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THE

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THE COMING SHOW AT BRANTFORD.

We beg to call the attention of our readers to the Premium list of the twelfth Provincial Exhibition, to be held at Brantford on Tuesday, Wednesday, Thursday and Friday, Sept. 29, 30, Oct. 1 and 2d, 1857. The amount of prizes is considerably augmented this year, particularly in the departments of Horses, Cattle and Sheep. The double and treble premiums to imported animals winning first prizes, which for the two last years have proved highly beneficial, are to be continued. The magnificent prize of £50, to which the zealous and indefatigable President of the Association, Geo. Alexander, Esq., contributes a handsome sum, for the agricultural stallion which shall receive the first prize, if imported from Europe since the last exhibition at Kingston, cannot fail to stimulate the enterprise of importers; and a splendid display of Horses of that description may confidently be expected.

The attention of intending exhibitors is specially invited to the Rules and Regulations of the Show, attached to the prize-list. Entries are to be made as heretofore by filling up printed forms, which will be distributed for that purpose among Secretaries of Agricultural Societies, in the course of a few days. These forms must be filled up and sent to the Secretary of the Association in Toronto, *on or before Saturday, Sept. 12th*, after which no entries can be taken, except in the Horticulture, Ladies and Foreign classes, for which the entry books will be kept open till Monday evening, Sept. 28th, when they will be *finally closed*. This rule will be absolute, as it is decided that no articles can be entered after the above dates, as heretofore, by the payment of fees. All members, subscribing a dollar, can enter as many articles as they choose, free of charge.

The Board of Directors has decided on commencing the business of the show a day earlier than heretofore, with a view of preventing the hurry and not unfrequent confusion characteristic of the close. All articles for exhibition must be on the grounds on the *Monday*, except live stock, which must be arranged not later than *Friday noon*, at which hour members will be admitted. Before, none but exhibitors and officers can be permitted to enter, and those who are not members will have to pay,

as last year, a quarter of a dollar each admission, *from Wednesday noon to the close of the show on Friday.* Intending visitors and exhibitors will do well to bear these things in mind, and carefully examine the Regulations printed in the prize-list.

The site selected for the exhibition is on rising ground, close to the town and railway station, commanding beautiful views of the surrounding country. About twenty acres will be substantially fenced, in which two capacious cruciform buildings, sheds, cattle-pens, &c., will be erected. The contract has been taken, and preparations are in active progress. The fence, buildings, &c. are not intended to remain; all will be removed after the show.

As Brantford is surrounded on all sides by a good and extensive agricultural country, having a large number of enterprising farmers and mechanics, and being now of easy access by railway from different points, there can be no doubt that the number of visitors and articles for exhibition will be unusually large; and the Directors are making their arrangements accordingly. A very efficient Local Committee has been formed, who will do every thing in their power to render the show attractive, and promote the convenience of visitors. Great and most praiseworthy efforts have been made by the worthy President of the Association, who has travelled through several counties, giving public addresses, in which he has set forth in a masterly manner the claims and advantages of the Association. A wider and deeper interest in the objects of the Society has thereby been imparted, and even municipal bodies, out of the county in which the show is to be held, have voted money to its funds. Mr. Alexander's disinterested and patriotic exertions have a strong claim on the gratitude of all who feel a pride and interest in the advancement of this country.

IMPROVEMENTS IN TREATING FLAX, HEMP, &c.

Among the more important novelties in the march of progress which the Meeting of the Royal Agricultural Society of England at Chelmsford produced, was Burton and Pye's proposition for the manufacture of flax, hemp, and like fibrous products. In all ages of the world the cultivation and first process in the manufacture of the flax plant (*linum usitatissimum*) have engaged the special attention of the agricultural interest; and although in England much prejudice has existed as to its growth, yet of late years, owing to the rapid progress made in agricultural chemistry, that prejudice has been fast giving way, and now the last objection has all but been removed. The discovery merits special attention, as the samples of flax and cattle-food exhibited in all the stages of manufacture seem to have proved.

The proposition has a two-fold object—*first*, to obviate the objectionable process of rotting; and, *secondly*, to work up the bolls and boon or woody part of the plant into food for cattle; both divisions coming in as an adjunct to Davy's system of separating the boon from the flax by mechanical means without the old method of steeping in water.

It is thus interesting to review the different links in the chain of progress; and to comprehend the real merits of the project before us, it will be necessary to take a retrospective glance at the whole.

Of the old process of steeping in water, spreading on grass, lifting, drying, breaking and scutching, we need say little to those engaged in it, being from first to last objectionable in every sense of the word. At every stage of the process, for example, the waste of flax is incalculable, while manual labour is dirty in the extreme, subjecting the labo-

ing population to filth and slavery of the most degrading kind; while ponds, streamlets, and rivers are so polluted as not only to destroy fish, but to be unfit for being used by cattle, and while the atmosphere of the country during the period in question is pestilential to its whole population.

Among the first improvements from this state of things was that made by M. Schenk, who accelerated the process of fermentation in the separation of the flax from the boon by heated water, the water being gr .dually heated by steam in large vats, into which the flax is steeped. When removed from them, it (the flax) is dried in a "hydro-extractor," by means of centrifugal force. The hot water, however reduced the strength of the fibre, while the drying process allowed offensive gummy mater to adhere to it. To obviate these, Mr. Pownall, instead of drying the flax after fermentation, subjected it to mechanicul pressure while in a wet state, and the action of a stream of water for removing the deleterious adhesive matter. Mr. Watt followed by a still more successful process of maceration. According to it, "the flax straw is delivered at the works by the producer in a dry state, with the seed on. The seed is separated from the straw by metal rollers, and afterwards cleaned by fanners. The straw is then placed in cast-iron close chambers, with the exception of two doors, which serve for the purpose of putting in and discharging the straw. The top of these chambers serves for the purpose of a condenser. The straw is laid on a perforated false-bottom of iron, and the doors being closed, and made tight by means of screws, steam is driven in by a pipe round the chambers and between the bottoms, which penetrating the mass at first, removes certain volatile oils contained in the plant, and afterwards is condensed in the bottom of the iron tank, and descends as a continuous shower of condensed water, saturating the straw. This water is a decoction of extraction matter, to which attach the fibrous and more porous portions. This liquor is run off from time to time, the more concentrated portions being used along with the chaff of the bolls for feeding cattle and pigs. The process is shortened by using a pump, or such an arrangement as rapidly washes the mass, with the water allowed to accumulate. In about eight or twelve hours, varying with the nature of the straw, it is removed from the chambers, and having been robbed of its extraction matter, it is then passed through the rollers, for the purpose of removing the epidermes or skin of the plant, and of discharging the greater part of the water contained in the saturated straw, and while in a wet and swollen state, splitting it up longitudinally. The straw then being free from all products of decomposition, is easily dried, and in a few hours ready for scutching." The Society for the Promotion of the Growth of Flax in Ireland appointed a committee to investigate Watt's process thoroughly by experiment, and their report speaks in the most favourable terms, as the following results show:—

	Tons of Fibre.
"100 tons of straw by Schenk's process yielded	5·90
100 tons of straw by Watt's process yielded .	12·20"

But great as these results are, Mr. Davy, by the mechanical means already stated, greatly shortened the process, increasing at the same time the quantity and quality of the flax.

Lastly, we come to Burton and Pye's improvements specially under investigation.

Under this practice, the flax is harvested under what is technically termed the "Courtrai" system—*i. e.*, after being pulled, it is dried in the field, and then stacked up till the following spring, after which it can be used as required for market. When taken from the stack, the boon is separated from the flax by Davy's machine. The boon, usually considered refuse, or waste, is then ground into meal, under the first head of the invention, mixed with linseed, boiled in water, and formed into cakes similar in size and shape to oilcakes, and used in the same manner as they are, for feeding cattle. The patentees believe that ordinary millstones are the best adapted for grinding the boon into meal; and, when found serviceable, other substances than those mentioned may be mixed in the compound.

The second part of the project consists in treating the fibrous part of the flax-plant with fuller's-earth. For this purpose, the flax is subjected to the action of water impregnated or combined with this well-known bleaching substance and with steam, and then boiled in water. During this latter process, it is alternately pressed close together, and allowed to expand. The water being now drawn off, the flax is allowed to stand for a time under pressure, after which it is passed between pressing and crimping rollers, for the purpose of removing the effects of crimping. During these pressing and

crimping processes, the rollers are wiped by felts or cloths. The flax is then ready to be sent to the hackler.

