodicals, both published at Edinburgh.

Crossing the channel we find that the farmers of Ireland also appear to give increased encouragement to their Agricultural journals, if we may judge from the *Irish Farmer's Gazette*, which has very much enlarged its size, and is as practical and business-like as ever. "Our American Cousin" heads the list in the "Register of Irish Short-Horns," given in the first number for the year. The *Agricultural Review* is another weekly published at Dublin, the arrival of which we always await with pleasure. It is edited by Prof. CAMERON.

Coming lastly, where perhaps we ought to have started, to the metropolis,—we find at London the old *Mark Lane Express*, which, although it sometimes "mixes up" American agricultural affairs a little, has no superior, either as an organ of the British Grain Trade, —in its reports of Agricultural Meetings,—or in the general soundness and accuracy of its teachings. It has an entire confidence, at least in its own vaticinations and opinions, and answers admirably as the representative of "Mr Bull" on the farm. The *Field* is another London weekly, devoted, however, more extensively to the sports, recreations and miscellaneous pursuits of English Country Life among the wealthy classes, than to Agriculture strictly. Its closely packed columns show that immense labor is bestowed upon them, and its advertising pages like those of the other journals we have referred to, prove conclusively that English manufacturers, breeders and tradesmen understand, far better than ours, that *publicity* is the only real means of making sales.

Natural Science for Farmers.

An article on the advantage of a knowledge of natural science to farmers, touches the right key, and we hope those farmer's boys, and

young farmers, who have not already acquired a pretty good knowledge of chemistry, philosophy and botany, will take up at least one of these next winter. The long evenings will afford ample opportunity for an intelligent young man to obtain considerable knowledge of one or two, or even all three of these branches, so intimately connected with practical farming. The "hard words," or "technical terms," which are so apt to frighten the "uninitiated," will quickly disappear when one obtains a little knowledge of their derivation and the reasons for their use.

Aside from its application to the composition of manures, an item of no little consequence in the present state of agriculture, a knowledge of chemistry is almost indispensable in every branch of farm operations. Is it necessary to give medicines to a sick animal, it aids us greatly in exhibiting the nature and probable effect of such medicines; do we wish to preserve the products of the farm, it tells us the nature and process of decomposition, and what is likely to arrest it; it tells us, too, in the operations of the kitchen, what preparations are deleterious or otherwise, and in its application to vegetable growth, it enables us to understand and act in accordance with the laws of growth.

Philosophy, too, must be understood by every farmer who would keep up with his profession, especially if he would reap any advantage from the improved machines and implements which so much facilitate the labors of the farm at the present day, and even if he uses no implement more complicated than a common lever, some knowledge of philosophical principles will often save half the labor otherwise expended.

Both these branches can be pursued to advantage during winter, and so long as man's principal aim is "the pursuit of happiness," it is our firm belief that independent of their practical application to business, any intelligent man would be amply repaid for the time and labor requisite to obtain a knowledge of them, by the insight which he would thereby obtain into the operations of nature which are daily going on around him.

Botany, although not so appropriate for winter study, and perhaps verging more toward the ornamental, may still come in for a share of attention now and then; with its principles acquired, no time need be lost in going into the practical part when spring arrives, and while it is a valuable aid to the strictly practical farmer, and well worth the trouble necessary to its acquirement, it is absolutely indispensable to the highest success in horticulture and its kindred branches. While the practical agriculturist, who, through ignorance of its principles, exposes himself to derision if not serious loss, by belief in such doctrines as the transmutation of wheat to chess, the mixing of potatoes in the tubers, &c., the horticulturist and seedsman are liable to serious mistakes at the very foundation of their business, unless a knowledge of botany is included in their education.

But there is another view of the subject which I consider especially important. In every well organized mind, there is more or less love

of the beautiful, and this almost exhaustless source of innocent pleasure is more fully brought out and directed to its proper channel, the vegetable creation, by this study, than it can be by any other means and at the same time, the close attention to the minute organs of flowers, required in practical botany, tends to develop the perceptive faculties.

In this, too, it is sufficient compensation for the knowledge-loving student to be able to name the plants and trees which grow along his path, to know their uses and their origin, habits of growth, &c.

Hints on Agriculture.

The rule of every farm, unless in extraordinary situations of fertility, is to expend on it two-thirds of whatever is grown; such a farm cannot be worn out, but with decent management is constantly growing better.

Countries which have the largest population, where agriculture is thoroughly practiced, grow more and more productive. Belgium is the most thickly settled country in Europe; it has been cultivated like a garden, for centuries, and its yearly produce is constantly increasing.

There is, doubtless, a limit to the possible production of a farm, but we doubt if it was ever reached; we think sixty bushels of wheat to an acre a great yield, and so it is, compared with our average harvests of ten or fifteen, but it is quite possible, by high culture, to raise one hundred bushels on an acre.

Drilling saves two-thirds of the seed alone, and often increases by one-third the crop; the saving of the seed alone, in one year on a good sized farm, would pay for the machine.

In broadcast sowing some of the seed is buried too deeply; some lies upon the surface; here it is crowded together; there it is separated too widely. The drill places the seed where it is wanted; the proper depth for wheat is one to two inches.

The time will come when wheat drilled in rows will be cultivated as carefully as corn.

Wherever land needs manuring, it pays to manure well. Suppose ten dollars' worth of manure on an acre of land gives you a crop worth thirty dollars, and twenty dollars' worth gives you a crop worth only forty dollars, you are still the gainer, and will be for years to come.

A tree planted over the grave of Roger Williams enveloped his skeleton with its roots so completely as to preserve the form of the bones. In some parts of Connecticut there are little family-burying grounds in the orchards, and the trees nearest the graves flourish with a remarkable fertility. We may have couples about consuming or selling our ancestor in the form of apples and cider, but it is certain that every bone is worth its weight in gold, as a manure. A few bones at the roots of a fruit tree or grape vine will supply it for a dozen years with just the nutriment it requires. The best wheat fields in Europe are its old battlefields. No man who has a farm or garden should ever sell bones or ashes. Straw is worth more for manure than it ever brings when sold in market.

Our farmers think they do very well to get ten dollars net profit from an acre of land, but it would be a poor acre of garden that did not pay a hundred, and we have orchards that pay a thousand. There are pear trees that have paid a hundred dollars a year for ages.

Every dollar of manure on a farm is better than five dollars in any bank, or stock, that we know of. It is a good stock that pays ten per cent. It must be a badly managed farm where a deposit of manure will not pay three hundred per cent.

We need model farms and agricultural schools; but where these important institutions are wanted it would not be a bad plan to spend a day or two with those eccentric but very benevolent people and admirable farmers, the Shakers.

In a Shaker community, you have the material below the general average; but made the most of in certain directions. Agriculture and domestic manufactures, carried out thoroughly, with the most important objects, temperance and frugality, will make them rich.

In England, farmers prefer to lease farms rather than buy them. They prefer to expend their capital in stock, manure and labor, rather than shut it up in the land. But the man who wants a home for his family and his posterity, must own the land he cultivates, and then every acre he drains, every tree he plants, every load of manure he plows into it, will add to its permanent riches.

At the creation, man's appointed work was the cultivation of the earth, and there are many whose talents are inferior in this respect. I think it will be so until all the other works are subordinate to this. Canals are dug, railroads are constructed, cities are built, warehouses, manufactories and ships are all constructed for the sole purpose of benefiting the lords and cultivators of the soil. All the pursuits of civilization rest upon this one. Perfect independence is impossible, but the old-fashioned farmer, who is able to produce for himself all the real necessities, comes very near to it.

A bed of muck or marl on a farm is better than a gold mine, in a long run: when the gold is exhausted, that is the end of it; but the enriched farm will pour out crops for a century.

When a fruit tree has exhausted its fruit-forming material, it must stop bearing. Try a load of muck or ashes, bone dust, &c., dug in from six to twelve feet from the trunk, and you will be satisfied.

Every dead animal on a farm which is not eaten as food, should be stored with loam, rotten leaves, old plaster, powdered charcoal, leached ashes, or other absorbents, so as to make a compost of manure that will be worth, in the long run, more than it would have sold for when living.

The science of agriculture is to know how to convert the waste and apparently valueless matters around us into the richest and most important production of life. The business of the farmer is one of the greatest dignity. It is to assist the Almighty in His work of creation. It is to increase the beauty and fertility of the earth.

Contradictory Statements.

The opinions and statements which are often uttered during the discussions on agricultural topics, seem to create some confusion in the minds of persons who are not familiar with the circumstances in which the subjects are involved. In a late discussion on manures, one advocated the use of muck, and another thought it would not pay; one referred to cases where ploughing in green crops had, it was thought, been beneficial, and another referred to cases the results of which were different; one bought corn stalks for manure, and another considered them too valuable as cattle food to be thus used; one was in favour of porous ground for the bottom of barn yards and manure collars, and others thought the bottom should be tight.

Now to the uninitiated these statements are puzzling, and they ask—What shall we believe? The following remarks are offered with a view of explaining, to some extent, these apparent contradictions.

1. In regard to muck, it is well known that what is called by this name varies greatly in quality—some being good manure of itself as soon as dug, and some so sour that it is necessary to sweeten it by various means—as mixing it with alkalies or ammoniacal manures. The effects of its application vary with the nature of the soil—being greater where there is a deficiency of vegetable matter, and where bulky matter is needed to produce friability. It was stated that sand used as an absorbent of urine or the liquids of the barn yard had produced better effects when applied to the land than muck. It is very likely that this would be the result on land which was too light and would be made still lighter by muck.

2. The gentleman who bought corn stalks wholly for manure did not say what particular condition they were in—whether they were the whole growth or the butts from which the portion above the ear had been taken. If the latter, they had probably stood in the field till they were totally dead, the blades withered and perhaps blown away, leaving principally a mass of coarse stalks, either dry or containing only sour juice. The gentleman who esteemed corn-stalks valuable as cattle food cuts up his corn at the ground and shocks it as soon as it begins to "turn," so that every leaf is saved. He lives on the hills of Worcester county, and prefers a variety of corn which has small stalks, as he has found that cattle eat such much better than they do very large stalks. The gentleman who used stalks only for manure, lives on the Connecticut river, on the alluvions of which,—at least in the lower portion of the valley,—corn-stalks usually grow to a greater size, and consequently would be less valuable for fodder, or would have a larger proportion that would be rejected by stock.

3. The gentleman who especially advocated ploughing in green crops, referred to cases where buckwheat and rye had been thus used. The succeeding crops were deemed to have been greatly benefited by the crops turned in. In one case, a man obtained premium crops of Indian corn where crops of rye had been turned in. But nothing was said in regard to any comparative trial by which the precise

effect of the crops turned in could be ascertained. The buckwheat and rye were ploughed in, and the succeeding crops did well, but how much better did they do than they would have done without the green crops? In other words, was the experiment a profitable one? The fact is, this subject of ploughing in green crops deserves a thorough overhauling. The question is, under what circumstances is the practice advisable?

4. The gentleman who doubted the propriety of having barn yards and manure cellars tight, said there was often too much water in such places, and having a porous bottom the water might be got rid of, while the manurial elements would be retained, it being, in his opinion, impossible for the latter to be carried through four inches of sand—that is the sand would purify even stale urine so that the portion which passed through it would be destitute of taste and smell. It is admitted that earth, even sand, has the power of absorbing ammonia and other elements of manure—sand, however possesses this property in a less degree than soil which is composed of a good proportion of clay and vegetable matter; but the experiments of Dr. Voelcker have shown that though soils will retain these elements under a certain amount of water, it will part with them when a greater amount of water is applied. Thus in a yard or reservoir where there is a large quantity of liquid manure, four inches of the surface of the earth will take up a certain amount of the fertilizing elements which may be contained in the liquid; but as fresh liquid is constantly in contact with the sand, more is presented than the surface can purify, and it descends to the lower portion—the depth to which the manure is carried depending on the quantity and strength of the liquid and the length of time the soaking is continued. Thus in the case referred to by one gentleman engaged in the discussion, the effects of urine were traceable by smell to the depth of three feet or more in the ground, and were also obvious in the effects of the earth used as a top-dressing for grass. We had the opportunity of seeing some of the results of this case, having been present when the excavation was going on, and particularly noticed the appearance and smell of manure in the earth taken out at a depth of three or four feet. We have seen other cases equally as striking. In one the effect of the soaking of a compost-heap in which the trimmings of seal-skins were mixed, was obvious to sight and smell to the depth of four feet or more, although the earth was quite compact from the proportion of clay it contained. In another instance, the earth where a barn had stood was taken off to the depth of two feet, and the ground, in connection with the remainder of the lot, ploughed and sowed to oats. The effects of the manure which had soaked into the ground where the barn stood were obvious in the rank growth of the crop, and the same result was seen in the grass which grew on the spot for several years afterwards. Liquid manure will penetrate several feet deep, and for a manure tank we would strongly recommend a clay bottom.

The Quebec County Agricultural Society.

To the Editor of the Lower Canada Agriculturist.

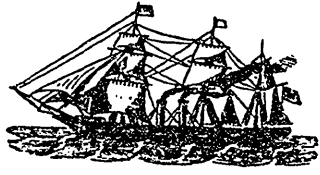
"Where ignorance is bliss 'twere folly to be wise"

SIR,—In reply to the communication of Jos. Laurin, President of the County of Quebec Agricultural Society, in the April No. of the Agriculturist, I reiterate the same statements that I made in my former letter in regard to the management of the county of Quebec Agricultural Society. The way the monies have been spent, is a shameful waste of the public grant, which I shall briefly point out. In the first place by examining the prize list I find, under the head "5th class poultry," 1 cock & 3 hens, \$7; and again for the best stallion \$4; now taking these two prizes into consideration, giving the highest prize for the most inferior stock, and the smallest prize for a breed of animals which stands first in all well conducted exhibition. Now I would ask any practical agriculturist what encouragement such proceedings are to Agricultural improvement. But Mr. Editor, the question is easily solved, each committee man has some particular animal, or produce and so regulates the prize list. I say visit the farms of several of these prize catchers and you will see nothing but the worst systems of cultivation, their farms overrun with weeds, and no regular rotation of crops. And as a proof of the way the Society is conducted, a great number of the respectable and intelligent farmers keep aloof from such exhibitions. And again their utter neglect of the liberal offer made by the "Board of Agriculture" for the importation of improved stock, which is much required in the County of Quebec. Jos. Laurin must bear in mind that Agricultural Societies are not constituted here as in the British Isles, where the monies are subscribed by individuals alone; not so in Canada, three fourths of the fund is public money and Societies are bound to apply it where the most benefit will result. Again, Jos. Laurin makes a false statement wherein he says, "That Matthew Davidson of St. Foy's has long and persistently shewn hostility to the County of Quebec Agricultural Society, by refusing to become one of its members." I beg leave to say that I was a member of the above Society for several years, and introduced several good rules and regulations for the improvement of Agriculture, which Jos. Laurin can see by referring to the pages of the Farmers' Journal for the year 1853. But was not supported, and finally left the Society in disgust. And further Jos. Laurin states a most deliberate falsehood, where he says, "That this Society learn with satisfaction that the letter, above referred to, received most unequivocal censure from more than one member of the City of Quebec Agricultural Society, at its last meeting on Tuesday last, when Matthew Davidson was present." The only allusion made to my letter at the above meeting, was by an individual who takes much pleasure in making himself heard, and generally does all the spouting that is to be done at public meetings. His remarks however were immediately put down by the worthy and intelligent chairman. Mr. Editor considering this to be an age of

advancement, and that Agriculture has made rapid progress this 44 years, I have now in my possession a printed prize list for the year 1818, which, by comparing the two lists, plainly shows that the Agricultural Society of the County of Quebec is upon the retrograding scale, to an alarming extent. Mr. Editor with your permission I shall make a few extracts for the benefit of Agriculture. "For Agricultural produce and experiments, to the person who shall raise the greatest weight of wheat per arpent, not less than two arpents, \$80. The same for Barley, Oats, Peas, Potatoes, and Turnips"—Now compare this system with the one bushel plan—"And to the person who shall make the experiment of turning in green crops as a manure and prove its utility and cheapness over any other manure, giving a particular and certified account of the process and its results, \$50. To the person who shall draw up and produce to the Society the best plan for a rotation of crops adapted to the soil, climate and market of this district and to the general shape and size of the farms therein". These are but a few of the prizes contained in this list, for the advancement of Agriculture. But there is one rule which I would strongly recommend to Jos. Laurin and his board of directors, which reads thus: "No member of the committee of this Society to compete for prizes." I shall be most happy to show Jos. Laurin, or any of his directors, the above prize list, which might be a valuable aid to them, in furthering the interests of Agriculture in the County of Quebec, by calling at my office between the hours of 12 and 1 P. M. Mr. Editor, I have trespassed largely on your columns but the good management of Agricultural Societies being a matter of much importance to the farmers of the County it is the only excuse I have to make.

I remain,
MATTHEW DAVIDSON.

OUR RAMBLES.



Before the present number of the Lower Canada Agriculturist has been delivered to our subscribers, we will have sailed from Quebec on board of the *Anglo-Saxon* and proceeded a few hundred miles on our way to London, where we shall witness, for report to our readers, the agricultural department of the international exhibition. We must be deeply gratified that it should be our lot to be present at this great show of the agricultural and manufacturing capabilities of the world, of the boasted productions of each nation. No doubt a great amount of knowledge could be derived from a careful comparative study of all which will be there exhibited. But an examination, however slight, of the whole would prove an impossibility even with regard to time. And so we merely propose to limit ourselves to the ap-

preciation of the agricultural department, consisting of the cattle, implements, and field productions.

These we have been able to judge all ready, in our late travels through the continent for a period of five years, from 1853 to 1858. We were present on the occasions of the agricultural universal exhibitions of Paris in 1855 and 1856, and of several Smithfield cattle shows. Moreover, we have made it a duty to visit the farms of the leading agriculturists in England, Scotland, France, Germany, Belgium, Holland, and Switzerland. On our arrival at Battersoa Park, we shall therefore be prepared to judge of the improvements in cattle or implements brought about for the last four years. These we will record carefully, for publication in our future numbers, with such comments and suggestions as the particular requirements of the country will permit.

Although the main object of our trip to London is to benefit our readers from a report on the agricultural department of the international exhibition, still we have in view, in connection with the interests of our publication, the possibility of coming to an agreement, with the best agricultural publications of the continent, to procure the engravings published by them, of all prize cattle and implements, for illustration in the next volume of the Lower Canada Agriculturist. Thus our readers will find, in our coming numbers, the true representation of all the points of perfection, so eagerly sought for in each head of cattle taking a prize in the English or French exhibitions. The manufacturer will have before him the plans of the latest improved implements, such as will be suited to our system of farming. Nay, we are in hopes of being able to procure coloured engravings, showing still better to the experienced farmer what are the points most highly thought of now. These engravings will do more to convey an exact appreciation, in the mind of the reader, than the most complete and exact written description, in whatever language or space we may attempt. And so the same for the mechanic, who will at once see the working of a new implement in a good drawing, when he would be utterly unable to manufacture one from a mere description. These engravings will prove, in our opinion, a most important addition to the *Agriculturist*, and although we have done our best to this day to give such illustrations as we could afford, we do not dispute but we might have procured better ones, had our contemplated arrangements been then entered in. In our first issue we promised our subscribers to do our utmost, in making our publication worthy of the high patronage of the agricultural board and societies, with which we are honoured, and we believe we have not forfeited our word. But let the farmers subscribe to their own paper, so as to enable us to do more for its publication, and we pledge ourselves that the time will come when they will find in the Lower Canada Agriculturist those practical hints, which will amply repay the amount of their annual subscription. To this day we have not met with that general encouragement which the agricultural press is entitled

to from farmers. Some societies have grudged their twenty copies subscription, and have accepted of the obligation of taking them only when they were compelled to do so. Now we hope that in future the farmers generally will have their eyes open to their own interests, and that they will not only subscribe, but write for their own paper.

This increase of circulation on which we calculate will allow us to publish 48 pages monthly, instead of 24 as we have done heretofore, beginning with the first number of the next volume. If all the agricultural societies were to pass a by-law which would grant to every member a copy of the *Agriculturist*, our subscription list would be large enough to enable us to issue a 48 page edition twice a month, and give for one dollar two volumes of 600 pages each, with twenty-four coloured engravings, besides seventy-five wood cuts, all connected with agricultural matter. This has been done by a few societies, but their moving in the matter cannot allow us to increase our expenses to such a large amount; it would require a general move through the recommendation of the board.

Long since we have been showing the advantages attending a permanent exhibition of the best agricultural implements from England and the United States, but more particularly from Canada. To this day our manufacturers have bitterly complained of the impossibility for them to adopt the best patents and latest improvements, for the very good reason that they knew not where to find or see the necessary models. We have been asked almost daily for implements of such and such description, and advice from the manufacturers. Often times we have been at a loss to give the required answer, for not having just before us the necessary information or models. Farmers require to see before they order anything, and even are anxious to have at once, at a few hours notice, those implements they want. To meet these requirements of the agricultural community, we propose to make arrangements with the English and French manufacturers, so as to bring home a complete collection of those implements best suited to our wants. From the United States we have had already several communications, and we have good grounds to believe that, with the new patent act, they will avail themselves of the very extensive market open to their industry among the enterprising Canadian farmers. Most of their implements are best adapted to our country, for their cheapness and saving of labour. We will therefore have as complete a collection of their implements as we can procure. A commission to meet expenses will be the only charge. The *Lower Canada Agriculturist*, now circulated among the most extensive Canadian and United States manufacturers, will prove a useful medium between us. Again, our visits to most of the great agricultural shows of the neighbouring States and Canada will enable us to choose those implements best suited for our use, and come to arrangements on the grounds with the manufacturers.

It is in view to complete our collections that

we propose coming to arrangements with the best French and English seedsmen to import reliable agricultural seeds for the agricultural societies, favouring us with their orders. For Black Sea wheat especially the greatest care will be taken to procure the genuine article, coming direct from Odessa in the shortest possible time, and with the least possible injury from a long sea voyage. Samples will be constantly on hand.

An agricultural library of the best authors is also contemplated, so that in a few weeks we will have all the means of forwarding agricultural improvement and information throughout the whole extent of our Province. All these will be for purchase at the lowest possible prices we can obtain, our only object being the promotion of agricultural knowledge and progress.

Thus our trip to Europe is of the highest importance, and we trust we shall not fail in the many objects we have in view. We cannot but once more remind the agricultural societies that by extending the circulation of their official organ they will find us to prove a mighty lever in moving those ponderous obstacles, and powerful opposition, now in the way of progress. Each new name adds to this lever, and if it be true that power is in ratio to its length, what will resist the *Lower Canada Agriculturist* the day it will number 20,000 subscribers.