Two kinds of machinery and apparatus are required for effecting these results, under the second head—the former for steeping and boiling, and the latter for pressing and crimping. Both deserve notice.

The first consists of two rectangular vessels, or vats, the one within the other, an open space between them, for the admission and removal of water and steam. The interior one has a perforated bottom, and into it the flax is placed for being operated upon by the bleaching-water and steam. Above the flax is a compressor, or, as it has technically been termed, a "follower," worked by means of screws, and the necessary machinery in framing over the inner vessel. Between the two vessels pipes for steam run along both sides and bottom of the interior one for heating the water.

From this description of the apparatus the details of the *modus operandi* may be thus stated: The flax is first put into the vessel, and the follower placed above it. Water is then poured into the empty space between the two vessels until it rises up to the follower through the perforated bottom. Steam is next turned on to heat the water, which is gradually done, raising it to 100° Fahr., at which temperature it is kept until the epidermis of the fibre separates, and as much of the colouring matter and albumen are extracted as such will effect. The water is kept at this temperature by a fresh supply mixed with fuller's earth flowing in at one side, while the dirty water is discharged at the other by the overflow-pipes, thus keeeping up a washing and bleaching process until the outer skin of the fibre comes off easily by drawing a portion of it through the fingers. When this result has been obtained, the fibres are boiled up in the liquid, The boiling is accomplished by admitting the steam to flow more freely into the lower part of the vessel. During the boiling the follower is kept alternately moving up and down, while a flow of clean water is permitted to run into the vat at the bottom, causing an overflow which carries into the waste pipe all the gummy and other matters pressed out from the fibres, so that they are not allowed to absorb the impurities again, which they would do were they allowed to remain in the vat. Fine flax fibres do not require boiling, and the temperature need not be raised higher than 180° Fahr.—applying the pressure as it rises to 150° Fahr. After the mass is sufficiently boiled and washed, the water is drawn off, the follower screwed down upon the flax, expressing therefrom the principal portion of the water remaining; and in this compressed state it (the flax) is kept for four hours or more to soften, after which it is ready for the pressing and crushing rollers.

The machinery for this second process is more simple, consisting of five pairs of rollers in a frame, with the necessary gearing to give them motion. Two of these—a pair at each end—are plain for pressing, and the other three pairs fluted for crimping. The flax is fed in to the first pair, and passing on through the second, third and fourth pairs, comes out from the fifth ready for the hackler.

Such is a very condensed review of the Messrs. Burton and Pye's proposition. The idea of working up the whole of the flax plant into food and clothing is certainly a laudable one; and we hope the project before us, which has this for its object, will meet with what it merits—a most rigid experimental investigation at the hands of flax growers.—The samples both of food and flax in every stage of their manufacture were promising in a very high degree. The quantity of fine flax, and the almost entire want of waste tow, require special notice. In point of fact, it may justly be said that the whole goes to the hackler as fine flax, the quantity of tow is so extremely small. Another consideration also deserves special notice in connexion with the manufacture, for the manufacturer has entiré control over the article, being manufactured at any stage of the process; thus ensuring, with proper attention, uniformity of quality—a result which cannot fail to be duly appreciated both in the flax market and subsequent stages of manufacture, as in the spinning and weaving. It was otherwise under the old process of fermentation and maceration, especially the former; for under it, it was hardly possible to preserve uniformity in the process of retting, fermentation being greater in one place than in another. Now every farmer who has any experience here, must be aware how largely a difference of fermentation adds to the quantity of waste tow, diminishing in a still greater degree the quantity of fine flax. Retting, grassing, and scutching are three distinctive processes, all of which are avoided by the combination of the systems of Davy, Burton, and Pye. In one respect it falls short of Mr. Watt's process, for in the latter the nutritive matter contained in the steep-water was economised for food, whereas in the former it is lost. A question, therefore, may arise as to whether Watt's process

should or should not be added to the combination, and this extractive matter drawn off by steam prior to the admission of water containing fuller's earth. In this liquid from time to time drawn off in Watt's process, the linseed could be boiled, thus making a richer cake for cattle. We throw out this suggestion not by way of finding fault, but if possible, to advance the interest of the exhibitors. The practical question at issue is probably one of expense, and they are the best qualified to answer this by having recourse to experiment.

OUR PROVINCIAL EXHIBITIONS.

In looking over the "Regulations" and "Prize List" for the "Twelfth Annual Exhibition" of the Agricultural Association, we do not see the evidence we could wish of that progressive improvement, that comprehensiveness of aim, and completeness of arrangement, which twelve years' experience ought to have achieved, and we now desire to point the attention of the zealous members of the Agricultural Board to one or two matters in which we conceive there is great room for improvement.

And, first, *we think that an effort should be made to ascertain officially and reliably, how the results exhibited at each Annual Show were obtained, and to preserve an intelligible record of the facts.* It will be admitted that if the efforts of individuals, the labour of committees, the private subscriptions, and the public grants annually expended upon these exhibitions, produce no higher result that to assure A, B, and C, that they have exhibited respectively, the best horse, bull, or pig, among some half-dozen competitors, the sooner Mr. Vankoughnet tries his hand at another amendment the better. The prize list is framed as if the Association had been organized, as if these Committees gave up their time, as if all this money were contributed chiefly to gratify the vanity of the exhibitors. We have a higher idea of the object of the Association. Emulation and zeal are no doubt excited by the offer of prizes; but the circle within which that influence operates is too contracted to warrant so great an expenditure of means. The discovery of new processes and new facts; the eduction of truth by a comparison of results; and the diffusion of the knowledge thus obtained over as wide a field as possible, were the chief objects contemplated by the founders of these institutions. Prizes are merely means to an end. In no other way could the collection, annually at one point, of all the most valuable productions of agriculture, and mechanical ingenuity, be secured at so small a cost to the public. But to what extent have these objects been realised from the eleven exhibitions already held? Where shall we find the record? Except in the memory of a few spectators, what single fact brought to light by these exhibitions has been preserved to guide the implement maker, the breeder, or the cultivator, in his future operations? The press of the day has indeed recorded that A. got a prize for wheat, B, for a bull, C. for a calf, D. for a plough, E. for a harrow, &c. The journalist has also made his passing comment. But the information conveyed by a card, marked "Class XX.—Geese, large breed," and the stupid answers of stable-boys and herdsmen, with an occasional panegyric from the owner of some extraordinary but untried invention, are not the best data for an article which the reader is expected to cut out and preserve for future reference. The "Transactions of the Board of Agriculture," though published officially, give us

no more information than the cotemporary press. The Board cannot publish what it does not obtain, and what, if not obtained in the proper way and at the proper time is lost forever. Take as an example the $100 prize for the best 25 bushels of wheat. This prize has been offered at every exhibition of the Association, except the first. It has been awarded several times in succession to one township—West Flamboro. Now, what fact in the cultivation of wheat has been ascertained and made known for the benefit of the public, through the competition excited by this prize? Is the soil of West Flamboro superior to that of other townships? If so, what are its constituents? Does sand, clay, or loam predominate? What is the subsoil? If there is nothing peculiar in the soil, what system of cultivation did the successful competitors adopt? What was the previous crop? What kind and quantity of manure, and how applied? What variety of wheat, when sown, and what quantity to the acre? These and a dozen other questions of interest to wheat-growers might be asked, but where will the answers be found? A note is apppended this year, that competitors for the $100 prize will be required to send in a written statement, embracing some of the above particulars, but it is not made a condition of the award, and will not probably be regarded as of any importance. Now, we contend that it is of the smallest possible consequence to the public whether Hobson or Dobson obtain a prize for growing the best wheat; that the agricultural interests of the country can derive no appreciable benefit from the decision; and that to record the fact, *without explanation*, or not to record it, would prove of equal utility. But explain *how* the best sample of wheat was produced, state the character of the soil, variety, quantity of seed, time of sowing, &c., &c., so that those who read may go and do likewise, and you tell us something worth recording: something to be published far and wide, and which, in a wheat-growing country like Canada, is cheaply obtained by a premium of $100.

There are many other productions of the farm in regard to which the information that could easily be obtained through these annual exhibitions, would be eagerly sought for and highly valued by the public. But, except in the case mentioned, exhibitors are not requested, much less *required*, to explain a single fact of the *modus operandi!* Is not this like playing Hamlet without the Prince of Denmark? Or is it not rather like bidding your friends to a great feast, exciting their imaginations with a view of the smoking viands, but never allowing them to approach near enough to taste?

2. *There is no attempt to promote good farming as a whole.*—Prizes are given for the best bushel of Potatoes, and the best bushel of Turnips, but the farmer who grew them, and the farm on which they were grown, may both be pointed to as examples to be shunned. That must be a poor field of potatoes from which you cannot select a bushel fit for exhibition. Indeed, four-fifths of the prizes under the present system may be carried off by men whose farms and farm management would never induce the passer-by to suspect that they had received marks of distinction from the Provincial Association. The New York State Society offers prizes for the best managed farms, and appoints a committee to inspect them. The reports oc-

cupy from 50 to 100 pages in each volume of the transactions, and form one of the most valuable features of the work. Competitors are required to give detailed accounts of their system of cultivation and farm management. Why is not a similar practice adopted by this Association?

3. *Implements and Machines are not properly tested—the awards are mere guess-work*—Take Reapers and Mowers as an example. These important machines are now made in such variety, so great is the demand for further improvements, and so fertile is inventive genius under this stimulus, that the American Patent office has been compelled to appoint an examiner whose sole duty it is to scrutinize the claims of inventors in this department. The patents already granted are counted by hundreds. Canadian manufacturers have also made improvements, and are at liberty to copy those discovered by their neighbours, The difficulty of deciding which among all these machines is the best in *practice*,—will do its work best *in the field*—is too much for any committee of jurors, unless they *see them at work*. To pronounce positively upon the merits of a Reaper or Mower that you have never seen in motion, is simply presumptuous. Your judgment will prove of little value to the exhibitor, for it will not be respected by the public. Judges have acknowledged the awkwardness of their position in being obliged to decide upon the relative merits of machines which some of them had never before seen, and that they had no opportunity of submitting to the test of practice, the only reliable basis for a premium. We have now before us a circular from a committee of the United States Agricultural Society, appointing a NATIONAL trial of Reapers, Mowers, and other Harvest Implements, to be held at Syracuse, New York, the 13th of July. That important Society has adopted as a rule "that all awards on Agricultural Implements or Machinery exhibited at any of its Fairs, shall be based upon a PRACTICAL WORKING TRIAL of the same in the field." The same rule should as far practicable, be adopted, by the Provincial Association. Awards based upon any other criterion are likely to prove unjust to individuals and to mislead the public.

It is not yet too late to arrange for a trial of the Haying and Harvesting Machines to be offered in competition in Brantford. Can we not persuade the Board or Local Committee to undertake it? We know that several of our leading manufacturers would gladly submit their machines to such a trial. And might we not be allowed to suggest as a suitable subject for discussion at one of the Evening Meetings to be held during the Fair, the following:—"How can we best improve the Annual Exhibitions of the Association, and give to its operations more system and greater permanent value?"

SIMPLE CURE FOR DYSENTERY.—The Middletown, Ct., *Republican*, publishes the following simple recipe for the cure of this most troublesome and oftentimes dangerous complaint. The recipe has been practiced in a friend's family, for many years, with uniform success, even in the most alarming stages of the complaint:—

"Take Indian corn, roasted and ground in the manner of coffee, (or coarse meal browned), and boil in a sufficient quantity of water to produce a strong liquid like coffee, and drink a tea-cup full, warm, two or three times a day. One day's practice, it is said will ordinarily effect a cure."

AMATEUR FARMERS.

It is not easy for men to originate revolutions in the particular callings to which they were brought up. The prejudices of education and the cramping influence of habit often stand in the way of their recognizing and adopting important improvements in the instruments and processes of their business; but, perhaps the fact of their dependence on the practice of any art, trade, or profession for a support in early life and a competence in later years, and the consequent wish to make it immediately and constantly remunerative, is a still greater hindrance to the introduction of doubtful or costly changes. The cautious, practical man sees his true policy lies in conducting his business after long-tried and well-approved methods; and success in the established course is not likely to create an inclination to depart from it.

But whatever reproach of timidity and conservatism justly attaches to men in the prosecution of the several pursuits to which they were bred, it is, in general, most emphatically disclaimed when they come to turn their attention wholly or in part, to some other department of effort. There is no reformer so confident, as he who has had little or no previous experience of the difficulty of removing the abuses he proposes to abolish. If, to the zeal such confidence inspires, be joined the additional advantage of pecuniary independence of results, so that the failure of one attempt does not hinder further trial, we may see the man who has habitually managed his affairs with the wisest prudence and the nicest calculation, suddenly display, in his ventures, a liberality often amounting to extravagance.

Society evidently owes a good share of the progress it is making, in both spiritual and material things, to occasional exchanges of place between labourers in the different fields of industry. The lawyer, the doctor, and the divine, are, by educational influences, and by prudential considerations, strongly committed to the particular systems to which they owe their training. But, let the most conservative member of either class—the most determined resistant of innovation in his profession, turn to the cultivation of the earth, and he is far more likely than the life-long farmer to bring to his aid the latest improvements in agriculture and to experiment with newly-announced discoveries and inventions. So, too, we observe that the man who leaves the plough or the anvil for regular or occasional attempts at religious instruction manifests more zeal to discover hidden truths and far more freedom to present to the public any new gleams of light that are revealed to him than do the mass of those who make scriptural interpretation the special labor of their lives.

Agriculture is at present recruiting largely from other branches of industry. It is becoming the common resource for profit, or pleasure, or both, of artizens, tradesmen and professional men.—Many, who do not choose to entirely abandon their old pursuits, divide their attention between them and the tillage of the soil. Merchants, mechanics and manufacturers, who have accumulated capital beyond the requirements of their business, are very generally investing in land, on a larger or smaller scale to suit their means or fancy. The so- called intellectual classes, glad to escape for a portion of the time from the drudgeries of the office, or study, into the open air, find health, freedom, and enjoyment, in cultivating a few acres, or even rods of ground. If the preacher must not speculate in his *pulpit*, he may do so on his *farm* with impunity; while the lawyer, or doctor, vexed by the forms and rules of legal or medical practice, can retire to his garden with full discretionary power to hill up his corn and potatoes or not, and experiment with fertilizers to his heart's content. It is from such as these—men who have gained wealth in other pursuits, and, for the gratification of their taste, pride, or whatever else, expend it in a generous system of farming, and others, who, on a small area of ground, resort to the more ornamental branches of the

business for relaxation from in-door labor, that progress in agriculture is receiving its strongest impulse. They mainly form the class of what we term *fancy*, or *amateur* farmers. From them, the inventor or improver of agricultural implements receives his earliest encouragements The novel hint or discovery of the agricultural chemist meets, with them, a far readier hospitality than with the long-time, professional farmer.

But if the amateur class, as pioneers of the great agricultural army, assume the trouble and peculiar risk of experiments, they do not monopolize the benefits of success, though they must bear the total loss in case of failure. The generosity with which they patronize the inventor, and apply proposed means of increasing the productive power of the earth, is equalled by the readiness with which they communicate the results of their experience; and herein they do immense service to the great body of farmers. Quietly pursuing old, time-honored methods, while an enterprising class are testing the value of new ideas—when the policy of change is fully established, the mass of cultivators stand ready to avail themselves of the advantages it offers. And as these advance with slow and wary tread to occupy the newly-conquered ground, they, through whose labours it has been won, are already engaged exploring fresh fields.—The reproach is often applied to individuals among them, that they do the cause of agriculture no good, inasmuch as the changes they introduce involve more expense than they bring profit. They who utter this charge, forget that we learn as much by the blunders as by the successes of our neighbors; and that an example of what is to be *avoided*, is many times quite as useful as a view of what is worthy to be *imitated*. And, indeed, time often proves that he who has experimented at a loss to himself is a *positive* benefactor to the community in which he lives; since he has brought important inventions and discoveries to the notice of men who were wise enough to make them *pay*.—*R. New Yorker.*

LARGE *vs.* SMALL BEANS.

I tried an experiment, last season, to satisfy myself, which are the better beans to plant, and give the result as follows:

The small beans gave nine and a half bushels from one of planting, and the large ones thirteen and three-quarters from one of planting, The land was light, as you see, by the crop, but equal in both cases. I concede that a bushel of small beans will plant as much land as three bushels of large ones, and many will conclude from this that there are four dollars saved in the item of seed. To such I would say, "don't be hasty, gentlemen." Don't you have to plant three times as many hills to get out a bushel of small, as you do of the large beans?—and then they fall four bushels short of the large ones in product. Here then is a saving in favour of the large beans of two-thirds of the labour and a gain of more than one-fourth in product from a given quantity of seed.