From Montreal to Quebec.—On a recent trip from Montreal to Quebec, by the Grand Trunk Railway, to whom we are much indebted for the courtesy of their road, we have noticed on the whole line a very decided improvement in the tillage of the land generally, and some very remarkable instances of superior farming, here and there, which must prove very beneficial to the country, by setting forth good example, which in due course of time will be followed in the immediate neighbourhood. Indeed taking that track of land as a whole we can say that the tillage is generally good. The ridges are getting wider, well rounded, the furrows straight, and cleaned out by the plough, after harrowing in the seed. Wide ditches and drains secure the crops against any excess of surface water; in short, the farmer gives to the land all the labour it requires, and performs his work in a very creditable manner. But there is all through the country a lack of system which destroys most of the profits that would result from a good rotation. The necessity of a well calculated succession of crops is still to be argued for many who have not yet come to a conclusion on some of the most important facts connected with their daily work. All must have observed that some plants will exhaust, while others will enrich the soil; some will destroy weeds, others allow their propagation; again that all plants will not give equally good crops on the same soil. And what can be the conclusion of these practical observations, if not that crops require to follow one another, on the same soil, in a certain rotation, to give the highest returns? The fact is well established now, and ought to be known by every farmer, who in the execution of his operations thinks more

highly of his brains than muscle. It is evident that by placing a grain crop after a cleaning one it is in the best conditions to give a high return. But this grain, allowing the propagation of weeds, it becomes necessary to have it followed by another cleaning crop, let it be clover, tares, peas, a green or a hoed crop, which will again be followed by a white crop and so on; maintaining always that cleanliness of the soil which is the constant object of good farming. Till this is obtained, no great improvement will result. The actual system is to have a succession of white crops till the land is exhausted, when it is laid to pasture by sowing a certain quantity of timothy and clover in the last grain. Three years pasture brings the land back to a fit state of richness, and it is again tilled and cropped, irrespective of weeds, while a few spare acres are laid out in meadow. Now with a proper rotation, the same amount of work would double in a very short period the returns of the farm. After pasture the land should be sowed in oats the first year; the second year, corn and green crops should be sown on that extent of ground which can be thoroughly manured; the richer fields could produce peas and tares, while the poorer ones might be summer fallowed, and a crop of buckwheat ploughed in green. The third year, wheat, barley or oats, according to the capacity of the land to produce them, with timothy and clover, so as to lay out in hay for the next three years. The meadow followed by pasture would furnish the cattle with an abundant supply of wholesome food. The dairy would be so much more productive, and the grazing cattle would yield so many more pounds of beef, besides a large quantity of hay, greater crops of grain, roots for winter feeding, a yearly increase of fertility, and adding to the value of the farm itself. All these advantages may be brought about with a good rotation, and as we have before stated we have been happy to find here and there a few good examples, which are being closely followed by the immediate neighbourhood. The forest is fast disappearing through the energy of the new settlers. Heavy clouds of smoke, floating slowly in the air, told us a very good tale of the progress now made in the clearing of our wild lands, as we advanced in the new districts. One of the most successful farmers in that part of the county is certainly Mr. Hébert of Mégantic, whose farming we are about to put before our readers.

The farm of Mr. Hébert, M. P. P., Ste. Sophie.

Mr. Hébert, after taking his education in one of our Canadian colleges, boldly entered the wild forest, and after proceeding several miles from home and from the last settlements, chopped down the first tree on his farm. From the school benches to the hard labour of a new settler the change was sudden and great. Still he manfully performed his daily work, and resisted the temptations of despair. Often times, when the darkness of night and the silence of the forest surrounded him, in his lonely hut, he looked forward with dread, through the frightful scenes of his imagination, but he

soon found, in the progress of his work, ground to foresee the day when the stumps and black logs, all round the spot where he now toiled, would be replaced by boundless meadows, golden grain, neat cottages, and a dense population of wealthy farmers. This great change has been accomplished after fourteen years of hard labour and constant care. Mr. Hébert is now one of the most extensive landowners of the locality. His farm consists of 300 acres, of which 230 are in full cultivation. Now let it no more be argued that farming is not a profitable business in this country, even though the new settler has no capital but an axe and manly enterprise.

Mr. Hébert has established a fact of the highest importance for the history of agriculture in Canada, and we feel it is our duty to put before the farmers generally, but before the settlers of the new districts particularly, the very good practice of Mr. Hébert's farming. The population of our rural districts fully appreciate the value of those men who devote themselves entirely to agricultural pursuits. There exists between them a similitude of interests and wants, which points them out as the most sincere advocates of their rights. Mr. Hébert's remarkable example has not been without due appreciation, for the County of Mégantic has bestowed upon him its highest sense of approbation by returning him their representative to the House of Assembly.

The practical experience of Mr. Hébert has taught him many methods which may benefit our readers; we hold from Mr. Hébert himself, all the particulars we are about to give.

The cutting down the trees is the first operation in clearing new land, and can be done at all times, whenever the settler has a few days to spare. To be done with the least possible amount of labour, this work requires a certain method so as to save cutting in logs, and piling up to burn, which must be done for almost every limb, if not properly attended to. The first step is to find out, on one given acre, the thickest of the wood, and the two largest trees, taking good care to have them to fall one over the other, on the spot chosen to start the fire, which is calculated to burn the trees all round. To obtain this their fall is directed by an intelligent cut, so that they are consumed on the spot, without any branching or piling up. No doubt circumstances will happen when this mode of proceeding will prove an impossibility; but it is a fact that oftentimes half an acre of land has been cleared on a single fire. More generally it is true, 12 or 15 fires are necessary. When the trees have been thus thrown and allowed to burn, the remaining portions are cut in 15 feet logs, and piled up to burn. The object of firing first the two largest trees, is to avoid their cutting in logs, when they sometimes measure 4 or 5 feet diameter, and give a corresponding amount of labour to be cut and piled.

The fall of the tree is directed by a proper cut. As a general rule the tree will fall in the direction taken by the chops at each blow of the axe. When the main part of the trees have been thus burnt, the remaining logs are closely piled one over the other and fired. At-

tention must be given to keep the blazing wood well together as it burns down. The cutting and burning is done at \$12 per acre. It is remarkable that trees will be fired at any time and that twenty-four hours will be sufficient to consume entirely a whole tree 5 feet diameter and 100 feet long. The fire is put in the morning, the remaining branches are piled together at night, and next morning nothing remains but ashes. When warm they are unmanageable, and require 48 hours to cool sufficiently to be carted under the shed where they are safe from rain. A certain quantity of water is then added, say two pales by every two bushels, to keep the ashes together and prevent them losing their strength by keeping in a dry state. Next they are made into potash and pearlsh.

The cutting and burning done with, the land is left with about 150 stumps per acre, measuring on an average ten inches in diameter, and three feet high, with double that number of smaller ones. The cut is made at three feet to avoid the large diameter of the stump, and thus save a considerable amount of labor. The soil is covered with a thick layer of ashes and vegetable mould six inches deep, in which the first seed is harrowed. Ploughing is now rendered impossible by the stumps and roots of the field. The first crop consists of wheat or potatoes. The seed is sown broadcast on the ashes; then put in by a cross harrowing. The implement used is made of a coarse triangular frame, having eleven strong iron teeth. Two handles help in guiding this harrow among and over the stumps. Wheat gives as much as 200 sheaves to the acre and 8 or 9 to the bushel, thus averaging a field of 25 bushels to the acre. Potatoes are equally productive planted with the hoe and left to grow by themselves. The second year oats are sown and average 150 sheaves at 4 to the bushel or 40 bushels to the acre. In these are sown broadcast one gallon timothy and 3 lbs. red clover; white or dutch clover will naturally grow in abundance in the coming meadow and pasture. The first crop of hay averages 200 bundles. The 7th year of the rotation the meadow is turned into pasture, and the cattle will stop the growing of the stumps, not yet destroyed, by feeding on the shoots. The pulling of the smaller stumps being now practicable, the settler goes to work with a yoke of oxen and a chain. Roots are piled up and burnt. After six years' pasture, two thirds of the biggest stumps and all the smaller ones will have disappeared, leaving but a few which will be burnt and destroyed in time when occasion offers. Mr. Hébert does not patronise stump extractors, as too costly to work them to advantage. After pasture peas are sown, yielding 20 bushels to the acre, after first plowing with a yoke of oxen, at the rate of one acre a day.

The second year peas are followed by wheat, averaging from 13 to 22 bushels, after plowing 6 or 7 inches deep. By this time the layer of vegetable mould resting on the surface of the soil is decomposed, and the plow now turns up a furrow of light clay land, with a gravelly subsoil acting as a perfect natural drainage. In this case the settler dispenses with ditches.

The third year gives an oat crop with timothy and clover, forming meadow the next year. This is of a better production than the first on account of the tillage of the land, which breaks up that surface crust which heretofore prevented a complete drainage and ventilation of the soil. Three years meadow followed by three years pasture complete the rotation which stands thus:

Transition rotation.

- 1st Year.—Clearing of the land.
2nd Year.—Wheat or potatoes.
3rd Year.—Oats, with timothy and clover.
4th Year, 5th, 6th.—Meadow.
7th Year, 8th, 9th, 10th, 11th, 12th.—Pasture.

Normal rotation.

- 1st Year.—Peas after pasture.
2nd Year.—Wheat.
3rd Year.—Oats, with timothy and clover.
4th Year, 5th, 6th.—Meadow.
7th Year, 8th, 9th.—Pasture.

It is easily understood that these rotations cannot be strictly followed in all circumstances. Still they are most commendable, and will bring the best of results. Since some time Mr. Hébert has adopted the root crops so as to furnish his cattle with a plentiful supply of wholesome food, during the long period of our northern winters. Last year 1½ acre of carrots and as much in turnips, with 3 acres of potatoes, rather astonished the natives. Neighbouring farmers, we are told, took the hint, and are this year going extensively in the root crop line. This is a most important move in the right direction. Turnips gave 600 bushels to the acre, sown in rows. Carrots were as productive, with a good supply of manure; while potatoes yielded 200 bushels to the acre.

Mr. Hébert's horned cattle have been selected among the native breeds, and through good care and proper selection have come to a very high state of perfection. No doubt the addition of root crops in the feeding must complete the work, and add again to the already profitable returns of the dairy, which constitute along with the fattening of oxen the whole profits of the farm.

The colour of the herd is that which characterises most particularly the French Norman breed, from which our stock has sprung, and which has won on the continent a decided superiority for milking qualities. We approve entirely of that system of selection, and do not at all wonder at the very good results thus obtained.

We cannot leave the subject without remembering once more that in each county there are leading agriculturists, whose farming operations are altogether creditable to themselves and to the country. Would the farmers generally follow closely these men of high standing in agricultural pursuits, we have not the least doubt but the returns from the cultivation of the Canadian soil would more than double. We have already given accounts of several well established farms; we have many yet to visit, and they will come in their turn as our numerous obligations will permit. Till then, let us do our best, and the future will tell with pride, what we will have done, for the achievement of agricultural improvement.

CALENDAR OF OPERATIONS FOR JUNE.



A glance over a table like the following will generally call to mind some piece of work that would otherwise be forgotten or neglected.]

Farm.—How to economise time and labor and how to accomplish most during the present month, is the farmer's study. Many a farmer undertakes to do so much work himself that he breaks down under the pressure, while he should have spent part of his time in planning to make work go smoothly, to have no hurrying, no work to be done over again, and to have nobody on the farm that interrupts the work of others, or is out of the way when wanted or shirking his share of the tough jobs, and looking out for easy ones. The farmers of our country should remember that all prosperity, especially in this country, is dependent upon the products of the soil, and so use the whole fertility of the soil and the manure heap to the best advantage, and with confidence in Him who giveth rain in due season, and ordereth the seed time and the harvest.

Beans will do pretty well on poor soils, but a great deal better on good. They run to tops if the ground has too much fresh manure, and are an excellent crop for clearing land of weeds. They are always marketable, valuable for home use, and for feeding to sheep. Plant white bush varieties in drills $2\frac{1}{2}$ feet apart.

Bees.—A moderate apiary can be easily attended to with little expense and trouble, and with great profit.

Birds.—Spare them all; put up bird boxes. More than one or two compartments are undesirable. Kill cats that kill birds; allow no guns fired on or near the premises.

Bones.—Collect from far and near with jealous care; pound them up or put them in with the horse manure.

Broom Corn.—Plant late in the month, on good corn land in hills 3 feet each way, or in drills 4 feet apart, thinning subsequently to 6 inches apart in the rows.

Buildings.—Paint before hot weather comes on, if at all this season. Remove all litter from

unused stalls and the bottom of bays, before it becomes a harbor for rats and mice and insects which soon take possession when the premises are left undisturbed.

Calves.—Feed sweet hay after they begin to graze; castrate at 4 weeks old.

Carrots may easily be sown; the earlier the better.

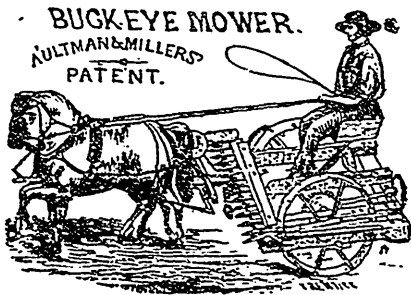
Cattle.—Continue to fodder there is a fodder until there is abundance of grass. Keeping them a week out of the pastures now will be of great service to it before the end of the Summer. They will relish a little hay at night even after turned to pasture. Keep up the flow of milk by feeding cows with wet bran, shorts, and roots if any remain, until the pasture are in full growth. Feed grain to working cattle according to the severity of their labours. Potatoes or other roots once or twice a week will keep them in good, healthy working order.

Cranberries.—This is the best month to set cranberries on wet land. Obtain good healthy plants from the swamp and plant them on skinned and burnt swamp land or on light moist upland, and keep clean.

Cellars.—When the cellars are empty, clean them out in every nook and corner, and whitewash throughout, and stop rat holes with cement and broken glass.

Clover.—Where winter grain is thin and backward from any cause, clover and grass seed will catch if sown early.

Corn.—Prepare the soil in *dry* weather early in the month, never work the ground when it is wet. The old rule of the Indians was, to plant when oak leaves are as large as a mouse's ear. If heavy greensward be broken up this Spring, do not cross-plow, and be careful not to disturb the sods in harrowing and marking out the ground. The fermenting sods will afford warmth and nutriment. Examine care-



fully and reject all imperfect seed. If wet and dried off with lime, smutting is prevented.

Dairy.—The labors of the dairy are commonly more burdensome this month than any other. Plenty of rich milk, with good help, makes the work light.

Draining.—Mark spots that need draining, and be prepared to put in the "crockery" or stones next fall in good earnest; and improve drouths, at any season, to drain low swampy land.

Flax and Hemp.—Flax culture promises to become more remunerative in future, from recent improvements in preparing the fiber. Sow this and Hemp early.

Fences.—Keep all in repair, particularly boundary and road fences, and around pasture lots where young cattle are confined. Good fences make quiet cattle. If they once become unruly, no ordinary fence will restrain them.

Grain Fields.—A top dressing of plaster, nitrate of soda, or guano will often prove beneficial on both Winter and Spring grain. Guano lime or wood ashes, sown liberally before the seed is covered, will benefit heavy soils. Keep all stock from grain fields, and pull out weeds as soon as plainly visible.

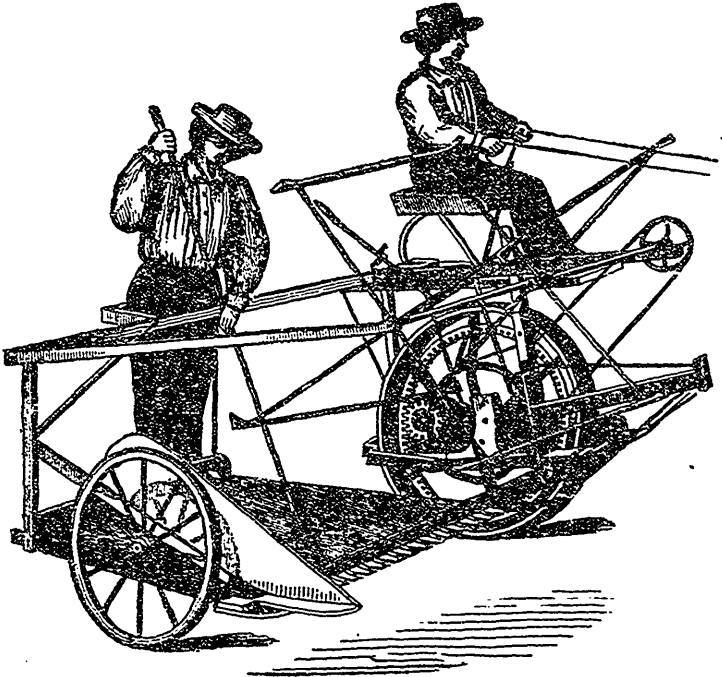
Grass Seed.—May be still sown upon grain fields not already seeded, and on poor meadow. Use plenty of seed.

Hedge Rows thrive and spread by being let

alone. Tear them out by the roots, not only along the fences, but by the roadsides to prevent further encroachment. If time cannot be taken for this, turn a flock of sheep upon them to eat off the young sprouts as they appear, which will destroy some, and keep all in check.

Horses.—Need, to keep them in good condition during Spring work, generous feed and thorough grooming. Collars, cart, and harness saddles should fit perfectly, and these are much better hard than soft. Soft pads induce sweating, and galls, if the skin be broken. A piece of hard leather, cut to fit the neck and shoulders under the collar, is a great relief to a tender skinned horse. Sponge the heads, shoulders and legs night and morning.

Horse-hoes.—In all cases where hand hoeing can be dispensed with, and the work done by horse-power, do so. The tillage is commonly much more thorough, because oftener repeated.



Maisonneuse de Buckeye Etats-Unis.

☞ **Lime.**—Always apply it on land after plowing deeper than before, and upon the surface, for it works down. Keep a supply on hand for composting with weeds, sods, etc., 30 bushels to the acre, after plowing in other manure, is an excellent preparation for corn.

☞ **Lucerne.**—This clover rarely succeeds north of latitude 41°. It requires deep soil with open subsoil, on which it thrives year after year without renewal, and furnishes valuable feed, particularly for soil, as it can be cut several times in a season. Use 10 to 12 quarts per acre, and sow early, best in drills 2 feet apart, and keep clean.

Mangle Wurtzel.—A most valuable root for stock. Sow first to middle of may, on good

strong deeply tilled land, 4 inches apart, bury the seed an inch deep, one seed in a place, if you can trust he seed; where seed fails, fill up by transplanting.

Manures.—Corn is a gross feeder, and should be well supplied with all that can profitably be used. The effects of heavy manuring on hoed crops will be visible years after, in the oats, winter grain, and grass which follow. Buy manure only as a last resort, after all available supplies on the farm are exhausted. Bone dust, and Peruvian guano, where a good article can be obtained, cotton-seed oil-cake, castor pomace, and beef scraps, (the first two ready for immediate application, the requiring composting a few days with soil,) may often

be bought and used to advantage. For grass or grain fields the Peruvian guano, nitrate of soda, or sulphate of ammonia if obtainable, applied in solution are best.

Mowings.—Allow no grazing in Spring, top-dress with fine compost before the grass has advanced much, or apply guano, ashes, or plaster, early this month if needed. Keep the wash channels open from the road, and arrange them to distribute the water over a wide space.

Oats.—A crop may sometimes be got if sowed late, but they do not fill well. If the ground is in perfect order and you can put on nothing else conveniently, sow oats about the first of this month; but if rains come on, devote the land to corn or other crop. If your object is to seed down to grass, sow any time this month and cut the oats for hay.

Peas for feeding out may be sown early in the month. A low growing variety put in with oats, will be partially supported by the grain, and both will yield a good crop in a favourable season.

Parsnips.—Afford a valuable feed for milch stock, should be sowed about the middle of May rather shallow in drills 2 feet apart. Parsneps make lighter drafts upon the soil than any other root crop, except onions, but delight in a deeply worked light rich soil.

Plowing.—Lay out long lands and avoid curved furrows. Whenever practicable follow with the subsoil plow. There is no other good preparation for deepening the soil by subsequent plowings, and is a great preventive of injury from drouth.

Potatoes.—Plant early in drills 3 feet apart use no heating manure, but well rotted compost, ashes, etc.

Poultry.—If confined keep up their laying by liberal feed of grain, boiled potatoes, and frequently some chopped wheat, and grass or other green food. Allow them to leave their yard an hour or two before sun-down, when they will not do much injury by scratching in the garden, etc. Hens with chicks, should be confined in portable coops and chickens allowed to roam in the garden and finish yard until they begin to scratch badly; they will destroy many insects. Feed young poultry with cracked corn, instead of meal, increasing the size as they grow older, until they can manage whole corn. Milk curds are very wholesome food for them. Turkeys ought not to be set before this month, and when hatched the young birds must be housed in a dry shed, and not allowed to get wet by dew or rain for several days.

Provisions.—Pork in barrels in the cellar, hams in the smoke house, and other provisions need looking after occasionally. Add salt to the brine if it needs it and see that it covers the meat. Hams sowed in thin muslin bags and whitewashed, will rarely be troubled by the fly. Keep them dry and cool.

Pumpkins.—Cheese pumpkins are probably the best variety for cooking. Keep them separate from other vines of the same family.

Sheep.—Shear early without washing unless the sacrifice on the wool will be too great. Shear scabby sheep and dip in a strong decoction of tobacco, scrubbing them with a brush

watch the first symptoms of foot rot, and if it shows itself at all, after driving the sheep through shallow water or wet grass, to wash their feet, drive them all through a narrow passage in which a long trough is placed, holding a concentrated solution of blue vitriol, quite warm, in which they must take several steps.

Soiling.—Winter rye is earliest ready for the scythe, then oats and peas sown early and repeatedly, later clover, and for the Summer successive crops of corn sowed broad cast or in drills. The evergreen sweet corn is one of the best varieties for this purpose, though the common western or southern do well. Sorghum, Egyptian millet and common millet, and Hungarian grass, are all good summer soiling crops.

Sorghum.—The uniformly good returns received from cultivation of this plant and manufacturing syrup and sugar when judiciously conducted, particularly at the West, stimulate its extended culture. Procure seed only from reliable sources—inferior sorts have caused much disappointment. Prepare the ground, plant and cultivate as for corn.

Sugar Beets.—Cultivate like mangel wurzel in all respects, to which it is superior as food for milch cows.