I plant beans north and south, if possible, rows three feet apart, and eighteen inches apart in the row, about six beans in a hill.

I planted last season three and one-half bushels of beans in my corn-field, the product of which I sold for about $100, expenses as follows:—

Planting with Wakefield's Patent Corn Planter,	$3 50
Seed,	7 00
Pulling and cutting	6 00
Thrashing and cleaning,	7 50
Total expense,	$24 00

You will perceive there is no item in the expenses for hoeing. The reason of this is, I plant the beans within four or five inches of the hill of corn, and they are both hoed at the same time, without extra labour.

I plant the beans the south side of the corn; pull them and hang them on the corn hills, and let them remain until the corn is ready to cut up. They are then thrown down into heaps, the corn cut and set up; at which time I can drive the team and get them, as I do hay, in tumbles.

GENESEE FARMER.

CLIMATES OF THE THREE TERRITORIES.

BY LIEUT. MAURY.

Before Humbolt suggested his isothermal lines, or Dové drew them on maps of the world, it was generally supposed that the climate of any place or country might be told by its latitude. Led by this idea, Mr. Jefferson urged that, as the olive grows in Italy and in Spain, we had only to project across the Atlantic the parallels of latitude between which it grows in Europe, to ascertain in what parts of America it would grow equally as well. The part of the country included between the olive-growing parallels of Europe would, it was supposed, be found to comprise the olive regions of the United States. Experiment and trial, however, did not sustain this view of the case.—The olive would not flourish under the latitude here under which it delights there.

As science advanced, philosophers had recourse to the records of the thermometer in different countries. They found places differing very much in latitude, yet having the same mean annual temperature, and when they came to draw a line round about the world, so as to pass through every place having a mean annual temperature of 70°, or 60°, or 50°, or any other degree, they found that every one of such lines was zig-zag, both on maps and the globe, that the isotherms run more smoothly over the water than they do on the land, and that they do not by any means describe parallels of latitude.

Thus, for illustration, let us take the *isotherm* of 36°—as such lines of yearly mean temperature are called—instead of running with the parallel of 45°, or 50°, or even 65°, it runs up in some parts of the world as high as Lat. 68°, and in others we can get with it no further from the Equator than Lat. 45°. This isothermal line goes up to Iceland, where the longest day is without a night, and it comes down in Canada, near Quebec, on the parallel of 45°, where day and night alternate as they do in Minnesota and Nebraska. Yet, notwithstanding the mean annual temperature of Quebec and Iceland may be the same *according to the thermometer*, one may well imagine that the productions of the soil for the two places are very different.

In Iceland the summer is cool and the winter mild; in Canada the winters are severe and the summers hot. The climate of Canada is continental—of Iceland it is insular. Iceland is in the midst of the sea; it is surrounded by waters which have been warmed by the rays of an intertropical sun and brought by the Gulf Stream from the "*Tierra Caliante*" of Central America to dispense summer heat and moisture to the regions of the far north. In the Orkneys, which are not far from Iceland, the winters are rarely cold enough to make ice. Still the mean annual temperature there is the same as that of Minnesota.

If the mean temperature of the two places be the same, and the thermometer at the islands is never below the freezing point in winter, it cannot be greatly above it in summer; and we may infer as a consequence that the sun has not power sufficient to ripen fruits and grains in the Orkneys which the warm summer of Minnesota and other inland districts brings to great perfection.—So far, therefore, as the husbandman is concerned, a knowledge of the crops that are grown in the Orkneys or Iceland would give him no just idea as to the seeds or plants that would grow best and yield most in Canada or Minnesota.

Under glass, and with furnaces, climates are created at pleasure, and physical researches have taught us that the sea water and its currents are grand modifiers of climates—that, in the natural way, they perform offices towards the modification of climates similar to those performed by glass and fire in the artificial way. These researches have revealed to us the processes by which the Gulf Stream softens the climates of Iceland and the Orkneys—how the heat of summer is not so great, nor the cold of winter so intense there as it has it in Canada and Minnesota, although the average daily readings of the thermometer for the year may be the same. Going a step further in this chain of reasoning and deduction, the intelligent farmer need not be told that while the sun in Iceland is not warm enough to mature many fruits that do well in Canada, the winter of the latter will destroy many kinds which never suffer from cold in Iceland.

Again, climate depends more upon elevation above the sea level than it does upon distance from the Equator—for the top of Chimborazo, though close to the line, is covered by its cap of perpetual snow. The length of the night, the intensity of the light, as well as of the heat of the day, the average proportion of clear and cloudy sky, are all functions in the climatic conditions of countries as adapted to this or that vegetable growth. Not only these; for before the farmer can arive at any safe conclusion concerning the kinds of crops which may be cultivated with most advantage in a new country, he must also know something of its seasons of drouth, with the times and quantity of rain. We have more rain here than in England, yet the climate of England is damp and this dry. Many kinds of vegetables depend quite as much for healthful and vigorous development upon the amount of moisture that their leaves suck up from the air as upon the amount which their roots derive from the soil.

Therefore, in order to determine what plants and vegetables the imigrant to Kansas, Nebraska, or Minnesota should carry with him, we should refer to some old country where the climate may be found repeated, if possible,—not only in quantity of sunshine, length of summer and winter, distance from the Equator, height above the sea, and the range of the thermometer, but also as to dew-point, and precipitation, clear-sky, and cloudy weather. To find such a country we must go far away from sea-board; with this condition annexed we are brought to the conclusion that we may look for another such nowhere but in Asia.—First, it must be between the isotherms of 44° and 36°. It is between these isotherms that that great and remarkable "divide" is found which encircles the earth, and which, in Europe, Asia and America, separates the waters which flow north into the frozen ocean, from those which flow south into the summer seas. This "divide" passes through Minnesota, where the Red River of the north, and the Mississippi, with other southern streams, have their sources. It also passes through Russia, where the Volga and Oural, on the one hand, drain southwardly, and the Obey northwardly, on the other.

At these two places in this "divide" the annual mean temperature is nearly the same —the distance from the sea westwardly is about the same,—the length of the days and the seasons, the intensity of summer heat and winter cold are the same,—the height above the sea is also about the same, and each also is in the province of summer rains. It was here in the old world, between these two isotherms in the valley of the Volga, that Humbolt found the most delicious fruits that he ever met with in all his travels, and the air so pure that you might expose to its influence the most highly polished steel for many days without having its sheen dimmed in the least.

These three Territories of America have as far as observations—meagre it is true—enable us to judge, nearly just such climates as that renowned traveller found about the Caspian Sea. Some of the climates of Kansas—for in these Territories there are many climates—are adapted to the most luscious grapes, peaches, olives and figs. The apple and the pear, the apricot and cherry, the melon and plum may be raised in this Territory; but in some much better of course than in others.

As we proceed north through Nebraska into Minnesota, the climate, particularly between the meridians of 95° and 100°, becomes more and more severe; and of course with the severity of the climate the above quoted list of fruits rapidly fall off. Travellers in approaching the base of the Rocky Mountains through Kansas and Nebraska often recognize the same lizards and other reptiles that are found in Northern Texas and New Mexico, indicating a remarkable mildness of climate.

Texas, California and Kansas will be the rival grape States of the Confederacy. In some parts of Nebraska the vine and the peach, apple, pear and apricot, if not the fig also may do well. Corn, wheat, oats, rye, barley and potatoes, and esculents generally, will produce finely. Let the Kansas emigrant, by all means, carry the peach and the vine with him. In Minnesota, however, the out-door cultivation of either will be followed by labour lost.

MURRAIN IN LOWER CANADA.—The *Quebec Mercury* says that an alarming disease prevails among the cattle in the parishes of La Beauce, on the south side of the St. Lawrence the origin of which cannot be traced. Upwards of fifteen hundred animals, chiefly cows, have perished.

HAY-MAKING.

Although we have this season been favoured with but very little of the weather which experience informs us is necessary for hay-making, still as there is and will be an immense amount of material therefor, awaiting but the brightness and warmth of the "King of Day," to fill to overflowing the barns and stock-yards of the farmers, we purpose to jog the minds of our rural friends upon the importance of holding themselves in readiness to fully perform their duties when the opportunity presents itself.