Swine.—Give to sows with litters plenty of nourishing food. The best pork is obtained from pigs kept fat and growing rapidly from first to last. If bran, shorts or meal be given, mix with sour milk or water, and allow it to ferment before feeding out. Cooked food is economical, a steaming apparatus should be attached to every establishment where many swine or other animals are fattened.

Tobacco.—Weed plants in the seed-bed, and water with liquid manure, dung-heap leaching diluted sheep dung water, or guano water. Follow directions in articles on Tobacco in this and other numbers.

Tools, machines, harness, etc. To keep all in perfect order is employment for the many rainy days common in this month. Examine well and procure the best mowing machine before the grass is suffering for want of cutting. A farmer should be acquainted with the merits of as many of the new implements as possible. Oil harness after they have been wet, and before they dry.

Orchard and Nursery.—Fruit trees should have been transplanted in this latitude, by the middle of May. At the north, late growing sorts may still be set out, and if neglected until now, they may be planted even now in this latitude. Care will be necessary not to rub off the growing buds, and the roots must not be exposed to drying winds. Mutch the ground around late planted trees to guard against a drouth before the roots have taken hold of the soil. Cut back a good portion of the previous season's growth to infuse vigour in the remaining branches. A lagging tree either established or newly planted, will often push into a new and healthy growth by a severe heading back.

Seedling stocks should all be planted out at the earliest moment, if still heeled in. Successful planting frequently depends very much upon the time of setting out. The soil is near-

ly always moist after the winter rains and snows, and if planted at that time the stocks or trees become established before the drought which usually occurs the last of June, or first of July sets in.

May is emphatically the evergreen planting month, and the nurseryman is busy in taking up and sending away pines, spruces, hemlocks, firs, arbor vitæ, &c. So well do they understand the difficulty of successfully transplanting native evergreens from the forest, or open pasture even, with their coarse fibreless roots, that most of our common trees are now raised from seed in the nursery, or at least taken from the pasture while quite small and set in the nursery rows to form a mass of fibrous roots. They are frequently transplanted two or three times before they are finally sold, or in lieu of this they are dug about and the tar root cut, to induce side roots and fibres. Even those grown with the most care, require more attention in their removal than deciduous trees. The roots should not be exposed to the sun or drying winds, and with some kinds, such as the broad leaved rhododendron and laurel, it is safest to remove the tree or shrub with a ball of earth attached. The same may be said of trees taken from the woods or pastures. Wet the ground thoroughly, dig carefully, and having secured all the roots possible, with the earth attached, slip a gunny bag or other stout cloth under the mass and tie the corners up about the trunk. Move it carefully and set at once, filling in a little peaty soil about the roots, if possible. If a favourite pasture or road-side tree is wanted in the lawn, commence upon it this Spring, digging about and severing some of the larger roots, but not too many of them. Fill in with fine soil and leave the tree to form new fibres during the season. The tree may be moved the succeeding Spring, or to ensure against the liability of failure, the remainder of the principal roots may be cut the following Spring, and left for another season's growth.

In exposed situations and especially in prairie regions, it is very advisable to shield the newly planted orchard from the prevailing winds. Plant a belt of evergreen and deciduous trees upon the north, east and west sides of the site intended for an orchard. Set the deciduous trees on the outside as a partial protection to the evergreens. In clearing up a forest, a belt of trees two or three rods in width, left to protect the orchard, will be very serviceable.

In the orchard there is little to do, if the directions given last month were fully carried out. A few grafts may still be put in the apple trees, provided the scions were cut in April or before, and have been well kept. Remove all brush, loose stones, and other rubbish from the orchard, and if the ground has been a long time in sod turn it over lightly, previously adding manure. The only pruning now admissible is to remove decayed branches, and small shoots, thinning and heading back with the pruning knife.

Insects will begin to show themselves this month. Commence a vigorous assault upon them at once, before they have time to increase

in numbers. A little work in the apple orchard will destroy many caterpillars' nests. Wash trunks of small trees with strong soap suds or potash water to remove scale. Give cherry and pear trees a sprinkling of oil soap solution, towards the close of the month, to kill slugs.

Seedlings budded last season should be examined, and all shoots starting out about the bud rubbed off. Cut the stock to within two inches of the bud, unless already done.

Weeds will soon make their appearance in the nursery if not kept in check. The plow or horse-hoe will do most of the work, but the hand-hoe will also be needed to remove weeds in the rows. Use a short wiffletree, and pad ends to prevent barking the trees.

Kitchen and Fruit Garden—During last month most of the preparatory work of draining, manuring, and trenching, should have been done, many seeds sown, and some already beginning now to appear above ground. It is easy by a little extra care in protecting tender plants, as beans, melons, cucumbers, &c., to secure their ripening two or three weeks earlier than otherwise. Gauze covered frames will protect against quite severe frosts. Hand glasses are convenient and more effectual, but liable to scorch the plants. A pane of glass on four bricks answers a good purpose.—When rain has fallen after seeds have been sown, and the surface has dried rapidly, it will facilitate the appearance of the tender shoots, to gently loosen the crust above them, with care not to injure the growing plants. A loose surface is most favorable to growth under all circumstances, and the ground should be often stirred and the crust broken to admit air, warmth, and moisture to the soil below. Plan so as to have a succession of crops on the same soil—lettuce between the carrot and parsnip rows and among the hills of melons; cabbages among early potatoes, to stand after potatoes are dug, turnips after the peas and early beans, endives or celery to follow early crops in the same way.

Asparagus—Cut every shoot as it rises to sufficient height for the table, by which means the season will be much prolonged. Be careful in cutting not to injure the young shoots beneath the surface.

Beans—Plant bush varieties early. The Princess, China and Valentine are earliest: Union, Rob Roy, Marrowfat, Large White Kidney, and Refugee, later. The Lima stands first among pole beans, but is late. The Dutch Caseknife, and Red Cranberry are earlier. Set poles before planting the hills, which should be raised an inch or two above the surrounding surface, and plant after the middle of the month. The Limas are tenderest. Set the flat beans, eyes down, and shallow.

Beets for early use should now be up. They may still be sown. Sow for Summer, Early Bassano; for Winter use, Long Blood, or Blood Turnip, sowing in deep, mellow soil, in shallow drills, eighteen inches apart.

Borecole and Broccoli—Sow for late crops any time after the middle of the month, and transplant ready grown plants to the open ground from the hot-beds.

Cabbage and Cauliflower—Sow for late use, and transplant from the hot-bed into rich mellow ground. Examine about the roots for the cut worm. Hoe former plantings frequently, in the morning when the dew is on.

Carrots may still be sown, though it should have been done earlier.

Celery—Sow for main crop as directed last month.

Cistern—For large gardens, a capacious cistern to be filled from the roofs of adjacent buildings, is a great convenience. During drouth, a hose from a hydropult or garden engine may be introduced, and a thorough watering be given with little trouble.

Cold Frames—Remove any remaining plants as soon as there is no danger from frosts, and store the frames for another season. An occasional coat of paint and care in handling, will preserve them many years.

Corn—For family use plant sweet varieties at two or three different times during this month, and as many next, giving to each about equal space. For market plant once early in this month or in May even, and after the middle of June, make a planting once a week until the 4th of July. Darlings early sweet is a good variety, and the Evergreen sweet, a large growing late kind, but very good table corn. Some of the small eared New-England varieties are sweetest. Plant small varieties in north-and-south drills, 3½ feet apart, 3 kernels to the foot.

Cucumbers—Transplant those started in the house as directed last month. Plant seeds for a succeeding crop. Our practice is to make large hills and put in, at intervals of a few days, several rows of seed around the first planting, to attract insects which may escape other preventives. Superfluous plants are removed when the danger is over. One of the best preventives is cotton batting, a thin layer spread over the plants and pegged down.

Eggs Plants—Transplant from the hot-bed into ground well enriched with warm fermenting manure, when the weather is warm and settled.

Fruit Trees—The main fruit yard should be separated from the kitchen garden, but dwarfs do well in it where their shade will fall on walks, or where it will do no harm. Dwarf pears thrive in the soil of a well tilled kitchen garden. It is not too late to do a good deal of transplanting of fruit trees, grapes, etc., if the buds have not started, and the trees are in good condition.

Hot-Beds—Remove all plants from them, paint and put away sashes and frames for another season.

Insects—Many are already on the alert. Whale oil soap, guano water, and hen-manure solutions are not only offensive to them, but give vigor to plants to resist attacks. Covering with gauze frames, is almost a certain preventive.

Kohl Rabi—Sow and cultivate like cabbage; plants may be placed somewhat nearer together.

Kale—Green curled kale and other varieties may be sowed at this season, and treated like late varieties of cabbage.

Lettuce—Transplant from hot-beds, and provide for a succession among hills of vines, etc. Set it in unoccupied places. Frequent watering with liquid manure and often hoeing will bring it to perfection.

Liquid Manure Tank—Every kitchen garden should be provided with some convenience for making a solution of manurial substances. It should be near a supply of water, be sunk in the ground, and tightly covered. A barrel or half hogshead tub will do, but a tight box in which is a partition with holes at the bottom is better. Against the holes on one side is thrown a quantity of shavings kept in place by a few stones, then any kind of litter or manure. Upon this we may throw a few pounds of guano, or sheep, or hen manure, or sulphate of ammonia, and pouring on water it will percolate and come well strained through into the other side fit for use. It is most important that it be not applied too strong. Water at evening, not letting it touch the plants, unless they are infested with insects.

Manure—A supply for a large garden may be obtained by saving sink and chamber slops, and using the contents of the privy. Offensive substances are made inodorous by mixing with them plenty of muck, or by sprinkling liberally with sulphate of lime (plaster of Paris.)

Melons—Musk, Canteloupe, Nutmeg, etc. Sow seeds as directed for cucumbers. The seed is worthless, and the flavor of the fruit injured, unless raised at a distance from other cucurbitous plants.

Nasturtiums—Sow where they will be shaded from the mid-day sun. They thrive best with plenty of moisture.

Okra—Sow in a very rich soil, in shallow drills, 3 feet apart, and thin to a foot distant in the row.

Onions may still be sown. They do best several years on the same soil.

Peas—Sow for a succession of crops. The Champion of England variety is generally preferred for the main crop. A convenient method of supporting peas, is by means of stout cords stretched between stakes or posts at the ends of rows, supported in the middle if needed.

Peppers—Plant out from the hot-bed, eighteen inches apart, in rows two feet distant.

Potatoes—Plant at any time during the month, the earlier the better; late potatoes are of little use in the garden. The Dyckman, Ashleaf Kidney, Peach Blow, Wendell Seedling, and Dover, are excellent garden sorts. The last not early, but excellent. Hoe former plantings, and top-dress with ashes and plaster.

Pumpkins—Plant in hills eight feet apart, and at a distance from melons or squashes. Where different varieties of such vines are cultivated in the same enclosure, it is a good arrangement to surround each plot with several rows of peas, which will partially prevent their mixing.

Quinces—See article in May number.

Radishes—Sow in vacant spaces, for a succession.

Rhubarb—Set roots or, if not supplied, sow

seed. Hoe out all grass and weeds, and keep the surface loose. Pull leaves, removing only the stalks, and leaving the leaves for a mulch about the plants. Cut out the seed stalks as soon as they show themselves.

Salsafy—Sow on soil deeply worked, like carrots.

Seeds—Test before sowing largely. Set out roots or plants intended to furnish seeds for next year. Different varieties of the same species, as cabbages, turnips, etc., of various sorts, should be widely separated, to keep the seed pure. To get good squash or melon seed reserve spots in corn or potato fields far apart, for raising them.

Squashes—Treat like cucumbers and pumpkins.

Sweet Potatoes—Plant out when the weather is settled and warm, in deep, well pulverized soil, enriched with stable manure. Set plants from fifteen to eighteen inches apart in high ridges, or in hills, about three feet from center to center; set them obliquely and so that the stems of the lower leaves will be covered; they will then sprout again, if cut off by frost or worms.

Tomatoes—Transplant from the hot-bed into a well enriched sunny bed, 4 feet apart each way. A sandy soil is favorable. In setting the plants, place them a little deeper than they originally stood—they will throw out fibrous roots from the stem. Prepare a light inclined trellis to support the vines.

Turnips—Sow for Summer, hoe, weed, and thin others.

Winter Cherry (*Physalis*)—Plant out the same as tomatoes. Seed may still be sown, soaking it first.

SMALL FRUITS.

Blackberries may be transplanted and succeed well any time before the buds swell for leafing out. Cut back well.

Cranberries—They may be cultivated with good success in the garden.

Currants may be planted or moved, but at the sacrifice of the fruit if it be done after the buds have burst. Pruning to a single cane or stalk to each root, and this trained at an angle of 45°, and only very short spurs allowed to grow, is a system growing in favor.

Grape vines neglected in the proper season for pruning may be pruned as soon as the leaves appear, without danger of bleeding, and early in the month vines may be planted to good advantage, though better earlier.

Mulberry—This is suitable for an ornamental tree. Downing's everbearing is hardy and excellent.

Gooseberries—The Houghton does not mildew, and is therefore the best to plant. As soon as the leaves appear dust with sulphur.

Raspberries—Enrich the ground beneath and about them, by surface dressing. Cut out all feeble canes and winter-killed parts.

Strawberries—Set in good light, or well worked soil, water freely and frequently, giving a very little liquid manure in each watering. Bearing plants should be mulched with straw, tan bark, lawn clippings, or saw-dust, to keep the berries out of the dirt. We prefer tan-bark.

Flower Garden and Lawn.—How apt are we all to regard as valuable and useful only, or chiefly, those things which minister to our bodily wants, or bring us some material profit. Why should the demands of the body and its comfort and enjoyment pull down the soul to its own gross level. Once supplied with food and clothing, let the mind have a free range, and the soul delight itself in beauty, and grow in the sunshine of nature, which is beautiful, often in proportion as it is of no other use.—If old beds are to be re-arranged, do it at once. In transplanting, disturb root as little as possible. The frames, pits, houses and conservatories can be emptied in the course of the month, of all but stove plants. Most of them will do best, turned from the pots into the open border. Intersperse them among the bulbs, annuals and late blooming perennials, where they will make an immediate show, and keep up a succession of bloom.

Amaryllis, one of the finest Autumn blooming bulbs, should be set early in a warm border.

Annuals—Sow in fine, well enriched warm soil. It is essential that a good variety of fine blooming annuals should now be put in, to keep up a show of flowers late in the season, after most of the perennials have cast their blossoms. Most of those sown in the houses to forward their growth, may now be transplanted to the open ground.

Bedding plants, as verbenas, petunias, salvias, heliotropes, Japan pinks, lantanas, pelargoniums, and others, may be readily obtained of the gardeners. The tender ones should be set out as soon as danger from frost is past. It is best to set each variety by itself, more or less.

Asters—Sow in open ground early, in various places, where they are to remain; later in the month transplant from hot-beds or frames. A few may still be started in boxes, if the ground be not ready—to transplant afterwards.

Biennials and Perennials—When it is desirable to increase the stock, remove a portion, and leave the remainder undisturbed.

Box Edging—Keep close clipped and low; reset if necessary; renew weak or wintered-killed spots.

Bulbs—Keep well supported, and stretch a light awning over the choicest, to lengthen the period of bloom, removing at night and during cloudy weather. Set Autumn blooming varieties, as amaryllis, gladiolus, tuberose, lilies of various kinds, etc.

Carnations and pinks may now be set out already in bloom. Tie to neat stakes. Divide old roots, and make layers to form new plants.

Cypress Vine, Morning Glory, and other annual climbers may be sown immediately and trained to strings around a central pole. Un-sightly buildings, rough fences, etc., can be almost hidden beneath a mass of bloom, when covered with these climbers. Cypress vine seeds vegetate much more freely when soaked in tepid water for 12 hours before sowing.

Dahlias—Sprout them in boxes of earth, or by burying in a warm border before planting.

Evergreens—Delay planting until the last of the month after the trees have begun to grow, except arbor vitae and Norway spruce. Keep the roots from the sun. Hollies, rhododendrons, and other broad leaved evergreens, do better when removed with a ball of earth attached.

Frames and Pits—Remove any remaining plants.

Flowering Shrubs—Some are already in bloom, or have cast their flowers, the later kinds may still be planted.

Gladiolus—Set the bulbs in a warm sunny place. Some of the newer varieties are very pretty.

Grass—Keep well trimmed and close clipped along the edges, using a line and sharp spade, or edging knife. New turfing may also be laid; keep well watered until rooted.

Gravel Walks should be kept free from weeds with the shuffle-hoe, and be well covered with clean, coarse gravel, and rolled.

Fancy Gourds—Sow early, and train upon fences, trellises, or old trees.

Hedges—Complete setting deciduous, and arbor vitae, early, other evergreens later. Clip any not attended to last month.

Honeysuckles, Wistarias, Ivy, Ampelopsis, Bignonias, Clematis and other perennial climbers—Set at once, if neglected until now. Arrange on trellises or lattice work. Sow seeds and make layers.

Insects—It will be much easier to keep them in check if they are combated upon their first approach.

Lawns will need mowing, and should be cut frequently and evenly. A good, cheap, lawn mower is needed.

Lupins—Sow early and give plenty of room. Mulching is beneficial to newly planted trees and shrubs. Lawn clippings are excellent.

Pruning—Prune with reference to habit and manner of blooming; the knife may be used freely at all seasons, if used with discretion. Shrubbery needs to be kept dense to look well. Evergreens should branch quite down to the ground. Their outer extremities may be cut back slightly, to make a dense growth.

Roses—Let the supply be large and varied, if space permit.

The common June or garden roses must yield to remontants, teas, and hourbona. Tie up pillar and climbing sorts, layering the old wood. Turn those in pots into the open border.

Shade Trees—It is not too late to plant if they have not leafed out. Some will bear moving even then.

Trellises and Upright Frames—Set if loosened by frost, renew if decayed, before vines and climbers are put out.

Tuberoses—Plant bulbs not potted, early in very warm good soil.

Green and Hot-Houses.—As few plants are retained under glass as possible, all that will bear the exposure, as soon as they are sufficiently hardened by free ventilation, are removed to the open ground. There is little fear of frost after the middle of this month. Roses and bedding plants are turned out of their pots. Keep all growing plants well wa-

tered and syringed. Plant out fuchsias in partial shade.

Pelargoniums—Cut back severely, and set out the pruning in masses. Oleanders, Myrtles, Oranges and Lemons, may be sunk in their pots or tubs—examine for scale bugs.

Grape and Orchard-House.—Give good ventilation; syringe foliage, walls, and ground, freely and often. Thin out fruit if it is too thick. Go through thoroughly pinching in shoots wherever needed. Grapes require especial attention; mingle sulphur in the water they are syringed with, and dust it upon both fruit and foliage. Abstain from syringing any fruit in bloom, and let bees have access if they will.

Apiary in May.—The weather during fruit blossoms, decides whether we have early or late swarms. Should the yield of honey be plentiful, good stocks will be prepared to throw off swarms the last of this month. But, should a scant supply be obtained through unfavorable weather, swarming would be put off indefinitely, and even second or third rate stocks may throw out the first swarms. It sometimes happens that strong colonies having a good supply of last year's honey, and gathering but little now, will consume it this month, rearing drones. They even make preparation for swarming—rearing queens so far as to seal them up. A dearth of honey nearly always occurs between fruit and clover blossoms. The drones are sacrificed to save the colony. The bees in such cases change their plans entirely. If they get honey almost immediately, it will take several weeks before they can again get into condition to swarm—producing another brood of drones and other preliminaries just lost. Stocks that were quite feeble in April, with light stores, that could not afford to rear a drone, and that used with economy what they had, will pass such season of scarcity without any suspension of breeding, and be ready for swarming first. This explains why poor stocks will occasionally turn out better than such as were best at beginning of Spring. Should a swarm issue during such a time of scarcity, it will need feeding, particularly if there should be cold wet weather. Some of the poorest colonies can not always be trusted to supply themselves at such times, and will need feeding also.

Swarming will not be general, until white clover appears. Use for swarms no hives that have been recently painted. Have every thing in readiness for the swarms as they issue. When they have clustered, there should be no delay in getting them into the hive. The time lost in preparing a hive, and having the bees wait for it, often results in *their not waiting*. Good luck here, consists in getting all the swarm to enter the hive, carrying to the stand, shading from the hot sun, and raising the front side just a little, without delay.

Those who begin to rear Italian queens this month, will need a full colony of that kind. It will be hardly possible to procure a queen much before the first of July. A queen just introduced to a native colony, is just as good to breed queens from, as if she was in a hive of her own bees. To begin—after the prepa-

tions already suggested—the first thing, after a colony is sufficiently strong, is to introduce the frame with small frames into the center of the hive, taking out an outside one, and moving the others outward to make room. The queen will soon deposit eggs in some of the small combs, when they are ready. Raise out the frame carefully—using smoke to keep the bees quiet—slip out one, put another in its place, and return to the hive. Fasten on the top of this with screws, or pieces of wires bent around a thin strip of wood projecting half an inch beyond the corner, by which to suspend it. Three such combs are needed, but only the middle one need have eggs. Have ready before hand about a quart of bees—in warm weather a less number will do—to introduce to this box, without a queen of course. Open a hole in the top of the box in which they are confined, and set the one with the comb properly adjusted over it in such a way that no bees will escape. Feed a little and keep shut up for two or three days. When bees can be procured at another yard a mile away, the shutting up is not important if set a little distance from any others. They usually construct three or four cells, and the first queen that matures will destroy all the others. To prevent this, about the tenth day take out the comb and cut off without injury all the queen cells but one; these may be given to other little colonies for maturing. The queen matures in twelve days after they are shut up, ordinarily, and will commence laying in eight more, when she may be introduced. It is found to be very hazardous to introduce an Italian queen to a colony of natives, sooner than a week after they have been deprived of their own. Let the stock be strong enough to divide, when half of the combs and bees may be put into an empty hive adding frames to fill each. Set two feet apart, each a foot from the old stand; the one that is like to get the most bees may be put further off. In a day or two the half without a queen will begin royal cells; and of course the other hive is the place to look for the old queen, which may be destroyed. In eight days look over the comb again minutely, and cut off every queen cell—success depends upon it. The queen now to be introduced, may be enclosed in a tumbler, with two or three bees as attendants, and secured with wire cloth. Remove the honey board—the board over the frames—and invert the tumbler directly on the frames where the bees are thickest; set over the cover two boxes, to keep them warm. In the course of twelve hours, the bees and queen will become sufficiently acquainted through the wire cloth to be allowed together. Take off the tumbler carefully without disturbing the bees, set on the cover again, when she will quietly go down into the hive, and commence depositing eggs at once. This is the whole process. The Italians seem to work more readily in this way than the natives. I think it quite probable that this mode of propagating queens artificially, will yet be generally adopted. The introduction of a mature fertile queen to a colony two weeks sooner than when they swarm naturally, is an advantage sufficient to pay for

extra trouble. The time gained in breeding, is equivalent to a swarm.

THE DAIRY.

About Butter-making.

MILKING THE COWS.—It is important *always* to treat milking cows with kindness; blows and harsh words have as much effect in rendering them ugly, as they would probably have upon children or human servants. Especially at milking, it is well never to forget that gentleness is an essential requisite; as far as possible to have the same milker always attend to the same cow, and in any case to have the operation *thoroughly* as well as kindly completed. By attention in these respects, "spilt milk," I was told, was an almost unheard of phenomenon here; the cows are, moreover, always milked in the stables, with a feed before them, and *with great regularity* at 6 o'clock morning and evening the year round. No one of these items should be overlooked.

CARRYING IN THE MILK.—The maids who do the milking are not bothered to carry in the milk as fast as a pail is filled; but some one else, generally Capt. N. himself replaces the full pail with an empty one, carrying in the milk and registering its weight. It is then strained from the pail into a large can, stirred round with a long handled ladle until the foam disappears, and then ladled into the pans. Two points are here worth noting particularly: 1. If the milk is strained directly into the pan, the eye alone will be depended on as to the quantity poured in, and the foam gathered on the surface is thought to be just so much in the way of the rising of the cream. 2. The milk of different cows will differ somewhat as to the time required for the perfect rising of the cream; more careful watching is therefore necessary as regards each separate pan, if the milk is set separately, than if that of several cows is so intermingled before setting that the cream on all must be alike.

SETTING THE MILK.—The pans are used of what is there commonly called an "eight-quart size." But on trial we found the pan actually to contain about seven quarts; it is large in diameter with flaring sides. The quantity ladled into each pan varies—in hot weather two and a half quarts, and in cooler weather three quarts. Inquiring how just these quantities should have been pitched upon, and why they are so carefully adhered to, we were told that accurate trials had been made with different quantities, until the foregoing had been decided on as giving beyond question the most cream. In cool weather the milk may stand longer than in hot weather, without danger, consequently it will bear to be a little deeper. The next thing for us was to ascertain exactly *how deep* the milk stood; and by measuring, it was found that in the pan containing 2½ quarts the milk was only one and a quarter inches in depth; in the pan containing 3 quarts, it was one and a half inches deep. This is a very strong argument in behalf of *shallow setting*, the practice referred to having been closely followed for two years past, and, as is thought, to very great advantage.

TIME TO SEEM THE MILK.—If the milk fairly

begins to be thick at bottom it is thought ready to skim; it may be allowed to stand until it can be cut with a knife all through, but there is great risk in too long standing—if it once begins to turn partly to water, the cream will have a bitter taste that can never be overcome.

TEMPERATURE.—The temperature of the milk room is kept at as nearly 62 deg. the year round as possible, and probably runs from that point to 65 deg., or in very warm weather perhaps to 70 deg. or 72 deg., but the latter are only exceptional cases.

CHURNING.—The churning is done in two barrel churns, the dashers of which are moved by an overshot water wheel of perhaps 14 feet diameter just outside the churn room. The quantity churned at once is 13 or 14 gallons, yielding from 30 to 33 pounds butter, in each churn. In hot weather the temperature is carried down if possible to 61 deg. at starting, by means of ice, as the agitation of the milk with the warmer atmosphere will heighten this temperature somewhat before the butter comes; but 62 deg. is thought to be just the right point if it can be got and maintained. Cold water may have to be put in to regulate the temperature during churning, but this is not done unless absolutely necessary.

The BUTTER is now taken from the churn, and washed generally three times or until the water no longer brings away any buttermilk. It is next weighed, and salted with the best Ashton salt, sifted and accurately weighed out in the proportion of an ounce to a pound of butter. The only exception to this rule is in very hot weather when a slight addition is made to the quantity of salt to replace what will be dissolved in getting out the last of the buttermilk—say 21 ounces of salt to 20 pounds of butter. After salting, the butter is put in pans on the cool stone floor of the butter cellar, where it stands four to six hours before the last of the buttermilk is worked out, after which it may again stand until the next morning before packing.

PACKING THE BUTTER.—The new firkin has a pail of boiling water thrown into it, which remains there until cool; brine is then substituted which is allowed to stand for a day or two before the butter is packed. When filled with butter, a cloth is spread over the top, and a layer of coarse Turks Island salt, washed clean, placed upon the cloth. Temporary tops for the firkins are made of round flat stones, which are laid over them from the time the butter is packed until the firkin is finally headed up to go to market. These stones are thought to keep the temperature cooler and more even than any other cover. The firkins, it should be added, stand upon a wooden floor resting upon joists, or upon the joists themselves, so as to let the air pass underneath them.

MARKETING.—It has been found the neatest way of marketing to take of the salt from the top of the butter, turn down the firkin to let the brine drain off, and then replace the cloth wrung out in brine. As to the keeping qualities of the butter, there is never any difficulty; its character, the season through, is remark-

ably even—the first time, for instance, of sending a lot to New York last spring, 2nd April, seven firkins were sent, of which three were new, and the other four kept over from the preceding fall; the butter dealer was afterwards asked if he had been able to detect any difference between them, but he had not, the whole selling as spring made butter.

—We must here draw our notes to a conclusion for the present. There are some matters in Col. Pratt's out-door management to which we may hereafter call attention.

BUTTER MAKING AND PACKING.—Being obliged to compete with some of the Buckeyes in the market of St. Louis, it may not be amiss to give a short sketch of my success in marketing butter in St. Louis.

I have now for eleven years carried my own and a few of my neighbor's butter to St. Louis, generally about the last of November. I have every year but one obtained for my best butter from 25 to 30c. per pound; this last season I wrote to my customers, that I would take war prices, and would furnish the best for 18½c. Had I not done so, I could have got 20c. easily, notwithstanding hard times.

The *modus operandi* of the dairy has been so often described, that I will not here repeat the whole, only calling attention to the most essential points:

- 1st. It is absolutely necessary to have every article of dairy furniture *clean and sweet*.
- 2nd. When it is too warm weather to place the milk in the buttery, and a good cellar is convenient, it (the cellar) should be free from the least taint of vegetable smell, and ought to be thoroughly cleansed with lime, and white-washed every spring.
- 3rd. It is best to churn every day. We churn sweet cream. The cream is removed as soon as the milk is loppered or thick.
- 4th. Use none but the best of salt—"Liverpool blown" or "solar ground"—the common salt has too much lime and will not keep butter sweet. We use about one ounce to the pound.
- 5th. I do not think the buttermilk can be entirely removed without *washing*, or by too much work with the ladle breaking the small globules and therefore making the butter *salvy*. Good butter ought to cleave free from the knife, and the brine (which the butter makes itself) should be clear as the purest water.
- 6th. We use a thermometer churn and churn our cream at a temperature of 60°, and ordinarily are about 20 or 30 minutes churning.
- 7th. If by some unforeseen circumstances have a soft or indifferent churning, we use it in the family, for we never have any but would be considered very good by most folks.
- 8th. Fill your firkin as soon as possible, packing very light, and cover with a clean, damp cloth; put on the cloth half an inch of clean salt, and head up so as to exclude the air. We use white oak firkins, soak them 48 hours, and salt the sides after thoroughly scalding them, before we put in butter. A first rate article of butter will *always* command a good price, and take it all in all, my cows and dairy have made me the best returns of any branch

of husbandry I have followed. Butter is almost a necessity, while cheese is by most people considered a luxury.

FLAT MILK PANS.—As cream cannot rise through a heavy mass of milk, it can be most effectually obtained by placing the fresh milk in very shallow pans—deep pans are desirable where the object is to retain the cream in the milk for a time. The last pint of each milking is always much richer than the first, and the morning's milk is said to be richer than the evening's. Milking should be done in pails fitted with strainers at one side so that the milk may be strained at the same time that it is poured into the pans or other vessels.

About Cheese-making.

At a quarterly meeting of the Derbyshire Agricultural Society, the chief feature was Mr H. Chandos Pole's paper on cheese making.

Mr. Chandos Pole said I have been requested by our chairman (Dr. Hitchman) to read a paper to the present meeting on the manufacture of cheese, with reference to the so-called "Cheddar" or Somersetshire method of management, as carried out by myself on farms at Radbourne and Barton Fields. When I commenced farming in 1851, the only system of cheese making with which I was acquainted was the old fashioned one. As I became more intimately acquainted with the process and its results, I found out that there was a very great irregularity both in the quality and the flavour of the cheese produced by it, and that this was not confined to my own dairy, but that it was the case with the general run of cheese, not only in this district but in many others. These defects I attributed, not to the milk or the land, as is usually the case, but to a defective knowledge of the conditions necessary for producing good cheese. Through the kindness of farmers and cheese factors in general, who allowed me to try many lots of cheese made on very different sorts of land, I became alive to the fact that in all of them there were some fine cheeses to be found, and it became my object to discover some means of producing a greater uniformity of character in my dairy, that being a point of the greatest importance to dealers in cheese. About this time the Messrs. Griffiths, of Birmingham, brought out the apparatus patented by Mr. R. Keevil, of Laycock, in Wiltshire. After some consideration I got one of these machines on trial. I found it produced a great improvement in my cheese both in quantity and quality, and eventually I purchased it. The next year I made my cheeses larger, about 40lbs. in weight, and coloured them, in fact assimilating them to the Leicestershire cheese, and it was allowed by all who saw them that they were a great improvement on anything previously shown in our markets. The next year, whilst in Wiltshire, I accidentally made the acquaintance of a very eminent Somersetshire dairy farmer, and had a great deal of conversation with him on the subject of Cheddar cheese, and he strongly advised me to adopt the system, informing me that I should find it a far easier one, and also that it would produce a better article at a less cost. This gentleman informed me that

he had himself proved the possibility of making high class Cheddar cheese on all descriptions of land, from high lying moorland in Scotland to the rich vales of Somerset, rented at £5 per acre, and that he had submitted cheeses made on these different kinds of land to his factors, who had failed to detect any difference in them from his own cheeses in the same room. I had long known that Cheddar cheese made the highest price in the London market, and that cheese factors held it up as an example of all that was required in their trade, namely, that it was solid, rich, pure flavoured, handsome, and sound, and it would go on improving with age. At first I made a few cheeses, following the verbal instructions I had received from a person well acquainted with the system, and these cheeses, when ripened, were allowed by Mr. J. Etches, my factor, to be far superior to any others in the room; he stated that they were worth 1d. per lb. more than the rest of the dairy, and he inquired particularly as to what difference there was in the manufacture, as he said the quality of those cheeses was quite different to that of the others. The next year I made some more cheeses on this principle, and with like success; these cheeses I showed to several persons, both cheese makers and cheese factors, and the result was the same,—they one and all admitted their superiority. Eventually, after consulting with some eminent dairy farmers, and cheese buyers in the West of England, I decided on adopting the Cheddar method in its entirety, and went into that part of the country to learn the system. I was very unfortunate in my choice of an instructor, for although the person I selected was an excellent cheese maker, and his wife also, yet they could not teach others well, and neglected to drill me thoroughly on some important points. Having found out the points in which my knowledge was defective, I secured the services of Mr. R. M'Adam, of Gorsty Hill, near Crews, whose name is well known to most in this room, and who is the author of the best practical essay on cheese making that I have ever read; in fact I may say the only good one, that on Cheshire cheese making, by Mr. Whyte of Warrington, excepted. Mr. M'Adam soon instructed me on those points in which I was deficient, and since that time I have succeeded to my satisfaction, and I trust that another year will add to my experience. Having now stated my reasons for adopting the system which I follow, I will proceed to describe the process used. The cheese is made only in the morning. The two meals of milk are mixed together in a tub or pan, with a tap at the bottom, and the whole is raised to a temperature of 80 degrees by heating several pans of milk in a boiler full of water. A quantity of sour whey is then added and also the annatto if that is used, and the whole is well mixed. The rennett, is then put in, in sufficient quantity to curdle the milk in from 50 to 60 minutes, an average of 55 minutes being most desirable. We prefer a moderately firm curd, neither too solid nor too tender; in the former case there is generally too much acidity present, in the latter too little. When the curd is properly formed, a

breaker made of thin knives is slowly passed through the mass, cutting the curd up into small pieces. When this has been passed round the tub two or three times it is taken out, and an implement called a shovel breaker is substituted; with this curd is slowly stirred about and broken until it is sufficiently small and the whey separated well. The curd is then allowed to settle for some minutes until a few gallons of whey can be taken off. This is performed by putting the milk sieve into the tub and letting it sink, when you can bale out the whey from the inside without disturbing the curd. This whey is heated in hot water, and as much of it is returned into the tub as suffices to raise the temperature of the whole to 80 deg., the heat at which it was set together. During the pouring in of the whey the curd is carefully stirred about to prevent any portion of it being over-heated. This operation is technically termed "putting on the first scald," and is one that requires great care in its performance. The tub is now covered over, and the curd is allowed to stand for half an hour. At the expiration of that period several pailsful of whey are drawn off from the tap at the bottom of the tub, and heated to a temperature of 150 deg. to 160 deg. The cheese maker then resumes the shovel breaker and commences breaking up the curd for the second time; this requires to be done most carefully and minutely, and all the particles must be separated. An assistant then pours in some of the heated whey, and the stirring is actively but carefully continued, heated whey being added at intervals until the thermometer shows that 100 deg. has been reached. The stirring is continued at that temperature (which is maintained by the occasional adding of a little hot whey), until the curd has acquired a certain consistency, which is soon learnt by the person engaged in the process. When the curd is in proper state the stirring is at once discontinued, and it is allowed to settle for half an hour, during which the tub is well covered to retain the heat as much as possible. When the whey is ready to be drawn off, a piece of tin perforated with holes is put down the side of the tub before the tap-hole; the tap is then turned and the whey runs off quite freely, leaving the curd in the bottom of the tub, any particles that pass the strainer being caught by the way sieve outside. As soon as the curd lies bare the operator, taking a skimming dish, turns all the outside portion of the curd into the middle as quickly as possible, and it is covered over with cloths and allowed to drain for half an hour, all small pieces that are lying round being carefully swept up with a brush and placed on the mass. In half an hour the curd is cut across in large pieces and is turned over in the tub and allowed to drain half an hour longer, no pressure being applied to it. When the whey merely drips slowly from it the curd is taken and placed in a shallow tin or wooden vessel called a "cooler," where it is split by the hand into large flakes, and is allowed to cool for fifteen or twenty minutes; it is then put into the vat and placed under the press, where it remains about a quarter of an hour.

When the whey ceases to run the curd is taken out, weighed accurately, and passed through the curd mill, and dry salt is added in the proportion of one pound of salt to 56 lbs. of curd, that quantity being amply sufficient to cure it. The salt is well stirred in the curd with the hand, and the whole is left to cool. When the temperature is lowered to as near 60 deg. as the weather will admit of, the curd is vatted and placed under a moderate pressure. At night the cheese receives a dry cloth and is turned in the vat, and the amount of pressure is increased; this process is continued until the evening of the second day, when a calico cap is put on the cheese and it is returned into the press until the next day, when it is taken out, swathed in a binder, and carried to the shelves of the cheese-room, where it receives the usual treatment. The process requires about seven hours to complete it, during the greater part of which the labour used is insignificant. This process is that which is ordinarily carried out in the farm-houses of Somersetshire, but in my own dairy, and in others where improved arrangements have been made, the labour has been much reduced and the lifting of heavy cans of milk and whey done away with, by using a small steam-boiler fixed out of doors or in an adjoining apartment. In the large dairy district of Scotland within the last five or six years this system of cheese making has almost superseded the old one, which much resembled our own, and the consequence is that Scotch cheese has been raised nearly 10s. per cwt., in value.

The manufacture of Cheshire cheese is described in the following manner in Morton's excellent little work, the *Hand-book of Dairy Husbandry*. After the curd is fully formed:

"It is then cut slowly with a wire curd-breaker, and the curd sinking, the whey is baled out; the curd is collected and squeezed both by hand and the direct pressure of weight above a board placed upon it; and the last of the whey being removed, it is lifted either into a basket or into one of the Cheshire cheese vats, ('thrusting tubs'), pierced with holes for the further escape of the fluid, the lower part being a wooden cylindrical vat, and the upper a tin cylinder slipping into it, as the curd or pressure sinks. After a certain pressure in this form, the curd is removed and cut, and broken by hand or by a curd mill, and from 1 to 2lbs. of fine salt is scattered over it, according to the weight of the cheese is a common quantity. The whole curd being then re-broken, is refilled into the vat, into which a cheese cloth has previously been placed. It is then put gradually under pressure [in a lever cheese press], which after the second or third day amounts to nearly a ton weight upon each cheese.

"Every day the cheese is turned, and wrapt in fresh cloths, and on the seventh or eighth day of this treatment, or as soon as dry it is removed to the loft, and there swathed around with strong girthing, and placed on a bench. By-and-by it is laid, still swathed as before, on a layer of straw on the floor of the room, and there it lies till from ten weeks to four months old, when it is ready for sale."

It is of the greatest importance that the curd

be freed entirely from the whey; for if any whey is left, the cheese is apt to swell and burst. For this reason, in some dairies it is the practice, on the first day when the cheese is put under the press, to thrust skewers into it through the holes in the cheese vats in order that the whey may more readily drain off through the hole pierced by skewers. The whey is scalded and given to pigs.

MANURES.

VALUE OF MEADOW MUCK.—The past season has been unusually favorable for the clearing out of old ditches and opening new ones, and having quite a surplus on hand, after filling my yards and barn cellar, I am now drawing at the rate of twelve to fifteen ox cart loads per acre to all my high ground, (ten or twelve acres,) that I intend to plow next spring, spreading as fast as I draw it. To plow this in at once, in its green state, I have no doubt would prove rather injurious than otherwise to the soil; but spread out thinly, exposing it to the freezing and thawing process from Nov. to April, it becomes completely pulverized and slackened, and so rendered fit for use. I do not, of course depend on this alone for a crop, but use the same amount of animal and compost manure that I otherwise should. I tried the same method a few years since with five or six acres of orcharding, and still later with another piece of high gravelly soil, in both cases, I think, with favourable results. It is no doubt possible to use too much of this valuable material. To repeat this dose every year, or even once in five years, would not perhaps be advisable, but thoroughly slackened by frosts, or mixed in suitable proportions with animal manure, ashes, seaweed, &c., I apprehend few farmers use it to excess.

I derive so much pleasure from seeing things grow, and helping them to grow, that I frequently purchase small quantities of plaster, ashes, guano, or phosphate, to stimulate a certain crop that needs a little more food than I can otherwise give it, but with the exception, perhaps, of ashes, I think I have never realized more than dollar for dollar on the sum expended for such fertilizers; but decomposed material gathered up from our own place costs comparatively little, and yields in my estimation four-fold. It is very important to make all the manure we can in our yards, barn cellars, &c., but I apprehend some farmers waste labor by drawing more muck into their yards than can be saturated or mixed to advantage. Labor is so important a consideration on a farm, that we cannot afford to haul material out of our yards, in the same state in which we haul it in. I think those who have a supply of muck on hand, and high lands requiring its use, will do well to use a part of it in the manner I have practised.

REMARKS.—We are always gratified on finding our friends properly appreciating the value of meadow or swamp muck. It is capable, we have no doubt, when properly used, of doubling the productive power of many of our New England farms. Standing by the side of a grass field of twenty acres some time since, with a friend he enquired if we could observe a differ-

ence in the crop on any portion of the field? We replied in the affirmative, and readily pointed out that portion where the grass was thicker and more luxuriant than any other part on the lot. "Well," said he, "thirty years ago, that strip where the grass is so much better, was heavily dressed with meadow muck, and with that exception has always been treated just like the rest of the field!" The land is a sandy loam, and lies on nearly the same level. The strip dressed with muck had annually given a better crop than the rest of the field.

SOMETHING MORE ABOUT MUCK.—There has already been a great deal said and written about muck and its use as a fertilizer; still very few farmers know, or believe, anything about its real value. It is set down by the majority, as a branch of book-farming that won't pay. Very many men tell me this. I ask them how they know? Because, if it was really good for anything, it would be more generally used—in their immediate vicinity, of course. I tell them there are sections where some find it profitable, and use all they can get, and cite some one near. O, well! no doubt 'Squire Jones does make it pay, he gets his money easy, and can afford such expense as getting muck. Granted, that the 'Squire does get his money easy, he does not get any easier than that he gets from muck. I know that a large majority of the farmers who live within half an hour's ride of Worcester city, (by farm-horse conveyance,) feel like this.

While travelling in that vicinity the other day, I saw a tall, robust looking man whittling away with a draw-shave on a long pine log; there were two or three bright, active boys, his sons, in an adjoining field, digging potatoes, and three or four yoke of steers in another field—his oxen. The land about his buildings used to be good land. He said his grandfather had raised forty bushels of winter wheat per acre on it, but it was new land then, and the seasons were better; there was no "midge" or other insect to destroy it, &c.; that twenty bushels was a large yield now. He showed me another piece where he had helped mow two tons of hay per acre, that cut one ton now, and his corn and potatoes were about the same.

I asked him why he did not manure his land.

"I keep more cattle than father did, own meadows, buy hay, &c., but manure don't seem to do as it used to. If it was not for my trade, I could hardly live and keep out of debt. My father made pumps, and I make the same kind; a good thing, and no mistake."

"How much profit do you make on such a pump?"

"I earn about \$1 a day, and board myself, usually; now, I get a good deal less."

I pitied that great mass of muscular strength before me, but from every day's experience I knew there was no help for him. He would always do as his father had done. I saw his eldest son approaching, so I cast my eyes around to find if I could see anything near as proof, for I was determined to sow a few progressive seeds in his active brain, and lo! the proof was within a stone's throw of us.

While this man had been hacking away on his old-fashioned wood pumps, wasting time and timber, the soil that was his father's had been washing off into the valley below, and there lay thousands of loads of his and his neighbor's No. 1 soil, "as rich as mud." There were acres of land nearly dry then, the bottom of a reservoir, and hundreds of loads of decayed leaves were mixed with the soil—but much better than his meadow hay manure, that he boasted about.

I asked our pump-maker why he didn't haul up some of that rich stuff down there, and show his neighbors some of the crops of '76—keeping my eye on the bog.

"I can't afford to haul muck," was the short answer.

"Yes, but I saw one man hauling out down below here from a very bad place; don't he make it pay? His land looks in the best condition of any farm about here, though naturally poorer than yours."

"Well, yes, he is fixing up some; but he got his money easier than I did mine. He lectured for his money, sold books, &c.

"Father," said the son shyly, "you said that muck and stuff Mr. F. put on his hill did make the grass grow wonderfully last summer, and you would try it, if I got time."