The period at which grass should be cut in order to best meet the wants of stock is a matter of much consequence, and one which has received a large share of attention both from the agricultural Press and those who swing the scythe. It has been definitely settled that the great object to be sought is the preservation of hay in a condition most nearly resembling the grass in a perfect state. In order to accomplish this end, grass should be cut when it contains the greatest amount of gluten sugar and such other matters as are soluble in water. When the plant has formed its seed, this stage has passed, and woody fibre predominates,—this being insoluble, cannot assimilate itself to the requirements of the animal stomach. When grass is in full growth, but before the seed has formed, it contains the greatest amount of saccharine matter; this speedily diminishes as it ripens, which, together with the decay of the leaves, causes a loss in its nutritive properties. Quite a number of grasses are exceptions to this rule—some containing the most nutriment when fully ripe—but as a general principle, for the benefit of both hay and the land upon which it is grown, we would advise the cutting at full flower.

When the elements and the grass are both in a condition favourable for the commencement of operations, it will not answer for any dallying on the part of the farmer. The proverb, "make hay while the sun shines," conveys to the mind the necessity of being in readiness, of having all the material requisite to the successful completion of labor "on hand" when its assistance shall be needed. See that your implements are in perfect condition, and, when you should be in the field, there will be no such idle excuse for non-appearance, or such perplexing detention, as will arise when there are rakes to mend, or scythes or mowing machines to put in order.

A frequent, and we might add, universal complaint among farmers during "haying and harvesting," is the scarcity of labourers, and the exorbitant prices demanded by them "for services rendered." This should not be—it is not of necessity. If the selection of such help as will be wanted is put off until the last moment, those who thus delay will be compelled to grant whatever price may be asked, and, in addition, put up with such assistance as can be obtained, no matter whether it be "good, bad or indifferent." By a little foresight and calculation, those needing "extra hands" can tell almost precisely when the will require them,—for what length of time—and should make their arrangements accordingly.

The process of curing should, if possible, be perfected in the cock. Hay thus made retains more of the colour and juices of the grass than when thinly spread over the field exposed to the rays of the burning sun. It should, if spread, be gathered into windrows or "foot-cocks" at night—dew falling upon it when thus scattered, results in more or less injury. The chief point after cutting is to preserve it from dew and rain, as these soon wash away the soluble salts, and its keeping qualities are thereby seriously affected, for hay thus deteriorated ferments very readily when stacked. If the weather is unfavourable the less hay is shook about the better. It will preserve its nutritive properties for a considerable period of time if left undisturbed, but when submitted to repeated dryings and wettings, it is soon utterly ruined.

Each season of hay-making as it passes away, furnishes new proofs of the utility of hay-caps, and he who, for the purpose of saving (?) a few shillings, or even dollars, refuses to provide against emergencies that may arise, is fully endorsing the policy known as "penny wise and pound foolish." The hay crop is one of the most important that farmers can raise, and every means should be taken not only to secure it in the best condition, but to add to its bulk. Thousands of acres in grass do not yield a tithe of what they ought, and what a little attention on the part of growers might make them produce. This crop keeps starvation from the barns and cattle yards, and such exertions should be put forth as shall prevent waste either by unpropitious weather, or the carelessness of those engaged in making and gathering.—*Rural N. Yorker.*

NATURAL ENEMIES OF INSECTS.

The depredations of insects on the crops of the farmer, constitute a draw-back to his profits of no trifling amount. To check the ravages of the locust (grasshopper), the Hessian fly, the wheat midge, the caterpillar, the canker-worm, the wire-worm, and various other tribes, is an object of constant study. But while artificial means receive so much attention, the natural means are not sufficiently observed. The rapacity of animals—the instinct which prompts one race to prey on another—was doubtless designed by the Creator as a means of preserving a proper balance throughout animated nature. Man, made "ruler over the beasts of the field and the fowls of the air," disturbs this balance, and in some instances, through ignorance, disturbs it to his own injury. In following the motive of self-gratification by taking animal life, he does not always sufficiently understand the characteristics of the different species, to

"Distinguish which to slaughter, which to spare."

Hence the study of those simple branches of natural history which comprehend the animal races deserve the special attention of the farmer. A knowledge of the habits of various quadrupeds, birds, and insects, would in many cases enable the agriculturist or horticulturist to promote his interest, either by their destruction or preservation.

In regard to birds, there is much diversity of opinion concerning the merits or demerits of some species, as affecting the interest of the farmer and gardener, which should be the fundamental rule of judgment in reference to all animals. We are inclined to think that some of the morbid sympathies which have of late arisen in respect to specimens of the higher order of animals, whose conduct is injurious to the general welfare, has extended itself, somewhat, to other bipeds, and may have caused the observance of an undue lenity towards evil doers who possess the captivating traits of a sweet voice and handsome external appearance. Besides, people are inclined to hasty generalisation; it being known that some species of birds are great insect-destroyers, it is inferred that others are so whose habits are not known. We offer a few remarks in regard to some species.

The crow (*Corvus americanus*) is claimed by some persons as the special friend of man—at least, it is argued that he, on the whole, benefits the farmer more than he injures him. It is evident that this is a subject on which considerable freedom of opinion must be allowed. If some crow would leave us an autobiography, comprising a faithful journal in regard to his conduct for every day of his life, we could sum up the account as a basis for the character we should give him. But at present we can only "reason from what we know." His defenders admit that he pulls up corn, but they say he more than pays for this in destroying grubs and grasshoppers. But the offence of pulling up corn is not by any means his only one. He is a terrible enemy of small birds, destroying both their eggs and young in great numbers. He is rather indiscriminate in this predaceous warfare, and many of the species he attacks are feeders on insects to a much greater extent than himself. Many persons may have noticed the consternation into which all the small birds are thrown by the presence of the sable monster. They try to allure or drive him from their nests, and the king-bird and some kinds of blackbird have courage and art sufficient to protect their charge, and even make their powerful enemy "suffer some," but the defenceless sparrows and finches yield an easy prey. His appetite for eggs is so strong that he will rob the nests of turkeys when they occur in retired places, watching by the hour for the turkey to leave the nest that he may be unmolested in his luxurious meal. It makes no difference what stage of incubation the eggs are in—a fresh egg or an embryo chick are devoured with the same relish.

It is true the crow does eat insects, sometimes, but he prefers taking his animal food in the shape we have mentioned, or as a last resort, in the shape of young frogs, which are themselves insect-feeders. On the whole we believe it is as justifiable to kill crows, as to kill wolves or foxes.

Another bird whose character has in some instances been rather too favorably viewed, is the American robin (*Turdus migratorious*). His friends claim that he is a sweet singer, tolerably good-looking, and a destroyer of pernicious insects. We have no rule

for estimating the former qualities—there would be no objection to every man fixing his own standard for them, provided the birds wanted for his own entertainment were kept wholly on his own premises. As to destroying insects—the robin eats worms, but they are mostly the angle-worm (*lumbricus*) which does no injury, but in some cases is beneficial to vegetation. But the bird is especially a *fruit-eater*, while he does little or nothing towards the production of his favorite food. Ask the fruit-cultivator who makes his living in part by the sale of May Dukes, Black Eagles, &c., how much the robin aids him in his business? Ask him if he can afford to take the dandy's love-songs, piped ever so sweetly, for the loss of the earliest strawberries, cherries and finest pears, on the sale of which he depended, perhaps, to procure food and clothing for his wife and children? One of the most distinguished horticulturists of this vicinity (we might say of the country), after learning the habits of the robin "like a book," has adopted the plan of shooting every one that alights on his grounds. We believe he is right.

The cedar-bird, or cherry-bird (*Bombycilla carolinensis*), is a devourer of some insects not usually eaten by birds—such as the canker-worm and caterpillar. Where the former abounds, it forms almost the whole food of the birds till currants and cherries begin to ripen. By this time the canker-worms have gone into the ground to pass through their final transformations, and the birds take to fruit. They are pretty *hard* on the earliest cherries, but after wild raspberries and whortleberries come in, occasion but little annoyance. We are inclined to think this is a useful bird, in some neighbourhoods, though we would not allow him to steal the "first fruits of the cherry-orchard."

The cuckoo (*Coccyzus americanus*) feeds on the common tent caterpillar. It destroys great numbers of these worms, not only gorging itself with them, but killing more than it can eat, and tearing their tents to pieces. As an offset to this, however, it eats the eggs of other birds, so that its claim to usefulness is doubtful.