"But you must go back to your potatoes, for we want to carry this pump off to-morrow."

"Darn the old pump," growled the boy, "tain't worth nothing compared with hay, no-how." But he expected something, and looked to me for help, so I sidled along up to the father, whose ire began to rise, and praised his work and tools, (which, by the way, were the ones his father used—good fifty years ago,) and he forgot "bub," muck, and all but pumps, and their relation to hard coin. Mark me, "bub" will never forget that conversation, and when he gets into some such town as Wayland, Mass., where are thinking, progressive men of his own class, who have provided themselves with a good library and library building, &c., then he will learn to get his money easier than by working at a disadvantage.

I had occasion to speak of the muck in this particular reservoir bottom to one of our pump-maker's neighbors, a reformer, and very intelligent man. He and his sons were doing a very heavy job, for little or nothing, and boarding themselves. He didn't believe in muck; said he wouldn't give \$100 for all the muck in the bottom, delivered.

He does believe in manure. In haying time he scrubs around the pastures and roads, wherever he can buy or beg a chance, and feeds everything out on the farm; takes cattle to winter, &c., because he wants the manure. But he don't believe in muck. O, no! or in using sulphate of lime and plaster on his stable floors—never'll pay him. His father didn't do it. So he has a vile filthy, hot-bed of disease under his stable, and in it, too.

Now, we have heard these men's stories of profit and loss, and I might cite hundreds and thousands of cases like these, all over New England. In some sections, I have found

farmers making shingles, in others getting out railroad sleepers, railroad wood, &c., amounting to about the same profit as pump-making and walling from home, by farmers. In nearly every instance there were large deposits of valuable vegetable mould, muck, saw-dust, &c., (in another article I will speak of saw-dust, my experience with it, &c.,) in their immediate vicinity, but they thought it worthless.

You may think, as some of them said, that they were obliged to do these things to get ready money. I don't recollect an instance where I thought so. Nearly every farm was over-stocked for the winter—farmers having more pasture than tillage land—for want of muck, and therefore several young cattle, nice and fat, that would be worth less next spring than now, and weigh less, if all were kept, that better be sold at a discount at once, than kept. On many farms two-thirds of the cattle would weigh more next spring than all will if kept—and make just as much manure, this winter.

The facts are these; and if any one wishes to commence an argument in your paper to disprove them, he would do the public more good than so much thrashing of my faithful uneducated canine friend has. It will take three tons of such hay as these hard-working farmers use to make a cord of manure:

THREE TONS WEED AND MEADOW HAY.

	Dr.
To cutting and hauling.....	\$9 00
To feeding out.....	3 00
To cutting brush to pay for it.....	3 00
	\$15 00
	Cr.
By 1 cord third quality manure.....	\$2 00
By advantage to stock.....	9 00
	\$11 00
	Dr.
To LAYING WALL.	
To 10 days' work.....	\$9 00
To 5 days making pump.....	4 00
	\$13 00
Board at 25 cents per day.....	\$3 75
Balance for 15 days' work.....	\$10 75
	Dr.
To 15 days' drawing.....	\$10 75
	Cr.
By 15 cords second quality manure...	\$41 25

Will it pay? The muck is worth almost as much more to put behind cattle and mix with stable manure to absorb the liquids, and keep it cool—making at least \$75.00.

PREPARATION OF BONES FOR USE.—I set an old cask, with one head, in some convenient spot back of the house, in the spring, and of the bones which have accumulated through the winter, I throw in enough to cover the bottom; then enough of unleached ashes thoroughly to cover them; then another layer of bones, then ashes, and so in alternate layers until the cask is full. On top is placed a sufficient covering of ashes, loam or charcoal dust, to prevent the escape of any gas. I usually wet down the ashes as I proceed, and leave the cask exposed to the weather, that they may be kept damp.

By the next spring, when I wish to use them, the bones are thoroughly digested, and in a fit condition to use.

By this management I preserve all the material of the bones, and it stands to reason that they must be more valuable than those from which the animal matter has been extracted by the soap doilers, and which are then burnt for the sugar refineries, and then made into superphosphate.

I usually take the mixed bones and ashes, and compost with well rotted manure, a liberal sprinkling of plaster, a little guano and salt, and a load of sweepings from the blacksmith shop, of iron scales, charcoal dust, horse hoof parings and the manure made there. This I apply to trees, especially pears.

The growth caused by this is astonishing; as you perceive, this compost contains all the requirements, both for growth and fruit, better than any purchased superphosphate, for it has the potash so essential to the pear, and the iron which is very important. I also prepared my grape border with this.

I not only use the bones saved from our own family, but buy a good many, paying Irish and German boys for collecting, about half a cent per pound, which is the market price obtained by the cutlery works for their refuse bones.

I have great faith in the efficiency of both ashes and bones, and I think this combination of them is both cheap and useful.

THE CROPS.

We receive from Mr. Boa of St. Laurent the following directions for the cultivation of flax.

On the Cultivation of Flax.

Soil—The best land for flax is a dark coloured loam with a clay subsoil; it will grow on almost any soil, but such as contain a large portion of vegetable matter in their composition are undoubtedly the most proper for flax; but whatever be the kind of soil, it ought neither to be in too poor nor too rich, but what is called in good condition.

The place of flax in the rotation of crops—If the crop is to be allowed to ripen its seed, it should be considered as a grain or exhausting crop, and as a green crop when the plant is pulled green; if intended to ripen its seed it should follow potatoes, turnips, or some other green crop; if to be pulled green it should then be sown upon land from which one crop of grain only has been taken after having been several years in pasture; in either case this will cause no derangement on a farm where a six or seven years' rotation is practised; in the first case, grass seed should be sown with the flax, and in the second should take the place of a green crop, and may be followed by barley or wheat, if allowed a slight dressing of manure after removing the flax.

Preparation of the soil—In all cases the land should be deeply ploughed in autumn into ridges ten or twelve feet wide, and well water-furrowed; this done in the proper season, in a proper manner, the frost of winter will put the land in a finer state of pulverization than any implement man can employ; the land should be well harrowed before the seed is sown, then cover the seed by passing the harrow a couple of times over it, water-furrow the land, and remove all stones which remain on the surface; this finishes the seed process.

Time of Sowing—From the 10th to the 20th of May is the best time in this locality; if sown earlier, the seeds of annual weeds will spring up with the flax, and will either injure the crop, or cause more labour in weeding it, whereas if sown about the middle of May, a great number of the seeds of weeds will have already germinated, which the process of seeding will kill, and consequently save labour in weeding.

The quantity of Seed—This will depend upon the intention of the crop; when a crop of seed is intended to be taken, thin sowing is preferable, but it is a mistake to sow thin when flax is intended to be taken for the crop; it will grow coarse and less productive; from a bushel and a half to a bushel and three quarters should be sown per acre.

The Choice of Seed—It should be weighty, of a bright brownish colour, and slippery to the feel in putting the hand amongst the seed.

The manner of Sowing—It is always sown broad-cast, but if seed is the main object, drilling may be adopted.

After-Culture—This consists chiefly in weeding, but sometimes should commence with rolling the surface when the soil is very dry, the season advanced, or the earth very light and porous. The weeding, if required, should be done when the crop is about four or five inches high; there is no danger of injuring the plants by walking over them to pull out any weeds that may have grown up with them, or even by turning a flock of sheep amongst it, as the sheep will not taste the young flax plants, and a fine dewy night will put all wrongs right; the rest, until harvest, is in the hand of a beneficent Providence, who alone can bring to a successful issue the work of our hands.

Harvesting the Crop—The flax crop is taken by pulling; this should never be done before it comes into flower, when fibre is

the sole object; or before the seed in the pod acquires a brownish colour, when fibre and seed jointly are required.

Rippling—This is the next operation, and may be quickly done by presenting the seed end of the flax to the cylinder of a threshing mill, withdrawing the stalks, and binding them in bundles for the purpose of steeping. The best water for steeping flax, is clear, soft, and in standing pools; the time it should remain in the water will depend upon the nature and temperature of it; the most certain rule by which to judge when flax is sufficiently watered is when the reed becomes brittle, and the bark separates easily from it; it must then be taken out of the water and spread very thinly on the ground in regular rows; when it has become perfectly dry, it may then be bound up in bundles and either carried to the scutching mill, or stored away under cover, where it may remain for years without injury to the fibre, if kept dry. The other processes to which flax is subjected before it is converted into thread or linen, belongs rather to the manufacturer than to the farmer.

[As everything relating to the cultivation of flax is important, we lay before our readers the following remarks on the subject, which were drawn up by Mr. Thomas Berry, formerly steward to Lord Gormanstown, at the request of several parties in the county of Wilts, who were desirous to carry on its cultivation. We may also mention that Mr. Berry grew last year, on the lands held by T. L. Henly, Esq., at Calne, in that part of England, 182 acres of flax, a sample of which gained the first prize of £15 at the Royal Agricultural Show at Leeds. Steam cultivation was employed in the preparation of the land, and the results were in every respect most satisfactory. The following remarks embrace, in fact, the details of the cultivation of Mr. Henly's prize crop.—Ed. F. G.]

Being solicited by parties feeling desirous of growing flax (as an extra and remunerative crop) to state to them my method of preparing the soil, sowing the seed, and after management in preparing it for delivery to the flax mill, I most willingly comply with their request.

In the first place, the soil must be stirred 8 or 9 inches deep either with the plough or some sort of cultivator or grubber; many varieties of which last mentioned implements are now in use amongst agriculturists generally, and most of them, I find, by going through the soil twice or thrice, will effectually move it the requisite depth. I have found Bentall's cultivators to answer well for that purpose; and in preparing the land for flax, I much prefer them to ploughing it. Double the quantity of work can be done in one day with the same number of horses with the cultivators than with ploughs, the soil is much more pulverised, and all weeds are brought to the surface. The

plough turns the weeds under, if any, in the surface of the soil, which must afterwards be found and only with considerable labour got out.

This deep tillage I should advise being done in the autumn, or as early in the spring as circumstances will admit of, being governed by the state of the soil; for the land generally becomes dry towards the middle of March, and from that period to the middle of May. The sowing of the flaxseed may, therefore, take place in the month of April, that being the month in which the flax sowing is most extensively carried on throughout the United Kingdom.

If the soil got its first tilling in the autumn, or long previous to the time of sowing, the cultivators, or grubbers, as they are termed, large and fine harrows must be very freely used, and rollers also as well, if the clods are hard, in order to bring the surface to as fine a tilth as possible; in fact, the tilth cannot be too fine. If the surface after the several harrowing be still rough and hard, the rollers used cannot be too heavy. When the soil is very dry, two or three horse rollers will be found to be required, and if used most frequently after the harrowing, will produce the very best results, in speedily pulverizing the soil sufficiently fine for the reception of the seed. The surface should always be rolled the last thing previous to the seed being sown with seed troughs or seed barrows (so called in some parts of this country), at the rate of two bushels per acre, statute measure. Two men, with a couple of these machines, will sow from 20 to 30 acres daily. I should insist on their going over *all* the ground, one of them wheeling his machine, say from north to south, the other from east to west—each man being provided with marking poles to guide the width, and to which he should wheel quite straight to each, sowing after the rate of one bushel per acre with each machine. The reason of this cross sowing is for the purpose of having the seed distributed quite regular on the rolled surface of the soil; as a most important point is, by this process to obtain an even and good quality, as well as a full average crop of fine flax. When the two men have completed the first square of a few acres, the other men and boys will commence harrowing and rolling, to finish with, first harrowing in the seed with the finest seed harrows that can be procured, and if fine seed harrows cannot be had, chain harrows in most cases will answer the purpose quite well. The seed does not require being covered more than one inch beneath the surface by the seed barrows. I would suggest rather *less* than *more* as the surface must be well rolled afterwards, if the land be dry, such being the last process of sowing. If the land be very dry, the heavier the roller the better; the dry or moist state of the soil must be the guide for the rolling, whether light or heavy rollers be used throughout the whole process of working the land during the sowing.

Flax is sometimes drilled one inch deep and six inches wide, at the rate of from 1½ bushels to 2 bushels per acre: this method affords an opportunity of hoeing the weeds with very small and narrow hoes; not more than 2 inches

wide. When the ground is perfectly dry this last operation should be performed. When the flax crop is under a foot in height a good number of hands should be put at the work (that is, when the weather and soil permit of the hoers and weeders executing their work) as all the flax sown otherwise than by the drill must be weeded by the hands, and not with hoes. I scarcely need to mention that all the weeds that are accumulated on the surface of the ground under preparation for the reception of the flax seed should be gathered up and taken off; and the implements found most useful for that purpose are chain-harrows, horse-rakes, hand-couch rakes, and 3 and 4 prong forks—the latter for putting it into the carts. I have described the preceding operations as being performed by *manual* and *horse* labour; but the preparation of the soil for the sowing of the seed can be more fully carried out by steam cultivation.

I prepared, in the year 1861, more than 100 acres by the use of steam, and upwards of 82 acres by horse and manual power, for the flax crops produced at Horton, Wilts. The crop there was very superior, indeed, both as to quantity and quality, and for a specimen of which the first prize of £15 was awarded to T. L. Henly, Esq., of Calne, Wilts, at the R. A. S., show at Leeds in that year. The crop is fit to pull when the seed balls are found to turn from a *green* to a *pale brown* colour, and the stalk turned *yellow two-thirds* up its whole length. The cost of pulling flax is from 10s. to 20s. per acre; but the cleaner the crops are from weeds, so much less will the charge of pulling it be than the latter sum named.

The flax, when sufficiently ripe, as before described, is pulled, by holding the tops of the flax in one hand, the other being placed about half-way down the handful of flax straw; it is pulled with a jerk, and if any dirt adheres to the roots of the flax a blow or two against the leg of the person pulling, in most cases, will cause it to drop off, a very desirable thing, as dirt amongst the flax and seed is very injurious. The handful of flax that is pulled is laid on a band of 9 or 10 flax straws—handful succeeding handful until a sufficient quantity is on the band; then when tied the same as wheat makes a small sheaf of about 18 or 20 inches in circumference. The sheaves are stooked the same as wheat sheaves, of from 10 to 12 in a stook, but there are some who prefer stooking only 6 sheaves in a stook: in both cases the stooks should be turned if one side is more ready than the other to carry and rick, that each side of it may have an equal share of the sun to dry the fibre. The object of putting only 6 sheaves in the stook is, because of the convenience of pitching them in one forkful on the cart or waggon when carried, and therefore prevents loss of seed, and it is also found to dry sooner than when a much larger quantity is put together in stooks. The flax, when only a *small* quantity is grown, is put in small *round* ricks. When a *large* quantity is grown, the flax is put in *square long* ricks, 10 feet wide at bottom, 8 or 10 feet high in the side, and then a short roof, thatched as soon as finished. Or if not *immediately* thatched, it must be well covered

to prevent wet getting to the flax. If such, however, should by neglect take place, then very considerable injury will most probably be found to be done to the flax in question. This system of carrying the flax without steeping it is for the warm water system of preparing flax at the manufactory, and when the grower disposes of his crop to the flax manufacturer, for which class these remarks are written.

After the crop of flax is carried, it will prove an excellent plan to skim the surface of the ground about 3 inches in depth with the common skim plough, Bentalls' cultivator, or, in fact, any implement that will be found to perform the work in an efficient manner. Then harrow and cart off (or burn on the ground) all refuse flax and weeds that can be gathered up upon the surface. After all this is performed the ground can be either ploughed or worked by cultivators of steam or horse power. The land may then be sown with rape, late turnips, rye, or vetches, or planted with cabbages adapted for sheep feeding in the months of April and May; of these the thousand-headed cabbage ranks as one of the very first. The seed of this cabbage should be sown either in March or April, for planting out in the months of August or September. If the land be manured after the flax crop, the same as clover stubbles or lea are for wheat, as good a crop of wheat can be grown *after flax* as ever can be grown *after clover*. In proof of such being the fact, it will only be necessary for me to refer any party to see the present beautiful growing crop of wheat *after flax* on Townsend Farm, Horton, in the parish of Bishop's Cannings, near Devizes, in the county of Wilts.

The flax crop can be grown to yield an average crop on suitable soils almost after any other crop has preceded it. The soils best suited for its growth would be found to be strong loams and clay soils; the clays on chalk and limestone formations would prove as good as any chalk, or limestone brash will be found to grow excellent crops of flax. Green sandy soil, I have no hesitation in stating, will also grow good flax crops. If the land be well prepared for the reception of flax seed, and the soil also suitable for that purpose, *it will be found that has more to do towards producing an average crop of flax than anything else has; a vast deal more so than manuring for it, with bad tillage.* Lands heretofore were very rarely, indeed, manured for growing flax, although latterly I have known it in some cases to be done.

A good crop of flax can be grown after two white straw crops (say, wheat and oats), producing three or four tons per acre on suitable soil, well tilled for the putting in of the flax seed. The flax always seems to me to answer well in following oats after grass and clover leas; and the best results, I am certain, have been proved to follow this course when adopted, in most instances, on many farms.

In the northern counties of Ireland, where more flax is found to be grown than in any other parts of the United Kingdom, the growers there make it a general practice, when their land is cleaned, to sow clover seed amongst their flax, and the growers' most sanguine expectations have always been realized by the

system thus adopted. Crops of clover produced in this way are always found to be far better than those produced by any other method, which can be easily seen and proved by any observer who may be travelling through these districts. These same convincing proofs of the entire success of producing superior crops of clover in England have been witnessed, I know, in various parts thereof. I will here mention, by way of illustration, one instance only of the *fondness* which I know clover has of growing amongst the flax crop. J. Parry, Esq., of Allington, near Devizes, Wilts, sowed a field of flax in the year 1860. The crop proved to be a very superior one. In the following year, 1861, he mowed a crop of clover off the same field, without previously sowing any clover on that field. It was red clover, too, which makes it the more remarkable, as it is found to be almost always more rare for red clover to come indigenous than white. When clover seed is grown with the flax crop, I would suggest that the land should be previously made perfectly clean, and freed from all couch in particular, and then it might be sown in the same quantity per acre as if sown with any other crop, and it should be observed that the clover seed is sown at the same time of sowing the flax seed, before the roller goes over the ground the last time, *i. e.*, after the flax seed had been harrowed in. The clover seed may also be sown after the flax crop has sprung up not exceeding six inches in height. When the clover seed is sown amongst the growing flax crop, it must be left on the surface for the purpose of moist weather forcing its growth.

I have known that as good crops of clover as ever grew have been produced in this manner when sown with barley or oats. If the flax crop is drilled, the clover seed may be sown either before or after being hoed; if sown after the hoeing of the flax crop, the surface will generally be found to be sufficiently loose for the reception of the clover seed, which must be allowed to remain for the rain to strike it into the soil, which will then be found speedily to promote its growth.

Grass seeds may be sown at the same time as the clover seeds amongst the flax, or at a later period, if preferred. Grass seeds are as advantageously sown when the flax crop is taken off the land in August as *previously* thereto, and in this case it gives the clover a better chance of keeping stock, as I have always found that the young grass does not, in *after* sowing, grow predominant over the clover, to destroy it. The clover grows and flourishes well after the flax is pulled.

Carrots are sometimes grown with the flax crop and fair average crops, to my knowledge, have been produced by sowing from 3 lbs. to 4 lbs. of carrot seed broadcast per acre. In this case the carrot seed should be sown at the same time as the flax seed is sown, previously to the last harrowing with the fine seed harrow and the last rolling. From 2 lbs. to 3 lbs. per acre may be drilled at two feet distance; and if the flax seed is drilled, the carrots must be drilled across the flax drills.

The variety of red carrot called the "Inter-

mediate," is the best for sowing with the flax crop. This variety of carrot is well known by its dwarf top, which falls down on its hollow crown, which resembles the hollow crown of a hollow-crowned parsnip. This carrot is found to be one of our very best for the vegetable markets, and is one of, if not, the most nutritious for all kinds of farm live stock. If the carrot seed be sown where the flax seed is drilled, it should be sown fresh before the hoeing; and in both instances the seed should be soaked for 48 hours in water or liquid manure, 10 or 12 days previously to its being sown, which is done to cause its early growth, and to come up at the same time as the flax seed—an important point. When taken out of the water, or the water strained from it, the seed should then be mixed with sand or ashes, or both sand and ashes mixed together, and afterwards well rubbed with the hands. Its proportions are two pecks of sand and ashes to 1 lb. weight of carrot seed. This is the quantity generally used to cause the seed to separate, but more may be added if found to be requisite for the sowing or drilling of the carrot seed.

Drilling the carrot seed across flax drills is very convenient for thinning out the carrots to their proper distances, from 7 to 9 inches in the row.

Much prejudice once existed against the growing of flax in this country; but this will be now seen to be an antiquated prejudice, handed down to us by our forefather, who then knew but very little, or next akin to nothing, of the useful art of making manure, and still less of preparing artificial manures. They were in the habit of sowing the flax seed after they had exhausted the land to the very utmost by sowing cereal (or, more plainly speaking, white straw) crops, at that time not at all considering that they had greatly exhausted their land, previously to the flax crop being sown thereon, and yet, strange to say, expected the land to yield a good crop of wheat after the flax crop; and when that desired object could not possibly be obtained, the flax crop was considered to be the sole cause of their disappointment.

If land has become exhausted by cropping, and *wheat* being the desideratum of the grower, after his flax crop has been secured and got in, he has then only to manure his land with farmyard manure, or with such artificials that are found to be the most suitable dressing for the wheat crop.

It must, I am sure, be obvious to any observant person that the *roots* of the flax are *not* so constructed as to exhaust any soil, the small (I may say), very fine top roots only from 2½ to 3 inches long, with its beautiful thread-like fibres, about one inch long, growing round it, has been satisfactorily proved by scientific men as *not* to exhaust the soil anything equal to our corn crops. The flax fibre is principally formed by atmospheric power.

Finally, the *advantages* of growing flax are :— The grower of flax gains a crop that is in many instances of more profit to him than his *best wheat* crop; and that after his land will not yield to him a remunerative crop of any kind without the aid of manure (either from his fold-

yard, or artificial). The clear profit of the flax crop will, I am persuaded, after selling it in the straw, enable him to purchase artificial manure for six times the quantity of land which his crop of flax grew upon, which is, let me say, a very considerable item of economy in farm expenditure, as well as combining many other advantages in his succeeding crop, as before explained; as also affording him the earliest opportunity of autumn tillage, if he choose to follow that after the flax crop be carried in August, or perhaps, July, according as the season may be.

The Ruta Baga Crop.

EXTRACTS AND REPLIES.—THE RUTA BAGGA CROP.—1. Is the ruta bagga crop a profitable one?

2. What kinds of soil will it grow on to advantage?

3. Are ashes a good fertilizer for them?

4. At what place can a person get good seed?

5. What is the best time for sowing?

6. Is broadcast sowing or regular sowing to be preferred?

7. At what distance apart would it be proper to sow the seed, if it was sown at regular intervals?

8. What would be a fair crop for an acre?

9. Is it a sure crop?

10. Is it exhausting?

A MONTHLY READER.

Franklin, Mass., Oct. 29, 1861.

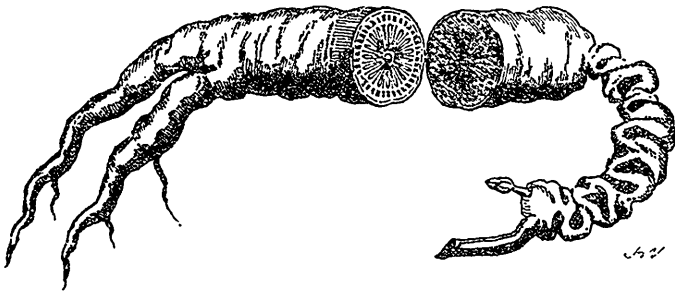
REMARKS.—1. Under proper management, the ruta bagga crop is a profitable one.

2. It will grow well on any good corn land. We have known it to produce well on highly manured plain or sandy land.

3. Ashes are an excellent fertilizer for them—so is superphosphate of lime.

4. The seed can be procured at the agricultural warehouses.

5. There are various practices as to the time of sowing. Slight frosts do not injure them, and they will grow late in the autumn, consequently, they may be sown later than many other seeds. Some time during the first half



Section of the Ginseng root.

of June will be sufficiently early, and some good cultivators delay even later than this.

6. There is no question in our mind but that it is cheaper and easier to sow in regular rows. The crop can then be mainly tended with the horse and cultivator. It is more convenient to weed and thin them, and to determine at once by the eye, what space to leave between them.

7. The rows should be at least two and a half feet apart, and the plants one foot apart in the rows, and a good crop will then cover the whole ground, before it is time to harvest it.

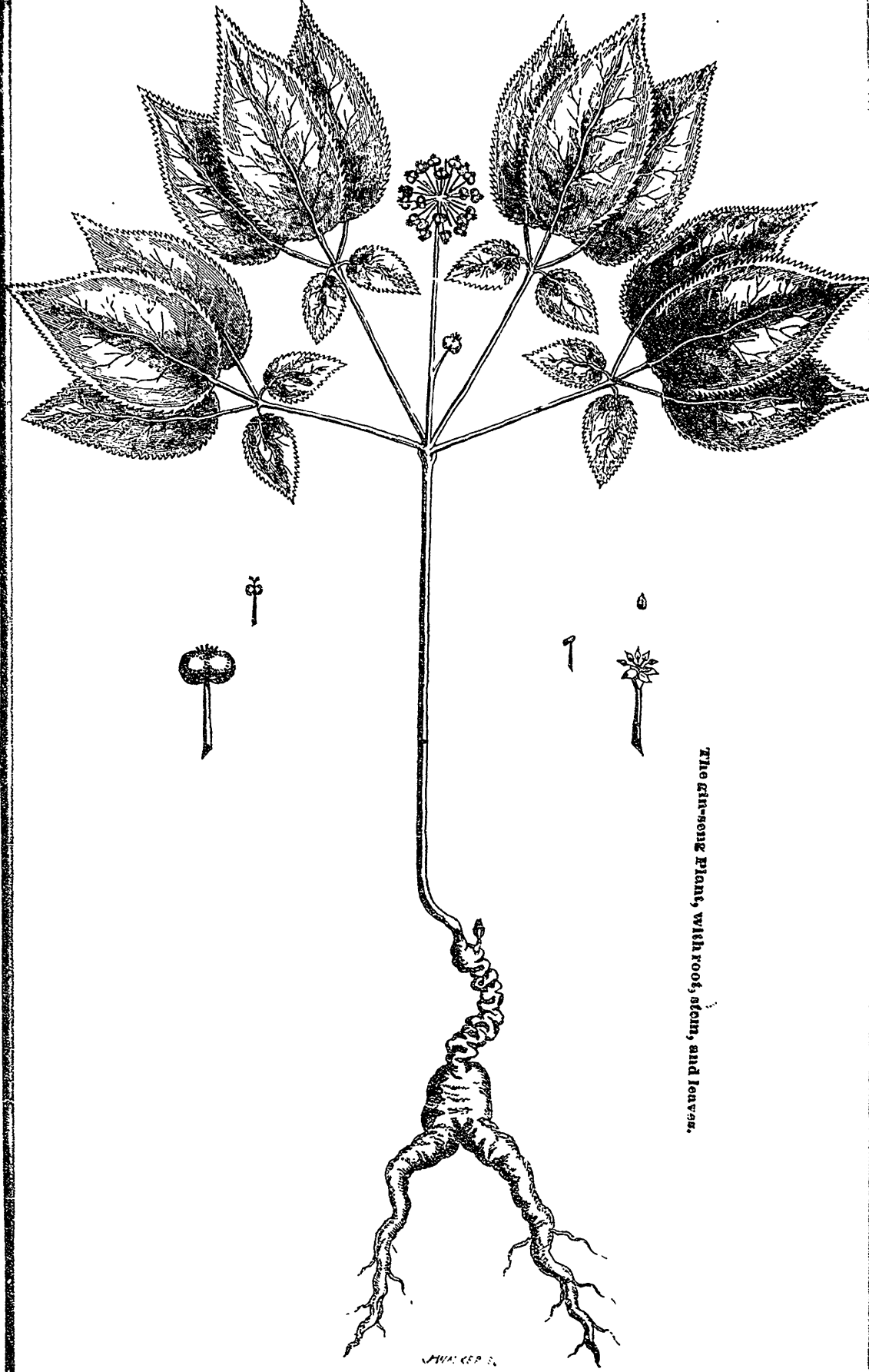
8. A fair crop would be six or seven hundred bushels. By high manuring and careful cultivation, you may attain to eight or ten hundred bushels per acre.

9. The crop is as sure as our other crops ordinarily are.

10. It is thought to be an exhausting crop. Many good farmers say that a second crop of ruta bagas on the same land cannot be obtained, and that it is difficult to get a good corn, grain or potato crop, without high manuring, on land just devoted to the ruta bagga.

The Ginseng Plant.

The gin-seng is now the object of a considerable trade from the neighbouring States with China. One of our exchanges informs us that a cargo, \$100,000 worth, has just been shipped, and that the production of this very valuable plant is every day increasing, with proper care from the hands of the farmers who now sell it at 50 cents a pound. It will be remembered that Canada once exported, under the French government, considerable quantities of gin-seng. So carelessly was it looked for in the woods that it was exhausted and forgotten. We are informed that farmers in the neighbourhood of Montreal have collected several hundred pounds of this valuable root, and would procure much more if a market could be found. We give a very good engraving of this plant, so as to enable all who may be interested in the matter to avail themselves of this production of our woods; for we are about coming to arrangements for the remunerative sale of this article, and from what we learn we are entitled to say that the price offered in Montreal will make it a profitable speculation.



The ginseng plant, with root, stem, and leaves.

Lucerne.

The cultivation of lucerne, as a valuable hay plant, has not yet become popular in this country. In some sections, however, it has long been known, and is highly recommended for its many excellent qualities, being a vigorous grower, hardy, and on suitable soil, a richly-yielding grass. Many who have attempted the cultivation of lucerne, have failed in consequence of not understanding its peculiar habits. In the case of most grasses, we consider the preparation of the surface soil of the greatest moment; but we rarely attempt to ameliorate the subsoil. In the preparation of a field of lucerne, however, it is often necessary to go below the vegetable stratum, and undertake the improvement of the subsoil. Some have asserted, and among the number Von Thaeer, we believe, that in the cultivation of lucerne, the lower stratum of the soil is of more consequence than the upper. The plant, as it develops from year to year, sends down its principal root, and still continues so to do, as long as it finds food in its progress, and hence it is essential that the soil, for at least the depth of two or three feet, be of a similar geological and chemical texture. Where different strata occur, overlaying each other short of this depth, it is important that the different ingredients of each be thoroughly mixed together. This can only be effected at great expense, and it is therefore better not to attempt it. There are localities on almost every farm, which are well adapted to the cultivation of this grass, and these may be discerned by examination, and at a very small expense.

On suitable soil, free from excessive humidity, and tolerably warm, lucerne is no doubt susceptible of being made a very profitable crop; but we would caution all against the idea—prevalent in some sections at present, and to the no small detriment, we fear, of the interests of agriculture—that any and all descriptions of soil may be made to produce this crop by the aid of lime. True, the presence of lime, especially in the sub-stratum, is an indispensable condition to success, yet we might as well assert that Indian corn can be profitably grown on any soil by the assistance of manure.

It is a very long-lived grass, in proof of which we quote the following illustration from the pages of Von Thaeer: "On a piece of garden ground, formerly used as a lucerne field, and afterward turned up twice with the spade—and laid down to grass, I have seen isolated lucerne plants grow up which must have been at least thirty years old. A lucerne field may often be kept up fifteen years; seven or eight years is the time usually reckoned. Some cultivators suffer their lucerne to grow for four or five years only, not so much from fear of its perishing or diminishing, as for the sake of turning the soil to greater account by more rapid alternation."

We have seen it stated that some Massachusetts farmer has cultivated this grass for many years on a piece of pine plain land, and finds it not only a vigorous grower, but a grass which makes an excellent food for stock, either green or dry.

If the plant is so long-lived, as is stated by Von Thaeer, the cost of preparing the ground is no greater than that of preparing it for the Timothy crop, as that ought to be repeated as often as once in seven or eight years. It is best to sow it in drills just as early as the ground is fit to receive the seed in the spring, and if well tended, it may be cut three or four times during the season, affording an abundant and highly nutritious crop each time. It flourishes in Maine, where the ground is continually covered with snow through the winter; but there may be risk in cultivating in the eastern part of Massachusetts, on account of the earth being bare sometimes for weeks together, when it is very cold. It is a crop well worthy of experiment, especially by those who produce milk for market.

I was pleased to see your article on Lucerne in your last number of the *Farmer*. I think its value to our farms has been overlooked. That it is a very valuable plant in many localities, admits not of a doubt. For soiling, I think it will be found the most useful plant that we can use. My experience with it is, however, limited. I bought a farm in Rhode Island, that had a few rods of lucerne, mixed in with other grasses, and had not a fair chance to grow to perfection. As it was, it would start up much earlier than ether grass, and be ready for cutting, near three weeks sooner. When I broke up the field, I found it almost impossible to plow through it, the roots were so tough and strong. Most of the plants would draw through an eight-inch furrow, holding on so hard as in many cases to cause the plow to slide around them. I dug up a single root in the garden, that had been cultivated in a flower-bed, which weighed, after laying through a hot June day, on the flag-stones the south side of the barn, over twenty-eight pounds. It was weighed by a neighbor, who thought it would have much exceeded thirty-pounds previous to its being wilted. There were several hundred stalks, many of them over six feet in length. The root at the crown was near six inches through, tapering down as large as a man's arm. It was cut off about two feet below the surf. co.

A gentleman at Adamsville, Little Compton, R. I., for a number of years cultivated lucerne, and cut it two or three times each season, according as the moisture might be. He used it as a crop, and thought it the best grass he could use. English writers give us very precise directions as to the best mode of preparing the soil for the seed, many of which are far too expensive for our adoption, and I think entirely useless. If the soil has been well worked and manured for previous crops, and the subsoil is not too hard, I think we need not fear but that it will grow, if not too wet a soil. No plant will stand a long drought better, as we have instances recorded where clover has died, and lucerne held out and made a good crop. Mr. Young tells us, the first use of this plant is that of soiling horses in the stable; for this purpose, no other article of food agrees so well with those animals; nothing better for our cows, young cattle and even hogs in a farm-yard. He also thinks it very well adapted to fattening beef.

FOREIGN REVIEW.

International Show of fat stock at Poissy.

Paris, Thursday, April, 17th, 1862.

This much talked of exhibition came to a close yesterday, surrounded by all that ceremonial and attention to effect and detail with which the French nation know so well how to signalize every occasion of public or national interest. The presence of the minister, and of the official personages connected with the department, in full court costume, the admirable order preserved by the authorities, the immense crowds that thronged the lengthened rows of beeves, and the clear, bracing atmosphere overhead, combined to render the "distribution of the medals" an appropriate closing ceremony of an exhibition that had now for the fourth time brought Saxon, Scot, and Celt face to face on a foreign soil, with a generous rivalry in the first and noblest of arts—agriculture. But hold! Let us for a moment return to Boulogne, where the first scene of this French exhibition drama is laid.

On Tuesday and Wednesday, the 8th and 9th instant, the whole of the British stock arrived and were received and placed by the agents of the French government in comfortable quarters, a special train having been appointed for Thursday to convey them direct to Poissy.

The following is a short abstract of the number and description of stock that appeared :

HORNED CATTLE.				
English, .. .. .	..	..	..	.. 32
Scotch, .. .. .	..	..	..	.. 18
Irish, .. .. .	..	..	..	.. 3
—				
Total, .. .. .	..	..	..	.. 53
SHEEP.				
13 pens, of 6 each—all from England.				
PIGS.				
24 entries—all from England.				
GENERAL ABSTRACT.				
Cattle, .. .. .	..	..	..	.. 53 head.
Sheep, .. .. .	..	..	..	.. 13 pens.
Pigs, .. .. .	..	..	..	.. 24 head.
—				
Total, .. .. .	..	..	..	.. 90

If we except the incidents of the breaking of the bullock's leg, the falling of the British agriculturist from the window of the railway carriage, and finally the falling of a party of our Scotch friends into the hand of a doubtful character, and their difficulties in convincing the authorities that they were what they professed to be—Scotch farmers on their travels to Poissy, and not the well got up accomplices of the gentleman of the small portmanteau, filled with flash notes—all went well with the expedition to their arrival at Poissy on Friday morning, where nothing was left to be desired in the comfortable quartering and provisioning of the animals. Saturday and Sunday were devoted to repose and to the weighing of each animal, his exact live weight in French kilogrammes being attached to his number in the judges' books, and subsequently published in the catalogue. A rule that appeared to give general satisfaction, and that would be well worthy of imitation by the managers of our fat stock shows in Ireland.

Monday and Tuesday were devoted to the operations of the juries. These were divided into two sections, of which one was devoted to horned cattle, and the other to sheep and pigs. Each jury numbered twelve numbers and a president, composed of members of the legislative corps, who are also influential landed proprietors, and other agriculturists of note; and to each jury was attached a butcher of high standing, to afford them the benefit of his practical experience.

Of the six nominations made at the request of the Minister of Agriculture, by our three royal agricultural societies, only two put in an appearance. Mr. Wm. Fisher Hobbs, of Essex, and Captain Ball, of Adare; the latter being an exhibitor of three head of stock (the only ones sent from Ireland), was placed in the sheep and pig department, while Mr. Fisher Hobbs represented the interests of England among the cattle.

I give you a short statement of the prizes in the British classes; those in the French department are so numerous, upwards of three hundred and fifty horned animals having appeared to compete for the prizes, which in some classes run to a fifth or even a sixth prize, that I shall merely say in general terms, that France has good reason to be proud of the immense progress she has made in this department since 1855-1856, when our attention was first pointedly directed to their native breeds as they came under our notice in the Champ de Mars and the Palais d'Industrie, as well as what some of us at that time saw in the public cattle markets. But it is in their cross breeds exhibited at Poissy that we find the distinct indications of the wisdom of the move made at the two first international exhibitions to introduce our improved breeds into France, more particularly the short-horned bull and the south-down ram; the classes devoted to these crosses contained animals of great merit, and of first quality in any market in the British empire, as our French friends have learned not only how to breed, but how to feed. The pigs also, whether of the pure English breeds, of small Yorkshire, Leicester, Middlesex, Suffolk, or their crosses, were a most superior class, and made one intelligent Englishman remark, that we should soon have to go to France to renew our pig blood, as the short-horn men are going to America for the descendants of their former acquaintances.

The decisions of the juries may fairly be said to have given general if not universal satisfaction, one point only in the method of making the awards seeming to challenge observation, namely, the with-holding the first and sometimes the second prize, and awarding the third; or again dropping the second and third, and awarding the fourth prize. The manner in which this is done is by the vote of the jury, taken at the moment, but upon what *standard* it was impossible, of course, to declare. It occurred, however, to some of us that until the art of judging at our shows is reduced to a principle such as that so ingeniously advocated in the course of last year by a writer in the English agricultural journal, whereby a certain number of marks of excellence shall be attached to the

possession of certain qualities and points—in fine, until our cattle, like our candidates for military or civil service appointments, shall have stood a competitive examination, in which a minimum number of marks shall be declared necessary for the gaining of a first prize, and so of the others in proportion. That it is a little hard, and scarcely fair from one point of view, towards a man who at great expense and risk has travelled long distances to these shows, who has come prepared to meet all comers, and who moreover has produced an animal of decided merit, that he should find after all his pains that an inappreciable standard of excellence has been applied to his animal, and that the jury have only awarded him a second, third, or perhaps a fourth prize, his being all the time, by their decision, the *best animal in the class*.

As I write the great weekly market of Poissy is being held, about two thousand head of cattle and seven to eight thousand sheep being on the ground, the quality, of course, being much inferior to that of the selected animals we have seen for the last three or four days, and leaving still much room for improvement. The country, however, is in the right road, and as far as her material interests at least are concerned, in the right hands also. We wish her every success in this laborious but grateful and peaceful march of agricultural improvement.

M. ROUCHER ON THE MEMORY OF PRINCE ALBERT.—E. Roucher, the Minister of Commerce, when opening the Cattle Show at Poissy some days since, spoke as follows of the late Prince:—"Among these prizes the most important reminds us at the same time of a profound devotedness to agricultural interests and to a great national mourning. His Royal Highness Prince Albert informed the Emperor's Government some months since of his intention to devote the value of the prizes obtained by him at the universal agricultural meeting in the year 1855, to the purchase of a cup, which should be awarded at a French meeting. This cup has been allocated to the Exhibition at Poissy, to be contended for by the two laureates to whom prizes of honour have been awarded—one for foreign oxen, and the other for oxen bred and brought up in France. The judges have fixed their choice on one of the most experienced breeders in Scotland. The public will applaud the choice. This proof of interest offered to the breeders of cattle by an eminent Prince, prematurely removed from the love of an august family, and from the respectful affection of an entire nation, should not be dear to us solely on account of its noble origin. In that immense park which surrounds the vast palace of Windsor, with its ancient towers and battlements, Prince Albert became a simple farmer, and applied the lights of a superior intellect, the resources of a great experience, to the most ancient and respected of industries—the cultivation of the soil. The Windsor farms received the name of model farms from the public voice, because they presented to visitors the characteristics of the most economical and best regulated of agricultural buildings—best adapted to the labours of the barn, to the handling and feeding of animals, to their rear-

ing, and to their fattening. This noble example—this useful teaching, has produced on the development of the territorial wealth of England, the great influence which the enlightened solicitude and the energetic impulse emanating from the Imperial throne, have exercised on agriculture in France."

The Royal Agricultural Society of England.

"All the Year Round," has recently published an article entitled "Agricultural Encampments," but mainly devoted to the Royal Agricultural Society, its history, and its shows. The whole article is interesting enough to be quoted at length, but lack of space compels us to limit ourselves to two or three detached paragraphs illustrative in part of certain points, to which it will do no harm to call the attention of Canadian farmers and Societies:—

Anomalies—What the Society has not done.—According to the theory of the charter which makes it royal, the first object of the society is "to promote the science and practice of agriculture," yet the most prominent members of its council, and the majority of its presidents, know as little of either as a man can who owns great estates and rides fox-hunting at some time of his life. For membership, the only qualification is an undertaking to pay the annual subscription. With an income of some £10,000 a year, there is no museum, no library worthy of the name, and no expenditure on scientific investigations, beyond a few hundred pounds grudgingly devoted to the labour of a professor of chemistry, whose zeal fortunately is not measured by his official income. Out of six thousand members, five hundred have never been gathered together at one time, in one place. The prizes given during two-and-twenty annual shows on agricultural implements have very often been either mistakes when awarded to novelties, or tardy endorsements of established agricultural experience—like Lord Chesterfield's patronage of Johnson's Dictionary—when allotted to practical utilities. The prizes for live stock have readily encouraged the exhibition of animals too fat to breed, and too costly to eat—the admiration of the ignorant, and the despair of the purchasers. * * *

What it has done.—The Royal Agricultural is one of the most useful Societies in the country—a living, breathing, and eminently successful institution. For it has supplied a want—taken advantage of a tide—founded a great annual agricultural festival and fair, where profit and pleasure are combined, and the greatest amount of advertising and sale of live stock and implements—the greatest amount of eye-teaching that could be conceived—is packed into the space of about a week and five-and-twenty acres. For the week of the great show the many acres filled with whole streets of animals and agricultural machines and tools, include the advantages of a great fair and pleasures of a gigantic *conversazione*. At these shows farmers exchange with friendly greetings their opinions and their experience, while making bargains, and deliver unrehearsed, unprinted essays on every point of agricultural

interest suggested and illustrated by the objects of the show. * * * It has every year built up a great bazaar, and breeders and manufacturers, and customers of both, have crowded there to sell and buy, and learn by the education of the eye the value of the best live stock, and the best agricultural machinery. Not taught by the Council, but teaching each other, the farmers of England have realized all that was practicable in the aims of the founders of the Royal Society. In a word, they have been enabled to do a good deal for themselves; and that, in England, is the spirit of our social as well as of our political institutions. * * *

The catalogue of the live stock exhibited at the Liverpool show in 1841, fills twenty-four widely printed pages. In 1861, that of Leeds, eighty-five of very close print. But number can give but a faint idea of the improvement in average quality, in weight, in symmetry, in everything that makes live stock profitable, which has been distributed through the length and breadth of the land. In the department of implements and machinery, the change, improvement, and increase has been still more remarkable.

How its Exhibitions are located.—It has been the wholesome custom of the society to divide England into districts, and every year to pitch its camp and bring its army of improvers, living and mechanical, to some central town of each district; thus seeking to inculcate each in turn with the spirit of progress by eyesight and earsight. Every year the Council puts up its exhibition to competition by open tender. The essential requirements are—a central situation well provided with railways, a suitable site of dry or drainable grass-land for the show, special railway accommodation in sidings provided for the occasion, and a subscription towards expenses and local prizes, which has for the last seven years been never under £1200, and sometimes exceeded £3000 (\$15,000).