The swallow family (*Hirundo*) are feeders on winged insects. They are among the most useful birds to the farmer. They do no damage to any crop, and they destroy many flies and moths which are either annoying to man or domestic animals in their present form, they are the parents of larvæ which would be injurious.

The yellow-bird (*Carduelis tristis*) is a very useful bird, and one that has been most cruelly misjudged. Since the prevalence of the wheat midge (miscalled weevil), the erroneous idea has been entertained that the yellow-bird fed on wheat. It was seen to alight on the heads of standing grain, turn down the chaff with its beak, and, apparently, peck at the grains. This was enough, in the eye of a cursory observer, to prove that he was a pilferer of wheat, and deserved death. Dr. Fitch, so far as we know, was the first to point out this mistake, and to show that the food which the yellow-bird sought in the wheat-head, was the *larvæ of the midge*, and not grain. He found that the bird, with wonderful sagacity meddled only with the heads containing the insect, in which the grain was generally so shrunken as to be of little value. We see it stated in a late paper, that a farmer near Binghampton, N. Y., in order to convince his neighbours of their error in killing the yellow-bird, opened the crop of one, and found in it more than *two hundred* of the midge larvæ, with only four grains of wheat, into which it was said the insects had "burrowed." But as the insect does not "burrow," it is simply probable that the poor grains were swallowed accidentally in consequence of the larvæ being in contact with them. We shall continue this subject in a future number.

Don't Overtask the Young Brain.—The minds of children ought to be little if at all tasked till the brain's developement is nearly completed, or until the age of six or seven years. And will those years be wasted? or will the future man be more likely to be deficient in mental power and capability, than one who is differently treated? Those years will not be wasted. The great book of nature is open to the infant and the child's prying investigation; and from Nature's page may be learned more useful information, than is contained in all the children's books that have ever been published. But even supposing these years to have been absolutely lost, which is anything but the case, will the child be eventually a loser thereby? We contend with our author, that he will not. Task the mind during the earlier years, and you not only expose the child to a greater risk of a disordered brain—not only, it may be, lay the foundation for a morbid excitability of brain, that may one day end in insanity—but you debilitate the bodily powers, and by so doing, to all intents and purpose, the mind will eventually be a loser in its powers and capabilities.—Dr. Robertson.

RUTA BAGA, AND MILK-TASTING "TURNIPY."

Useful to all, you may be more especially so to the new comer. What is Ruta Baga? The Michigan *Farmer* recommends Ruta Bagas, or Swedish Turnips, introducing them as if they were the same. The Rochester, N. Y., Seed Lists specify the Prices of "Ruta Baga" seed, and also of "Skirring's" Swede. Skirring is evidently a mistake for "Skirving," the Liverpool seedsman, who has introduced for years past the best Swede Turnip grown. No other species can excel it—especially as a keeping root. Other species may be larger in bulk, milder in flavour, and brighter in colour; but none will be found equal in the qualities so essential to this climate: it will freeze without rotting in case of partial thaw, and, properly housed, they are as good in May as others are in February. They will give a taste to the butter; but this is lessened in three ways,—By milking after the cows have been fed, but before the cud has been chewn, and then giving them hay; and milking in the morning as before, that is, before the morning turnip meal can have been digested. By letting the cows have access to plenty of salt, and mixing a little with their water. By "scalding" the milk, as it is called, on the Devonshire plan—that is, putting the milk pan on one of your stoves, at a moderate heat, for about 45 minutes. The milk and cream will be separated. The milk pan is allowed to cool, and the cream taken off. Butter is made with half the churning, and all the nauseous taste, if any, is left in the milk, and not in the cream.

NOVICE.

SALVING SHEEP.—It is customary among the best wool growers of Europe, and with some in America, to smear their sheep after being sheared, with some sort of ointment The object of this to kill any ticks that may be upon them, to heal any accidental cuts that may be made while shearing, and to ward off the attacks of flies. Several receipts are given by English authors for this purpose. One of them is:—1 lb. of arsenic, 12 lbs. of butter, 3 lbs. of bar-soap, 2 bottles of fish-oil.

No doubt this would kill the insects, but we object to the use of arsenic. We wouldn't have it about anywhere on the farm.

Another, more simple, much safer, and we doubt not full as efficacious, is this,—equal parts of fish-oil and tallow, a little tar may be added, sufficient to give a tarry odor to it which will be offensive to flies. This preparation is also recommended to be used in winter, to aid in warding off the effects of the weather, but if the sheep have a chance to run under sheds and keep dry, there is not great need of it.

One writer, who recommends highly the oil, tallow, and tar salve, says it may be applied when thick, by being taken up by the thumb and finger, and spread along the back, and worked amongst the wool, and when thin, the palm of the hand, in a hollow shape, is used for lifting and pouring it on and working it in.

We have no doubt some application of this kind would be of great benefit to the sheep in fly time.

AMALGAMATION OF POTATOES.—What say our potatoe philosophers to the amalgamation of potatoes by planting two or more varieties in one hill?

What say our chicken philosophers to the amalgamation of chickens by hatching the eggs of two or more varieties in the same nest? They will probably say, all the amalgamation which takes place through the shell of the eggs, is not likely to improve the breeds very much. And though we may be considered dull, we certainly cannot comprehend by what law of nature any amalgamation can take place, except through the sexual organs of the plant found in the flower, and affecting only the seed in the ball on the top of the vine, and so the tubers produced from that seed. If true philosophy can teach any other we will be happy to learn.—*Farm Journal.*

POTASH.

July is not the month, it will be said, to write about Potash; but in some points of view it is. July is the month when every noxious weed, from the thistle to the fern, will be in full vigour. Go round the snake fences, and whatever may be the promise of the crop, the condition of the weeds is from the wet weather, most unmistakeable. If these are left to seed themselves, the condition of every farm will be fouler than ever. All these weeds are valuable for their ashes, or rather for their Potash, or the alkaline salts with which they abound. Cut down before they have blossomed, not only is the mischief for next year prevented, but all the valuable salts in the plant are preserved. And if the stalks are burnt, a heap of valuable manure is at once secured, which, used as a top-dressing for the young turnip or mangold crop, will be found very efficacious; or preserved in the dry for future use, or added to the potash heap. Cut down after the weeds have blossomed, and when the plants have seeded, not only are the alkaline salts they contain almost entirely lost, but the mischief for next year has been sown. Very slight is the labour and time requisite for this purpose. Any showery afternoon may be employed, and children and boys can gather into heaps, and the fire be put to the heaps, so soon as they are dry enough to smoulder and burn. According to Dr. Ure, the great English authority, the Canadian Thistle, when cut in full growth, contains in every 1000 parts 35·37 of Potash,—when cut after or during seeding it contains scarcely any. The Fern, the large Rush, and common Nettle, all contain a far larger proportion of Potash than does even the Maple. The value of wood ashes, or rather the ashes of vegetable substances, as manure, depends entirely upon the quantity of alkaline salts they contain, just as their commercial value for the Potash manufacturer depends entirely upon the lye (*lixivium*) containing Potash. Herbaceous plants contain more than grain bearing plants,—the Vetch or Tare, more than Rye or Wheat. Potato stalks abound in Potash, and a thousand other stalks which are wasted; so that the Farmer has at his own door, wasting on every side, the very substances which he requires as a stimulant for his young Root crops. The division of hard wood ashes and soft wood is not, according to the same authority, to be entirely depended upon. The Pine contains less Potash than any tree; and the Sugar Maple, especially when cut without being tapped for the sugar, and burnt at once, contains more than any. But the Beech, which is classed as hard wood, contains less; and the Elm, which is rejected as hard wood fuel, contains almost as much as the Maple. As a rule, the more succulent the herb, plant, or tree, the more alkaline salts does it afford. A cask of the best Pink Canadian Potash, as imported at Liverpool in 5 cwt. casks, is found to contain pretty uniformly 60 per cent. of absolute Potassa; and the best Pearl-ashes to contain 50 per cent. It is very questionable whether the Canadian farmer does not lose by the exchange when he gives his bushel of wood ashes for a little hard soap. There is scarcely a crop grown but would be thankful for this valuable manure, which climate compels him to manufacture, and of which Nature has given him so bountiful a supply.

BOYDELL'S TRACTION ENGINE AND ENDLESS RAILWAY.

[*From the Mark Lane Express.*]

On Wednesday last we left the "busy hum" of the city, to resort to where the ploughman has been wont to "plod his weary way." In plain terms, we joined the company who went to Wimbish Hall Farm, to witness the trial of a machine, that beyond a doubt is one of those inventions destined to supersede, to a certain extent, the most ancient implement of husbandry—the dexterous management of which has hitherto constituted the proudest achievement of the agricultural labourer and the glory of the farmer. Notwithstanding the claims that prescription confers upon this old and favorite servant, simplified and perfected as it has been by science, and beautified by artistic skill, its condemnation as a cultivator solely dependent for its application upon animal power, is sufficiently insured to render its decline but a question of time. Ere long it must be allied with, or superseded by, the monster energy of steam in place of horse power,

Wimbish Hall is situated at the distance of four miles from Saffron Walden in Essex. The farm on which the trial of the Traction Engine took place, has recently changed hands, being now tenanted by a young farmer of the name of Woodham. The soil consists of a strong—very strong clay, common to the district, but having a subsoil of a mixture of clay, sand, and marl. The tract of land evidently over-lies the chalk basin, the outcrop of which is seen on the east side of Walden, where the bed of that mineral is of indefinite thickness, but exhibiting at the Walden Lime-works a perpendicular face of 25 or 30 feet. The field on which we found the machine at work, was perhaps as unfavourable a one, for the success of the trial, as could have been selected in the whole kingdom. With a soil naturally heavy, adhesive, and intractable, it had, as a matter of course, been latterly neglected by the out-going tenant; and, being under a dead untilled fallow, was sufficiently hard-baked by the sun, wind, and rain, alternately, to make it difficult enough to manage under any circumstances, but particularly so with a new machine, handled by men unaccustomed to its peculiarities. Added to these disadvantages, was the arrangement, by which the land was to be ploughed *athwart* the old ridges, which greatly increased the difficulty of working the ploughs. It was remarked to us by several old farmers, that "if they worked well on that land, they would do so any where."

There were only three ploughs at work when we reached the field. On the first day, (Tuesday) there were, as we understood, six, or rather three double ploughs; but it was evident these were not adapted, in point of strength, to the stubborn character of the soil, for all of them were broken or strained. Those subsequently used were the common ploughs of the farm, The machine was travelling at the rate of about three miles per hour, or probably two and three-quarters miles, exclusive of stoppages. Its motion was steady and direct; and it appeared to be under as complete control, in regard to stopping and backing, *to an inch*, as a horse; the ploughs performing their part with perfect efficiency, if not with ease to the men who held them, and who had evidently no sinecure berth of it. The furrows turned were fully a foot in width, and four, six, eight, and even ten inches in depth, accordingly as the managing engineer wished to test the capability of the machine. We particularly observed that the furrows, instead of being turned over in one continuous, unbroken surface, which, in the common ploughing of such land, renders the harrow useless until the soil has been mellowed by the atmosphere, were, by the quick action of the ploughs, broken up and separated, so as to expose the whole body of earth to the action of the air. We have no doubt that, if necessary, the harrows might have been efficiently employed the next day; for, on pressing the soil with the foot, it at once crumbled into pieces. We mention this as of particular importance on so adhesive a soil as the one on which the trial took place. In conversation with several of the farmers of the district, they one and all expressed their approval of the manner in which the ploughs performed their work. Some of the older ones feared the ploughing "was too deep," admitting, however, at the same time, that where the land-drains had been dug, (which, of course, were much deeper), they would expect the best crops, either of corn or roots. A delay of three hours took place, in consequence of the breaking of a piston belonging to the pump. This, however, was neatly repaired by a smith in the village; and the machine got to work again about four o'clock. Mr. Hemmings, the Secretary of

the Company who have purchased the patent, has promised us a statement of the result, in regard to the quantity of work performed per day, and the expense, which we hope to have ready for our next publication.

Having thus given our opinion of the work performed, in which respect we consider the trial to have been successful, we have the less pleasing, but no less necessary task of stating what, according to our views, are the most apparent defects of the machine. These are chiefly confined to the mode of traction, which, as applied when we saw it, appeared irregular and confused, rendering the ploughs very liable to be thrown out of their work. It struck us that this was chiefly owing to the distance between the tractive power and the plough; or, in other words, the length of the traction-chain, which increases both the difficulty of holding the plough, and the irregularity of its movement. In common ploughing with horses, it is considered that the nearer the plough is to the motive power, the steadier and more regularly it works; on the principle that the segment of a small circle is under more complete control than that of a large one, the gyrations of which, too, are wider when a disturbance takes place.

Another inconvenience, arising we apprehend from the same cause, is the great strain upon the men holding the ploughs. This, on such a soil as that of Wimbish Hall Farm, must very soon exhaust their strength. And besides, the chains approaching so near each other are liable to get entangled, whilst the men find it very difficult to keep clear of them and avoid an accident. They certatnly ought to have nothing to think of but the work before them, which, with a machine of such power, requires undivided attention; and this cannot be given with the chains in such close proximity to the legs of the ploughmen as was the case on Wednesday. Possibly this objection may be in some respect modified with the double ploughs, which allow more space between each chain. But the former objection holds equally good with them as with the single plough, being at the same time, of double the importance in regard to delay.

The Endless Railway, unsightly though it be, performed its task with perfect efficiency, and conveyed the eight or ten tons' weight over the land, without any material indentation to mark its pressure. The steam-engine was of ten-horse power; but with a pressure of 70lbs. is equal to thirteen horse. This allowed four and one-third horse power to each plough; though it was the opinion of some of the farmers, that it would have required five or six horses to have drawn a furrow of the same width and depth on the same land. The engine consumes about 10 cwt. of coals per day, when at full work; and the engineer calculated that it would turn over eight acres of such land as that of Wimbish Hall Farm, in the same time.

On the whole, we consider the trial to have been a perfectly successful one, and that it demonstrates to a certainty, the applicability of steam, as a motive power, to the cultivation of the land. Boydell's machine had already been tried with success at Chelmsford, Thetford, and other places, upon soil both of a kinder and lighter texture, and that had also been previously under proper cultivation. At Thetford, as we understand, with six ploughs, it turned over 20 acres per day; and had the whole power of the engine been applied, it would have completed 30 acres. It wanted only a trial on such soil as that at Wimbish Hall to complete the series. We consider that, and the Thetford soil, as the two extremes of light and heavy land, after cultivating which, with success, no doubt can be entertained of the machine working well upon soils of intermediate texture.

Whatever defects therefore the machine may exhibit in this its infancy, they may scarcely interfere with the question at issue; as they will undoubtedly be rectified as experience points them out. Certainly we have advanced far enough already to be assured that steam ploughing is perfectly practicable. And with so many mechanical heads at work on the subject, we confidently expect, ere long, to see a perfect and simplified machine, applicable to all soils, and at least as economical as horse-power.

VARNISH FOR RUSTIC GARDEN SEATS.—First wash the wood-work with soap and water, and when dry do it over, on a hot sunny day, with common boiled linseed oil; leave that to dry for a day or two and then varnish it once or twice with what is commonly termed "hard varnish." If well done, it will last for years, and prevent any anoyance from insects. Now is the time for varnishing such seats.—*Gardener's Chronicle.*

AGRICULTURAL EXPERIMENTS IN FRANCE.

(TRANSLATED FROM THE FRENCH BY THE "COUNTRY GENTLEMAN.")

LARGE BEET CROPS.

The distinguished French agriculturist AUGUSTE DE GASPARIN, has communicated to the *Journal d' Agriculture Pratique*, an account of an experiment in the cultivation of the beet which is so instructive that it deserves to be transferred to our columns. The experiment was made on about one fourth of an acre, and the yield was at the enormous rate of 127 tons (of 2,000 lbs.) per acre. To produce such a crop the author says "it is necessary to observe eight conditions, viz:—

1. Deeply trench the soil.
2. Manure largely.
3. Crowd the plants to a distance of not more than a foot from each other.
4. Irrigate the land every fourteen days when it does not rain.
5. Hoe after each rain or irrigation.
6. Trim down all plants that begin to go to seed.
7. Remove no leaves for fodder, as is often done.
8. Leave the beets in the ground until the end of November, or until the course of vegetation is finished,"

The author remarks with regard to these conditions, as follows:—

"1. The deep tillage allows the plant to attain its utmost development, so far as length of root is concerned, and probably also in all its proportions,

2. Seven hundred cubic feet of good stable manure, and three cwt. of rape-cake, were applied to the trial plot of about one-fourth of an acre.