The competition to obtain them.—Hot is the rivalry of these occasions for the honour and glory and profit of receiving the agricultural notabilities, who bring in their train thousands of visitors, who spend their money for the benefit of the favoured citizens. To this end great peers take the chair, great merchants and manufacturers display their liberality in the local subscription list, and mayors of an agricultural town exhibit a degree of local patriotism which is not often thrown away. Deputations, headed by county and borough M.P.'s make pilgrimages to Hanover square and humbly invite the council to accept their money. The rival candidates for the favours of 1861 were Doncaster and Leeds. Doncaster urged its position in the midst of a splendid agricultural district, with its miles of railway platform, specially provided to accommodate the vast army of St. Leger visitors, with its long list of hotels and lodging, trained to accommodate multitudes by its race-course demands; and offered subscriptions far from despicable. But Leeds could combine the strength of manufactures with agriculture. The men who made the cloth as well as those who grew the wool, great landlords, great farmers, and great

manufacturers, could offer, if not luxurious hotels, such a town-hall as England cannot match, with a Mayor ready to fill it with guests—a Mayor who in the annals of the Royal Society will take rank with those shining lights of zeal and hospitality, the Mayors of Salisbury and Chester, described by an eminent implement-maker and horseman as worthy of the first prize as “the best mayors (mares) for agricultural purposes.” So Leeds won the day, and provided twenty-six acres of land for the show, about two hundred and fifty for the trials, with branch railways for the machinery from the railway to the showyard, and a fair share of private hospitality.

The picture drawn by “All the Year Round,” of the competition between different cities for the location of the Royal Society's Shows is not at all exaggerated, while the amounts subscribed by them for the purpose, are rather understated. There were at least \$25,000 expended by the Leeds Local Committee, upon last summer's exhibition. An American reader may perhaps ask, “Will it pay?” since we are in the habit of investigating the returns in money, as well as in glory, on such occasions. The Society's report shows that 145,329 people visited the Leeds Exhibition; a large majority, we cannot tell how large, must have been strangers, in comparison with the number who were citizens of the place. Now a stranger who could hope to visit an English city, even for a single day, in the time of Shows or Races, without leaving at least \$10 behind him, would be quite likely to suffer some disappointment on trying the experiment; but placing the average expenditure for each person, all around, at only half this sum, we shall find that the Exhibition must have left the city more than \$725,000 richer than it was before. Probably a million of dollars would be nearer the truth, which is certainly a pretty large return upon an investment of \$25,000. We therefore incline to the opinion that something beside mere “local patriotism” animates this “eager competition,” even in England.

Cotton for a cold climate.

A rival to the cotton of the South is receiving attention at the hands of the press. It is a new kind of cotton plant or tree which thrives in a cool climate. Mr. R. C. Kendall, of Maryland, says that he discovered it in the Andes, near the fortieth parallel of latitude, and that the ground around the tree was then covered with snow. It is perennial, and lives many years. It may be propagated either from seed or cuttings. About the third year it begins to yield a crop of bolls without seeds, which are not produced in much perfection until the seventh year. The tree grows to about the size of our peach trees, and the first one observed by Mr. K., about 18 feet in height, bore a crop which he estimated at nearly one hundred pounds. Mr. K. is confident that this tree can be cultivated wherever Indian corn can. In its general qualities the fibre of this plant has been pronounced by cotton brokers equal to the best Sea Island variety, and some bales of it have been sold in South America for 16 cents per pound. The yield is great. With favor-

able soil and situation, 2000 pounds can be raised per acre, while Mr. K. claims that half that amount can be depended upon on an average. Five hundred pounds per acre is held to be a good yield at the South.

A hint to the Royal Agricultural Society.

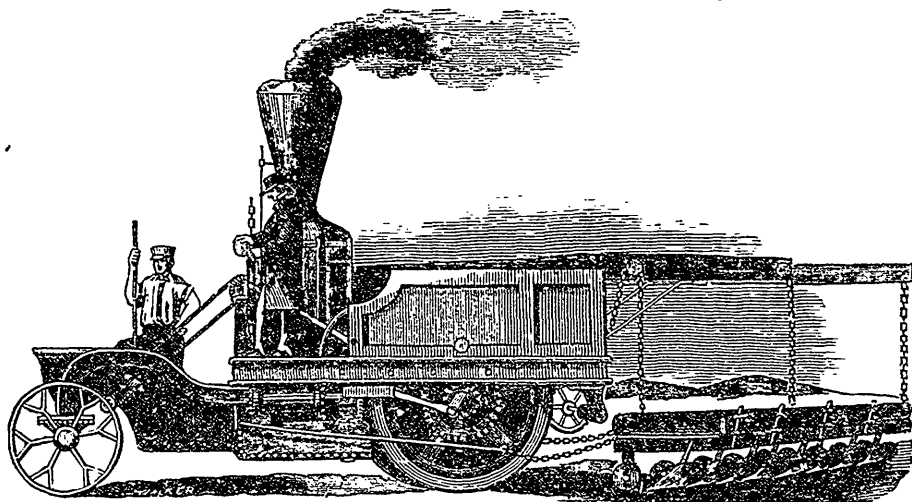
We observe that the Agricultural Society of Flemish Prussia has created a professorship to carry healthy ideas concerning agriculture into the villages. The German professor is to commence his operations by making himself acquainted not only with public functionaries, but also with practical farmers. He is to gather information on every subject in connection with farming, and with regard to the different races of animals in the various departments. This agricultural missionary is also charged by the society to get up clubs, schools, &c., &c., and to embody the results of his observations in a clear and concise manner in a daily journal.

It occurs to us that something on the same principle should be started by our Royal Agri-

cultural Society; for, it is very evident that we want some life infused not only into many of the practical farmers of this country, but also into the country gentlemen. It is true that the agricultural instructors sent out some years since by the society were in reality agricultural missionaries, and it is much to be regretted that the system was ever abandoned; for it was given up just when it was beginning to do good.

To carry healthy ideas concerning agriculture throughout every province and county, and every parish in Ireland, would, indeed, be a noble project, one worthy of the patronage of such an association as the Royal Agricultural Society, and in which the highest talent might be employed with honour; for agriculture is the sheet-anchor of this country, and healthy ideas concerning it the sure foundation of permanent prosperity.

We commend the example set by the Agricultural Society of Flemish Prussia to the serious consideration of the members of the Royal Agricultural Society, and of all who



American Steam Plough.

have the best interests of Ireland at heart. Are we, in the case of the society, to be met in making this suggestion, as in other instances, with the chilling reply—"No effects?"

Steam Plough.

We give a very good engraving of an American steam plough, well worthy of the attention of farmers interested in the improvement of labour-saving machines. The first steam-power introduced at Mr. Mecchi's farm was a great innovation in farming,—a few years distant and now steam is used on all the extensive English farms for thrashing, cutting, pumping, grinding, &c. We have not the least hesitation in saying that the general adaptation of steam to field work will be a "*fait accompli*" in just as short a time as it has required to make it available for farm work. As it can be seen by the engraving, this plough travels on the ground, closely followed by whatever implement is attached to it. This is a decided advantage on the stationary system.

CATTLE DEPARTMENT.

WORK BULLS IN THE YOKE.—Idlers are dangerous members of society, and bulls are no exception. Their vicious propensities when left unemployed, make them the most dreaded animals on the farm. But however gentle they may remain, it is no small tax to support these gentlemen of leisure among the farm stock. Why should they not be taught to bear the yoke and divide the labour with their less favoured brethren? They have probably been left generally unused for such purposes, because of the supposed difficulty of managing them; but a well-broken, well-worked bull is a different character from the pampered sultan left to his own way. If taken young, and properly treated, they need be little more difficult to manage than oxen. The writer knew a whimsical Doctor in this State, who trained a two-year old bull to draw his sulky, and he attracted great attention, galloping about the country with his singular "turn-out." The

Boston Cultivator gives the case of an imported Ayrshire bull owned by Mr. E. R. Andrew's of West Roxbury, Mass., which is broken to single harness, and worked daily in a cart. He can pull more than any horse upon the farm. He is very tractable, easily managed, and quick in his action, walking faster than the common gate of a horse. He is guided with reins attached to a ring in his nose. If judiciously kept and not over-worked at the time of special service, such work is more of a benefit than an injury, giving greater measure and hardiness to the constitution. Let these sinecurists pay their way.

BEAN MEAL FOR PIGS.—In England, on the continent, the practice prevails quite extensively, of feeding pigs and young swine on bean-meal. The beans are ground the same as corn or wheat with us. The *Mark Lane Express* says on this subject:

"A subscriber wishes us to inform him what is the best food for fattening pigs? I have myself tried nearly every description of food, and have never found anything to produce so much weight, or so fine meat, in a given time, as bean meal. Some pigs fed with food mixed with fine topings, weighed, at six months old, two hundred and eighty pounds, and the pork was allowed to be extremely tender. I last year tried to fatten hogs on grey peas alone, giving them milk to drink. The animals took on fat rapidly, but did not acquire so great weight as those fed on bean meal." The legumes are all of them excellent food for swine.

When peas and beans have got wet and mouldy, to an extent which renders them unfit for culinary purposes, they should have scalding water poured over them, and after being allowed to dry, be reduced to meal for swine. The action of the hot water will at once remove fungi or mould, and render them sufficiently sweet to ensure their being eaten by the animals.

SUBSTITUTE FOR ROOTS AND HAY.—We think in this country we have made a great advance when we substitute roots, in a measure, for hay and grain, but in Europe they are endeavouring to find some economical substitute for both. At a recent discussion of this subject before a Farmer's Club, a very successful feeder said that few farmers know the value of straw and were more care taken in the harvesting and preparing of it for cattle, it would play a much more important part in the economic feeding of stock than it does at present; any description of straw, I consider to be of little value when given in its long or natural state; it must be cut or mixed up with hay, roots, meal, &c., to make it palatable, and when so treated, goes a long way to supply any deficiencies. In describing the system of preparing food, he said:—"I will detail the plan I pursue now, and which I think, is one that enables me to keep one-third more stock than on the dry system. The corn or meal I use is ground, and then boiled; the chaff is placed in layers of about six inches in thickness, in large cisterns; upon this chaff a thin coating of pulped or cut roots is spread, and upon the roots a portion of the boiling mullage is poured, to which, after being slightly

mixed, is added more chaff, roots and mullage, until the cistern is quite full. It is then left for twenty-four hours, in which time fermentation takes place; and, with three parts of straw and one of inferior hay, one pound of linseed meal, half a bushel of roots per head per diem, I have had eighty head of store cattle all winter that have kept in good condition, thriven, and done well. With fattening cattle, the proportion of hay is greater; and I generally commence with four pounds of meal or cake, and gradually increase to eight pounds, which quantity I rarely, if ever, exceed. My mixture usually consists of one pound of linseed to four pounds of barley, lentils, or other corn meal; it boils down and makes a much better mullage. Upon one hundred and twenty acres of roots, one hundred of upland hay, eighty of pasture hay, I never had less than two hundred and fifty head of cattle all winter; eighty fat ones sold at Christmas, and I shall get rid of eighty more before this month is up; eighty store cattle, &c., and over one thousand sheep. I hesitate not to say, had it not been for the consumption of straw, I could not have kept much more than half the number. Cotton-seed cake is much used in this neighborhood. I prefer it when things are at grass, or receiving large quantities of roots. Most of the meal, I find, answers better when mixed with linseed meal than when used alone."

On the subject of *cooking food* Mr. McCulloch said, experiments he had tried demonstrated the superiority of cooked over uncooked food, as an auxiliary of roots. "By merely boiling the same quantity of bean meal (four pounds,) instead of giving it raw, an equal result is produced by 71 cwt of mangels as by 84 cwt.; and with Swedes, the cooking of the auxiliary bean meal makes a saving over the raw meal of 27 cwt. of Swedes; or, to put the value of the cooked food in another light, it appears that an ox fed on turnips alone, consumed daily one hundred and fifty pounds of Swedes, while one with four pounds of raw bean meal consumed daily one hundred and thirty pounds of Swedes and another with four pounds of bean meal cooked consumed one hundred pounds of Swedes; the four pounds of raw bean meal being an equivalent of twenty pounds of turnips; while, by merely cooking it, it became equal to fifty pounds of turnips. A simple process must recommend it; elf, by the above surprising and satisfactory results, to every feeder of live stock."

MAUCHAMP MERINO SHEEP.—In our report on Great Exhibition of 1851, was mentioned the award of a "Council Medal" to Jean Louis Graux, of France, for a fleece of Merino wool of great fineness, and of the best quality for combing, and possessing increased strength, brilliancy and oneness of fibre. We remarked, "that this new breed of sheep of Mons. Graux would prove a valuable acquisition to this country, in crossing with our Merinos and Saxons." At the late French Agricultural Exhibition at Paris, these sheep of Mons. Graux were shown and attracted much attention; and the correspondent of the *Mark Lane Express*, London, thus notices this extraordinary valuable breed of sheep.

"One of the most interesting portions of the sheep-show is that of the Mauchamp variety of Merinos, have a new kind of wool, glossy and silky, similar to Mohair. This is an instance of an entirely new breed being as it were created from a mere sport of Nature. It was originated by Mons. J. M. Graux. In the year 1828; a Merino ewe produced a peculiar ram lamb, having a different shape to the usual Merino, and possessing a long, straight and silky character of wool. In 1831, among the produce were four rams and ewe with similar fleeces; and in 1833, there were rams enough of the new sort to serve the whole flock of ewes. In each subsequent year the lambs were of two kinds; one possessing the curled elastic wool of the old merinos; only a little longer and finer: the other like the breed. At last, the skillful breeder obtained a flock combining the fine, silky fleece with a smaller head, broader flanks and more capacious chest; and several flocks being crossed with the Mauchamp variety, have produced also the Mauchamp-Merino breed. The pure Mauchamp wool is remarkable for its qualities as combing-wool, owing to the strength, as well as the length, and fineness of the fiber. It is found of great value by the manufacturers of Cashmere shawls and similar goods, being second only to the true Cashmere fleece, in the fine flexible delicacy of the fiber; and when in combination with Cashmere wool, imparting strength and consistency. The quantity of the wool has now become as great or greater than from ordinary merinos, while the quality commands for it twenty-five per cent. higher price in the French market. Surely breeders cannot watch too closely any accidental peculiarity of conformation or characteristic in their flocks or herds."

Sanford Howard, Esq., of the Boston *Cultivator*, in publishing this account of this new breed of sheep, formed by the selection of a single ram, about thirty years since, from which, by judicious crossing, this peculiar breed has become as well established as any breed in France, as stated in the foregoing extract, remarks that "a parallel case exists in our own country, in the Ancon or Otter breed of sheep, which originated towards the close of the last century from one animal, and increased to the number of thousands. These instances are sufficient, we should suppose, to lead breeders to great carefulness in the examination of their flocks—noticing any characteristics indicating a quality of wool desirable to be secured. The Mauchamp-Merino now yields as much or more wool than the Merino, and its peculiar quality secures twenty-five per cent. higher price for it in the market.—*Jour. of N. Y. State Agricultural Society.*

SORE EVILS.—CHOKED CATTLE AND ROOT CUTTERS.—We read in the best of books that in olden time there were "sore evils" under the sun, many and grievous to be named; and it would require but little argument to prove that somewhat similar articles exist at the present day. One of them, although intangible, imperceptible, and almost, indescribable, having neither form or comeliness, operates almost universally, but most onerously, upon the class that is the least able to bear it, to

publish it, or to wage war upon it. The great majority suffer unwittingly with their mouths open and their tongues loose, having all the weapons and ammunition of a successful warfare for its destruction at their command, but in their ignorance care not to use them.

In plain English, the consuming public has so often been deceived by untrue advertisements in newspapers, circulars, handbills, &c., and newspaper "puffs," that it has almost ceased to place any confidence in them, and however much individuals may need the article advertised or puffed, (whether conscious of the benefit they would derive from it or not,) they take no measures to obtain it till they accidentally come across it in operation. In the mean time they may have lost much for the want of it in convenience, time or money, health or life. Hundreds and thousands of such losses occur every year for the want of some one or more of the new discoveries or inventions of time past. But the consumers, although comprising the greatest numbers, are not the most intense sufferers; the inventor or discoverer of what the consumers greatly need may have devoted all his pecuniary resources to his discovery, and be unable to communicate a knowledge of it to the public by travelling through the length and breadth of the land, exhibiting his article to all interested; but he may be able to advertise it in the papers or by circular; and if the public would have confidence in his advertisement they may be greatly benefited, and he might receive some return for his time, patience and expenditure.

This is a "sore-evil;" and another near akin to it is that the world and the inhabitants thereof have become so corrupt that every man's word in his own interest, is current only at a discount, and in law amounts to an "estoppel."

As the cause of these sore evils is evidently dishonesty, the remedy must be honesty; let every man speak truth to his neighbor orally and on paper, and consumers will get their greatest good, while originators will receive their "just dues."

TOP-DRESSING GRASS LANDS IN AUTUMN.—Our attention was recently called to a piece of grass land upon which some interesting experiments had been made in top-dressing. The piece consisted of two or three acres, had been undrained, plowed, seeded to grass, and the whole of it in every respect treated alike with the exception of the time of top-dressing it. The same quantity and quality of manure was applied to one part as well as another, and yet the difference in the time of applying the manure made a difference of a hundred per cent. in the crop!

On one portion of the field, the dressing was applied last fall—but we did not learn whether it was before the ground had frozen or not. The manure was made very fine by frequent overhauling—and spread directly from the cart—not deposited in heaps. On the remaining portion the dressing was applied in the spring, as early as it was safe for the team to pass over the sward without cutting it up much, and where the dressing was applied in the fall,

there was double the amount of grass that there was on the spring-dressed portion!

FECUNDITY OF HENS.—It would seem a providential arrangement in behalf of man that the domestic hen should be endowed with so great fecundity. This ordinary productiveness of a single hen is astonishing. Instances are recorded of hens laying over two hundred eggs annually, while probably one hundred and twenty would be a fair average. Undoubtedly much depends on circumstances as to the productiveness of hens. Climate has a great influence in this subject, and the lodging, food and attention which is bestowed upon these animals have more or less effect in promoting their fecundity.

It is asserted by Buffon that a hen, well fed and attended, will produce upward of one hundred and fifty eggs in a year, besides two broods of chickens. We find statements recorded in our agricultural journals of several instances of extraordinary products of hens, which will enable us to form some judgment on the subject.

The editor of the Massachusetts Ploughman says from eighty-three hens seven thousand two hundred eggs were obtained, which would give to each hen eighty-four eggs for the year.

A remarkable instance of fecundity in the hen is related by a correspondent. Three pullets of the Poland breed, hatched in June, commenced laying in December following, and, from that to the next December, laid five hundred and fifty-four eggs, averaging one hundred and eighty-five to each hen.

It seems ever to have been an object of great importance in an economical point of view to secure the laying of hens during those periods of the year when, if left to themselves, they are indisposed to deposit their eggs. Odd hens cannot be depended on for eggs in winter, the very time we want them most. As pullets do not moult the first year, they commence laying at an earlier period than the old hens; and it is possible so to arrange as to have eggs throughout the winter, as well as spring and summer.

Some hens are ascertained to lay at longer intervals than others; some will lay one egg in three days; some every other day; others every day; and we have heard of one that laid two eggs in one day! The act of laying is not voluntary on the part of the hen, but is dependent upon her age, constitution and diet. If she be young, healthy, and well fed, lay she must; if she is old and half fed, she cannot. All that is left to her choice is where she should deposit her egg.

Improving pasture lands.

The subject is one, like other topics, that must be met according to circumstances. Every one knows that our bodily wants are varied by location, temperature and a thousand incidents that cannot be foreseen. So with the improvement of pasture lands, and all other agricultural operations.

Cold, wet lands may be greatly improved by thorough drainage, drainage is not the less important because we wish the land for pasturage. Much of our hill lands are too wet to

produce good, sweet feed; water grasses and rushes of all kinds are a sure omen of too much surface water; cows that run on such pastures are sure to give milk of an ordinary quality, consequently, butter produced from such milk will be inferior.

You probably wish to know what is to be done with such lands. Were I skilled in this point, I certainly could not give directions without seeing or knowing the land. There is, however, one general rule that will apply to all wet lands, where grass or grain is the product sought; that is, thorough drainage; keep the water at least eighteen inches below the surface, and my word for it, you will not be troubled with "brown shag," knot grass, or any of the rushes.

I have seen low lands greatly improved by plowing twice a year for three years in succession, without taking off a crop, but this, however, was where the land was too far from home to cart manure. I think as great improvement could have been made in less time, had there been oats, clover, millet, or some other crop plowed under whilst green.

There is another class of lands, although high and dry, yet covered with stones, brush and briars, that looks forbidding to the plowman. I have known such lands to be trebled in value in three years, by stocking heavily with sheep, which course I think highly of. There are, however, two or three objections, or obstructions in the way of this mode of improvement, in Middlesex County. One objection is the high price of fencing stuff, or the want of a breed of sheep that will not jump or ramble, which, by-the-by, I have heard are to be found in Essex County. Another is, that faithful, but almost always useless animal, the dog, whose ravages can be greatly checked by enforcing the laws of our State.

If we can remove the foregoing objections, I know of no way so easy, cheap, and withal so profitable, as to stock our rocky and bushy pastures with sheep. I believe it to be a well authenticated fact, that sheep will eat many more kinds of plants than either the horse or cow, and several varieties the sheep will utterly destroy, that horse nor cow will touch.

There are several other methods of renovating pastures, such as sowing on plaster, salt and lime, either of which are good fertilizers on certain soils.

I have, however, used salt for killing elm trees and small bunches of brush in my mowlands, with good success, never having but one elm start, and that soon died. My way is, to cut the tree so as to leave a hollow in the stump, put in from a pint to a quart of salt in each hollow, and the work is done. I will refer for a moment to that class of lands, generally known by the name of pine, or sandy plains; they are used as pastures, frequently from one-fourth to three-fourths of the time, and often more, and when used as such they may well be called worn out pastures; many of them have been made so by continuous cropping with rye, without manure. These lands may be greatly improved by the application of meadow mud, or the turning in of green crops.

Soiling cows.

In 1860 I attempted to ascertain the labour it would take on a common farm to soil, or stall-feed, a small herd of cows; but finding it difficult to separate that labor, every day, from the ordinary labor of the farm, I was obliged to content myself with noting the time occupied on a few days at different seasons, and under differing circumstances, as to the luxuriance of the feed to be cut, and so estimate the average time. I kept eight cows through the summer. In June and July, two and a half hours a day were sufficient for getting the feed to the barn, giving it out to the cows, watering them, and managing the compost heap. In August, three hours a day; and in September, owing to the partial failure of some crops sown for use at that time, it took about four hours. The crops which failed to do as well as was expected, were oats and millet. My favorite crop for the summer feed of milch cows, after several years' experience, and trying a variety, is clover. Like all other plants, this is liable to occasional failure; but if it shows well in the spring, is on good soil, and has been well manured, there is, in my experience, hardly any crop that yields so large a return for the labor bestowed. On the 9th of June, 1860, when the clover had just begun to blossom, the produce of seven and a half rods weighed 1415 pounds. This is at the rate of 30,186 pounds, or a little more than 15 tons to the acre, at the first cutting. My eight cows, (of about average size,) ate 1200 pounds of that clover in one day. An acre like this would therefore feed one cow 201 days at one cutting. I did not weigh the second cutting, but think the amount taken off, was at least, two-thirds as large as the first, or 20,000 pounds, and the third not less than 15,000 pounds; a total for the whole season of about 65,000 pounds, or 32½ tons of green fodder, of the best quality, from one acre; equal to the feed of one cow for 433 days, allowing, as above, 150 pounds a day.

To ascertain the amount of hay in this fodder, I dried 100 pounds, which then weighed but 17 pounds, showing that it contained, green, 83 per cent. of water, above what remains in what we call dry hay. So each cow ate daily equal to 25½ pounds of hay, mixed with 124½ pounds of water.

Those who have committed blunders are permitted, I believe, to caution others against falling into the same wrong courses. My faith in clover, as expressed above, was so strong at the beginning of the season just past, that, trusting in the fine promise of my fields in the early spring, I neglected to prepare for a sufficiency of other crops to keep up a convenient supply of green fodder for the whole season. The first cutting of clover was good, and the weather such, in the early part of June, as to give good promise for the future; and thinking I had an abundant supply, I cut and hayed some that was beginning to fall down about the middle of June. But immediately after there came on a spell of very warm and dry weather, that so scorched the surface of the ground as to prevent the starting of the ex-

pected second growth, or at least so checked it that there was but a very light crop, and consequently I came sadly short of feed, and was obliged to use much grass that was intended for hay, and use it, too, when it had become too ripe to serve the purpose well, the cows looking discontented when it was placed before them. The season's experience has convinced me strongly that it is unsafe to indulge a sanguine faith in a close calculation. It is best to make a liberal allowance against the uncertainties of the weather, for the surplus is always available for hay.

DOMESTIC ECONOMY.

WASHING CALICOES.—Calico clothes, before they are put in water, should have the grease spots rubbed out, as they cannot be seen when the whole of the garment is wet. They should never be washed in very hot soap suds; that which is middling warm will cleanse them quite as well, and will not extract the colours so much. Soft soap should never be used for calicoes, excepting for the various shades of yellow, which look the best washed with soft-soap, and not rinsed in fair water, and dried in the shade.

SETTING THE COLOURS.—When calicoes incline to fade, the colours can be set, by washing them in luke warm water, with beef's gall, in the proportion of a teacupfull to four or five gallons of water. Rinse them in fair water; no soap is necessary unless the clothes are very dirty. If so, wash them in luke-warm suds, after they have been first rubbed out in beef's gall water. The beef's gall can be kept several months, by squeezing out of the skin in which it is enclosed, adding salt to it, and bottled and corked tight. A little vinegar in the rinsing water of pink, red and green calicoes, is good to brighten the colours, and keep them from mixing.

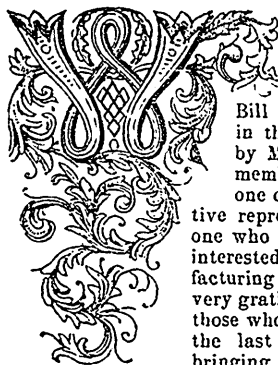
WASHING WOOLLENS.—If you do not wish to have white woollens shrink when washed, make a good suds of hard soap, and wash the flannels in it, without rubbing any soap on them; rub them out in another suds, then wring them out of it, and put in a clean tub, and turn on sufficient boiling water to cover them, and let them remain till the water is cold. A little indigo in the boiling water, makes the flannel look nicer. If you wish to have your white flannels shrink so as to have them thick, wash them in soft-soap suds, and rinse them in cold water.

WASHING SILK GOODS.—Silk garments should have the spots extracted before being washed. Use hard soap for all colours but yellow, for which soft soap is best. Put the soap into hot water, beat it till it is perfectly dissolved, then add sufficient of cold water to make it just luke warm. Put in the silks, and rub them in it till clean; take them out without wringing, and rinse them in fair luke-warm water. Rinse them in another water, and for bright yellow, crimsons and maroons, add sulphuric acid enough to the water to give it an acid taste, before rinsing the garment in it.—*Germanforten Telegraph.*

MANUFACTURING REVIEW.

JUNE.

CONTENTS.—The patent amendment bill.—Patent Bureau constituted.—Patent board constituted.—Who may obtain a Patent.—Protection for maturing inventions.—Duration of copyright.—Fees under this act.—Gallery of models.—Air power with combustion of Gas.



We have just received from Quebec a copy of the Patent Bill brought lately in the Lower House by Mr. Dunkin, the member for Brome, one of our most active representatives, and one who is most deeply interested in our manufacturing welfare. It is very gratifying indeed to those who have toiled for the last few years in bringing about the necessary amendments to the old act, to see in the present bill all the changes asked for, in order to meet the requirements of the country; and too much praise cannot be given to Mr. Dunkin for having put before the legislature of this Province, such a well matured and complete system as that proposed in his measure, and which is calculated to give at once a protection to the manufactures of all countries, and to Canada the enjoyment of all the advantages deriving from late inventions.

We have good grounds to believe that the bill will meet with general approbation in the house, and that any amendments adopted will in no ways affect its leading feature. We therefore give the following extract of the bill in answer to the numerous communications we have received on the subject, especially from the United States.

2. *Patent Bureau Constituted.*—There shall be established and attached to the Department of the President of Committees of the Executive Council, (hereinafter called the President of Council,) a Bureau, to be denominated the "Patent Bureau," the chief officer of which shall be called the Commissioner of Patents, be appointed by the Governor of this Province, and be subordinate to the said President, in like manner as the Auditor and Commissioner of Customs are subordinate to the Minister of Finance.

3. *Patent Board Constituted.*—The Governor may, by Letters Patent under the Great Seal of this Province, constitute and appoint, during pleasure, a Patent Board, which shall consist of the President of Council, the Attorneys General and Solicitor General for Upper and Lower Canada respectively, and the Commissioner of Patents, any three of whom shall constitute a quorum, which Board shall be un-

der the direction and supervision of the President of Council, who shall be Chairman thereof.

15. *Who may obtain a Patent.*—Any person or persons of any condition or country whatever, having made any new discovery, invention or improvement having for its object—

- a, A new product of industry; or,
- b, A new means of production; or,
- c, A new method of production;

not known or used by others before his or their invention or discovery thereof, and not at the time of his or their application for a patent in public use, or on view or described in any printed or written publication, or on sale with his or their knowledge, consent or allowance, as the inventor or discoverer, who shall desire to obtain an exclusive property therein, may make application, in writing, by petition to the Governor expressing such desire: Provided, however, that no patent shall be granted for preparations of food, beverages, medicines, or for any other discovery, invention or improvement, which cannot be worked reasons of public health, morals or safety, or as being contrary to the general interest of this Province, according to existing regulations: Provided also, that scientific principles, or purely scientific theorems, cannot be patented, even if the principle or theorem admit of a direct application to industrial objects: Provided, however, that Patents may be granted for every new application of such principles or theorems as lead to the creation of a new industrial product, a new means or a new method of production: Provided, further, that two or several discoveries, inventions or improvements that are different from each other may only be united into one Patent, if those discoveries, inventions or improvements relate to one and the same object, as component parts or operative means: Provided, further, that each applicant shall at the time of making such application as herein aforesaid, furnish the said Board with a solemn declaration, and with a written description and specification and drawings illustrative thereof: Provided, further, that if such applicant be an alien, or not resident in this Province, he shall be held to commence the manufacture within this Province, of the thing so patented, within one year from the date of his application for a Patent therefor: Provided, however, that the Patent Board shall have power to extend the period of such delay, if good and valid reasons be shewn therefor, on payment of the fee hereinafter provided: Provided further also, that before any such extension shall be granted as aforesaid, the Commissioner shall cause due

notice of the said application for extension of delay to manufacture, to be published, as is hereinafter provided for in cases of application for prolongation of term of Letters Patent, at least one month previous to the expiry of the delay first granted, and that such further delay shall in no case exceed the term of six months.

25. *Protection for Maturing Invention.*—Every applicant for the grant of Letters Patent of Invention, desirous of protecting his right till he shall have matured his invention, before proceeding to take out such Letters Patent, may, on payment of the fee hereafter provided, file at the Patent Bureau a provisional specification which shall contain a description of the nature of the Invention, setting forth the desing and purposes thereof, and its principal and distinguishing characteristics, and every such provisional specification shall be filed in the confidential archives of the Bureau and preserved in secrecy, and the day and hour of the delivery of every such provisional specification shall be recorded at the said Bureau and endorsed on the said provisional specification, and a certificate thereof give to such applicant; and every such application shall be duly registered in the Register provided for by Section ten of this Act, and every such protection shall be termed Provisional Protection.

73. *Duration of copyright.* In respect of the application of any such design to ornamenting any article of manufacture contained in the first second, third, fourth, sixth, eighth, eleventh or thirteenth of the classes following, the copyright shall continue for the term of seven years:

In respect of the application of any such design to ornamenting any article of manufacture contained in the fifth, seventh, ninth tenth, twelfth or fourteenth of the classes following, the copyright shall continue for the term of three years:

CLASS I. Articles of manufacture wholly or chiefly composed of metals or of mixed metals.

II. Articles of manufacture wholly or chiefly composed of wood; or the ornamenting of ivory bone, papier maché, and other solid substances not enumerated.

III. Articles of manufacture wholly or chiefly composed of glass IV. Articles of manufacture wholly or chiefly composed of earthenware. V. Paperhangings. VI. Carpe's, Floor or Oilcloths. VII. Shawls, if solely by printing or colors upon tissue or textile fab: .25

VIII. Shawls other than those in class VII.

IX. Yarn, Thread or Warp, if the design be applied by printing or other process by which colors are or may be hereafter produced. X. Woven fabrics, composed of Linen, Cotton, Wool, Silk, or Hair, or of any two or more such materials, if such design be by printing, or by any other process by which colors are or may be hereafter produced upon tissue or textile fabrics, excepting articles included in class XI.

XI. Woven fabrics, composed of Linen, Cotton, Wool, Silk or Hair, or of any two or more such materials, if such design be by printing, or by any other process by which colors are or may be hereafter produced upon tissue or textile fabrics, excepting articles included in class XI. XI. Woven fabrics; composed of

Linen, Cotton, Wool, Silk or Hair, or of any two or more such materials, if such design be by printing, or by any other process by which colors are or may be hereafter produced upon tissue or textile fabrics, such woven fabrics being or coming within the description called "furnitures," and the repeat of the design whereof shall be more than 12 x 8 inches. XII. Woven fabrics not included in any preceding class. XIII. Lace, and any article of manufacture or substance not comprised in any preceding class. XIV. Articles of manufacture having reference to some purpose of utility, so far as such design shall be for the shape or configuration of such article, and whether it be for the whole of part or the shape or configuration thereof.

103. *Fees under this Act.*

On each application for provisional protection.....	\$ 5.00
On each " " temporary " protection.....	20.00
On each complete do. for Letters Patent.....	20.00
On the issue of Letters Patent.....	10.00
On every appeal, in addition to security for costs.....	5.00
On every application for a re-issue.....	10.00
On filing each disclaimer.....	5.00
On every application to add an improvement to Letters Patent already issued.....	10.00
On every application for an extension of a Patent.....	20.00
On the issue of such extension.....	20.00
On every application to register a design or trade mark, including certificate...	5.00
On each inspection of any design or trade mark.....	50
For each certificate of registration not already provided for.....	1.00
For each certified copy of any document or extract from the Registers, per hundred words.....	7
For each copy of any drawing,—the reasonable expenses of preparing the same.	
For recording any assignment or other writing above three hundred words or under.....	1.00
For recording any assignment or other writing above three hundred words, but not exceeding one thousand words....	1.50
For recording any assignment or other writing above one thousand words.....	2.50
All of which fees shall be paid over by the person receiving the same to the Receiver General of this Province.	

64. *Galery of Models, &c.*—It shall be the duty of the Commissioner to cause to be classified and arranged, in such rooms or galleries as may be provided for that purpose, in suitable cases, when necessary for their preservation, and in such manner as shall be conducive to a beneficial and favorable display thereof, the models and specimens of compositions and fabrics, and other manufactures and works of art, patented and unpatented, which have been or shall hereafter be disposed in the said Bureau; and the said rooms and galleries shall be kept open during suitable hours for public inspection. Any further particulars will be given with pleasure by Mr. Dunkin, M. P. P. Montreal.

Air Power with Combustion of Gas.



M HIS power of a new description, has been invented in Paris, two years ago, by Mr. E. Lenoir. Here is the principle on which it acts. If in an air tight receiver, a mixture of combustible gas and air be introduced and inflamed, the gas will burn, generally with explosion, and produce a considerable elevation of temperature. The gas mixture, suddenly heated, will tend to expand, pressing with a heavy weight on the sides of the receiver.

Mr. Lenoir attempted to benefit the manufacturing community with this new expansion of the air by heat. His power has very much the same external appearance as the steam power, with the exception of the boiler and furnace, which are dispensed with. It consists of a strong cast iron cylinder, with a corresponding piston and rod attached to the axle of a fly wheel, along with the claps put in motion by excentrics. On each side of the cylinder is a clap, connecting on the one side the cylinder with the gas receiver, and on the other the receiver with the outside, allowing the issue of the air after having performed its work by expansion on the piston.

In order to illustrate the action of the whole machine let us suppose the piston ready to give a full stroke. The gas clap will be then opened, and the piston in moving will intro-

duce the gas along with the air, by opening³ made in the clap, so that air is supposed to be in the piston in alternate layers with the gas. This arrangement makes its combustion less explosive, meantime the power is increased. When the piston will have advanced one third of the stroke, the clap shuts, and through an electric spark the mixture is inflamed. The air expanding with a power equal to the high temperature thus produced, will drive the piston to a full stroke, when an outlet is procured to the expanded air, through the particular clap. The fly wheel will keep up the motion and the piston will return, introducing a fresh supply of gas and air, which will be inflamed when the third of the stroke will be performed, and so on at each extremity of the cylinder alternately. As this combustion of gas, kept on for some time, might increase the temperature of the cylinder to a high figure, a double cylinder is used as a covering to the first, leaving a certain distance between the two, so as to allow a constant run of fresh water.

These powers are now extensively used in Paris. A single horse power will give twelve hours work at \$1.50. The advantage is in the facility afforded to use the city gas, without the annoyance and expense of a particular man to drive it. By turning the gas the machine is at once ready to work, and it can be stopped with the same facility. There is no danger from either fire or explosion. One of these machines, $\frac{1}{2}$ horse power, has been imported as a model by Mr. E. H. Parent, civil engineer, Quebec, who will receive and answer all communications on the subject, with all dispatch, and due attention. 3

COMMERCIAL REVIEW.

The last steamer for Liverpool has brought a new fall in the foreign market prices, and the home buyers regulate their offers accordingly. Cold weather had lately threatened the loss of the coming crops in England and in France, and an alarm had been given. But the rise which resulted through this panic did not outlive its cause, and with renewed fine weather prices have again fallen where they now stand. The prospects of the crops here are good. Winter wheat is successful, and spring work is progressing rapidly with fa-

vourable weather. Pastures and meadows are equally good looking. Considerable shipping is going on at Montreal, and our exportation trade in breadstuffs and corn is increasing considerably through the facilities now afforded in the harbour for loading and unloading in the shortest possible time. For this we are very much indebted to the Harbour Commissioners, who are entitled to the highest praise for their untiring efforts to make Montreal one of the most important grain markets of America.

PRICES CURRENT.

GRAIN PER BUSHEL.

FOREIGN.	Wheat		Oats.	Corn		Rye.	Peas.
	60lbs	48lbs		34lbs	50lbs			56lbs	60lbs
New-York	1.25	0.75	0.44	0.70	0.85	0.00	
Chicago	0.75	0.00	0.16	0.23	0.20	0.00	
Toronto	0.90	0.05	0.30	0.40	0.00	0.42	
London	1.55	0.30	0.30	1.00	0.00	1.00	
Paris	1.90	0.70	0.69	1.00	0.88	1.40	
LOWER CANADA							
Montreal	1.00	0.48	0.27	0.44	0.60	0.61	
Quebec	0.00	0.00	0.30	0.00	0.00	0.83	
Three Rivers	1.10	0.45	0.26	0.90	0.75	0.75	
Sorel	1.10	0.50	0.26	0.75	0.00	0.70	
Ottawa	1.05	0.60	0.29	0.45	0.55	0.45	
St. Hyacinthe	1.20	0.46	0.27	0.76	0.00	0.77	
Sherbrooke	0.00	0.00	0.00	0.00	0.00	0.00	
St. Jean	1.10	0.46	0.25	0.70	0.00	0.62	

FLOUR.—Montreal Market.

Double extra	5.75	Superfine No. 2	4.45
Extra	5.40	Fine	3.75
Ranney	5.12	In bags, 112 lbs.	2.80
Superfine No. 1	4.75		

BRAN.—Different Markets.

	qtls.		qtls.
Montreal	0.70	Three Rivers	0.00
Quebec	0.80	Sorel	0.00
Ottawa	0.00	Sherbrooke	0.00
St. Hyacinthe	0.00	Iberville	0.00

BUCKWHEAT.—Different Markets.

	qtls.		qtls.
Montreal	0.55	Sorel	0.55
Quebec	0.00	St. Hyacinthe	0.55
Three Rivers	0.45	Sherbrooke	0.00
Ottawa	0.00	St. Jean	0.50

CANADIAN BEANS.—Different Markets.

	1.50	Sorel	1.10
Montreal	0.00	Ottawa	1.10
Quebec	0.00		
Three Rivers	0.00		

POTATOES.—Different Markets.

	1 1/2 m'ot	0.70	Sorel	1 1/2 m'ot	0.64
Montreal	0.34	St. Hyacinthe	0.40		
Quebec	0.61	Sherbrooke	0.00		
Trois-Rivieres	0.60	St. Jean	0.40		

GREEN CROPS SEEDS.—Different Markets.

Red Clover	per lb.	0.09
Vermont Clover	"	0.18
Dutch or White Clover	"	0.25
Timothy	40lbs. per bushel.	1.75
White Vetches	"	1.00
Black Vetches	"	1.00
Mangold's seed	"	0.25
Carrot's seed	"	0.45
Turnip seed	"	0.45

HAY AND STRAW.—Different Markets.

100 lbs. hay, straw.		100 lbs. hay, straw.			
Montreal	6.00	5.50	St. Hyacinthe	4.00	2.00
Quebec	7.00	6.00	Sorel	0.00	0.00
Three Rivers	5.00	3.00	Ottawa	6.00	4.00

MANURES.—Montreal Market.

Peruvian Guano	100 lbs.	3.30
American Guano	"	2.50
Animal black	"	1.50
Plaster	brl.	1.50

OIL-CAKES.—Montreal Market.

Linseed cake	cwt.	1.80
Linseed cake pulverised	"	2.00

MAPLE SUGAR.—Different Markets.

Quebec	lb.	0.07	Montreal	lb.	0.69
Three Rivers	"	0.07	Sorel	"	0.69

ANIMAL PRODUCTIONS.

MEATS.—Different Markets.

	Beef.		Veal.		Mutton		Pork.
	lb.	qr.	qr.	qr.	qr.	lb.	
Montreal	0.09	1.00	0.75	0.10			
Quebec	0.09	0.00	0.00	0.09			
Three Rivers	0.06	0.00	0.55	0.11			
Sorel	0.09	0.45	0.45	0.10			
Ottawa	0.10	0.00	0.00	0.10			
St. Hyacinthe	0.06	0.43	0.00	0.11			
Sherbrooke	0.00	0.00	0.00	0.10			
St. Jean	0.00	0.00	0.00	0.10			

CATTLE.—Different Markets.

	Montreal.	Quebec.	Three Rivers.	Sorel.
Oxen per 100 lbs.	6.00	0.00	5.50	7.40
Milch cows	30.00	0.00	18.00	18.00
Calves per head		0.00	0.00	0.00
Sheep	4.50	0.00	0.00	0.00
Lambs	2.75	0.00	0.00	0.00
Hogs per 100 lbs.	4.00	0.00	7.00	8.00

BUTTER.—Montreal and Quebec Markets.

Fresh butter per lb.	0.25	0.18
Salt butter	0.11 1/2	0.15

CHEESE.—Montreal and Quebec Markets.

Rafiné, per lb.	0.15	0.00
America	0.07	9.00

HIDES.—Different Markets.

Montreal, 100 lbs.	5.50	Quebec, 100 lbs.	6.00
Three Rivers "	0.00	Sorel, "	0.00

HORSES.—Montreal Market.

Saddle and hack horses	\$120.00
Farm horses	80.00
Old horses	25.00
Horses sold at auction	30.00

WOOLS.—Different Markets.

Montreal	lb.	0.25	Quebec	lb.	0.09
Three Rivers	"	0.00	Sorel	"	0.00

EGGS.—Different Markets.

Montreal	0.16	Ottawa	0.16
Quebec	0.14	Sherbrooke	0.15
Sorel	0.14	St. Hyacinthe	0.15
Three Rivers	0.15	St. Jean	0.12

FISH.—Montreal Market.

The string of 4 lbs.		The pair.	
Carps	0.12	Eels	0.25
Perch	0.20	White fish	0.25
Bass	0.20	Fike	0.25
Dores	0.38	Sturgeon	0.25

POWL.—Montreal and Quebec Markets.

The pair.		The pair.			
Ducks	0.55	0.50	Pigeons	0.17	0.00
Geese	0.85	1.00	Fowls	0.50	0.55
Turkeys	1.80	1.75	Chickens	0.00	0.00

GAME.—Montreal and Quebec Markets.

The pair.		The dozen.			
Ducks	0.30	0.00	Wild pigeons	0.75	0.00
Plover	0.29	0.00		The pair.	
Partridges	0.55	0.50	Hares	0.12	0.12

FRUIT.—Montreal Market.

The barrel.		The barrel.	
Apples fameuses	3.00	Pears common	2.00
Apples grises	6.00	Plums per bushel	4.00
Apples American	3.00	Grapes per lb.	0.80
Pears bons cretiens	12.00	Melons the piece	0.00