3. The seed were sown on the first of January in a hot-bed, and in April at the usual time of sowing, plants as thick as the finger were set out in the field. This early planting is very essential for the highest success. When the beets were dug, they had been in the ground during a vegetating period of nine months, and as the roots acquire a new concentric ring every fourteen days, they had eighteen rings in all, or six more than those sown at the usual time; and since these six rings were the outer ones, the volume of the beet was more than doubled.

4. Since the roots of the beet do not spread far, laterally, the plants may be grown very thickly. The author observed that when from fault in sowing, two seeds fell into the same hole, the plants were nevertheless as well developed as the others,

5. Irrigation is indispensable for growing the heaviest crops. During the last two seasons, when it was not possible to irrigate, the yield was much smaller. Nevertheless a certain care is needful in the use of water, for if it be applied too copiously, the beets are apt to be hollow.

6. It is necessary to stir the ground after irrigating, since the sun and wind dry and bake the surface; however, after three hoeings the foliage becomes so dense as to cover the soil completely, so that a fouth hoeing is very difficult to perform. At this point of growth, the necessity for hoeing ceases, since the surface of the soil and roots are protected from the sun and wind. Plants of so early growth are apt to run to seed, but if the flowering stem be broken off, the roots continue to increase like the others.

7. Stripping off the leaves, especially if this is done during the dog-days, arrests the developement of the plant.

8. The roots should not be pulled until November, after all growth has ceased. The roots double their dimensions during October and November if the weather be warm.

Such is the secret of producing beets at the rate of 127 tons per acre, or 2,100 days rations for any domestic animal. I have found that small cows never consume more than 120 pounds of beets per day, and that with this allowance they grow fat.

The following sentence has significance for many parts of the country. "I rejoice at the noise my experiments have made, because here in the south of France, they will long remain the only ones of the kind; here, where cattle keeping appears to be more and more neglected, in order to devote the soil to the production of commercial plants, (tobac-

co, flax, &c.,) whose culture can only be continued by the help of commercial fertilizers."

The author continues: —"at my instance, this plan of early transplanting has been adopted at the Age Reform School of Mettray, and the first trial resulted in doubling the usual crop, although no manure was applied. My brother saw at Grenoble a field of beets cultivated in the same manner. The roots had an average weight of thirty pounds (14 kilogrammes,) so that calculating there were only 8,000 plants to the acre, the yield would be no less than 124 tons. This was in September. There were still to form four new rings on each root, so that the final yield must have exceeded mine, and this was on the large scale.

In a warm climate, then, by heavy manuring, irrigation, early transplanting, and good tillage, such results may be procured. Where the vegetative period is shorter, where there is less warmth and less water, and where a frequently beclouded sky hinders the solar radiation, the produce will not, of course, turn out so high.

The point of production I have reached, however extraordinary it may appear, is not the limit. On the banks of the canal of St. Gilles, in the region so celebrated for its prodigious wine crops, a beet has been grown weighing 132 lbs. (60 kilos.) How many such are required to weigh 500 tons? Can we not study out, and then work out the condition for such a phenomenon?

We are having here, on this question, such a discussion as has come over to us from England, where many persistently discredit the wonderful stories about the yield of Italian Ray Grass. The timothy-growers cannot account for the crop of 50 tons per acre (Scotch); but when I see all the care in cultivation, the showers of liquid manure, the perfect drainage, and the use of steam-power, I am not difficult to be convinced of the truth of these assertions. The Englishmen have brought their plant from the extreme of Italy; have put under contribution the energetic vitality of the South, and have united it to the industrious activity of the North."

The plan of transplanting root crops from hot-beds, originated with Mons. Koechlin, and was practiced by him in Alsatia. He is said to have obtained on ground "perfectly prepared," beets averaging 17 kilos, =37½ lbs., and a total yield of 156 tons per acre. Raising the young plants in a hot-bed is no impracticable thing. It is easy to raise an artificially heated bed, and the seeds can be sown so thick that 40 square feet will furnish plants for an acre.

The English farmers, as I saw in Gloucestershire, are in the habit of transplanting cabbages, in order to occupy ground from which summer crops had been taken.

The average root crop of England is about 25 tons (turnips, carrots,) to 30 tons per acre (beets). We have now authenticated instances of four, five, and even six times these products. Who can doubt that it is cheaper to gather large crops from a small, well tilled surface, than medium crops from a larger area?

Salt for Sheep.—The first thing the shepherd in Spain does when his flocks return from the south, the summer downs, or pastures, is to give them as much salt as they will eat. Every owner allows to each thousand sheep 2,500 lbs. of salt, which they consume in about five months. They eat none in their journeys, nor are they allowed any in winter, as it is thought to produce abortion when given to ewes forward with young. This has been the custom, and it is thought to be the true reason why the Kings of Spain could never raise the price of salt to the height it has maintained in France; for it would tempt the shepherds to stint their sheep, which, it is believed, would weaken their constitutions and deteriorate their wool. The shepherd places fifty or sixty flat stones at the distance of about five paces apart, strews salt upon each, leads the sheep slowly among them, and every one is allowed to eat it at pleasure. But when they are feeding on limestone lands, they eat no salt; and if they meet with a spot of mixed formation, they are said to partake of it in proportion as the soil is mingled with clay.—*Wool-Grower*.

Market gardeners have two methods of trenching their lands; when both soil and subsoil are good to a great depth, they turn the surface under, and fetch up a fresh spit from below; but when the subsoil is poor, or strong clay, they fast and trench it, as they term it, throwing the surface spit forward and always keeping it uppermost, digging the subsoil with the foot in the trench, without bringing it to the surface.

MANAGEMENT OF THE FARM.

If we were to judge by cases which we very often meet with, we would be led to form the conclusion that farming is certainly a wonderful trade—that it is, in fact the natural state of man, a state to which he must inevitably revert, no matter how little connection his previous training and habits may have had with the subject, provided he can "babble of green fields" and have "a taste for the country entirely his own." Let him be brought up all his life within the smoky precincts of a city, familiar with farm produce only in the shape of a four pound loaf, or a joint of meat, still if he does possess, or fancy he possesses, "a taste for the country," with sufficient means to permit the indulgence of such a taste, he is, forthwith, qualified, in his own opinion at least, in every respect to become a genuine clod-hopper. The blundering attempts of such men are, in general only provocative of laughter, whilst their example, unless, indeed, they are unfortunately placed in an influential position, exerts little or no influence on the real business of farming. In the latter case, indeed, they are positively injurious, inasmuch as from the respect due to their position, or from extrinsic causes, the vagaries which they dignify with the name of farming, are often apt to lead some into error, to create a disgust in the minds of others against the prosecution of the business in any degree whatever, and to cover with ridicule a profession of vast importaace. Farming, like medicine, has its quacks, whose professional pretensions being loudly, unblushingly, and unremittingly proclaimed to the world, backed up as they often are by certain adventitious circumstances, acquire for a time a degree of importance to which they are by no means entitled but which, resting on no sure foundation, are soon exposed in all their weakness to the scorn of those experience has taught them to think and act in a different manner.

It is not, however, to such persons we would at present allude; for although these have but too often proved to be the real "pests of the farm," still there are, even within the the ranks of what we must call the practical men, many instances of insufficient qualifications for the important duties they have undertaken to perform. Perhaps one of the most essential points in farming is forethought. There are many who cannot see an inch beyond them, their powers of perception are confined to the narrow limits in which they stand for the moment, and farther than those limits their mental vision cannot by any means be brought to extend. Their minds can seize rapidly enough on any project which appears likely to be productive of immediate benefit, but they cannot by any process of ratiocination bring themselves to perceive the future results of any present movement. This obtuseness of their perceptive powers is the fertile source of innumerable errors, and prevents them from turning to their future advantage many circumstances which are calculated to be of advantage, but which they do not perceive to be such. For example, one one man looks upon the reclamation of a tract of waste land as a hopeless measure; he understands just so much of it, as to know that a considerable immediate outlay is involved in the proceeding, and for that reason, he at once sets down the project as unattainable and absurd. Another individual, however, forsees that the outlay necessary to accomplish this object will, if properly conducted, be the means of returning him a profitable remuneration. He studies attentively every feature of the case; he foresees almost step by step every part of the necessary procedure to be taken; and he sets about his work in full confidence as to the result. But, although such a man may demonstrate the correctness of his views, it does not follow that his neighbour, who, possessing less forethought, had considered the undertading as being only the means of throwing money away, until the effects produced convince him that his opinion was founded in error—it will not we say, always enable such a man to follow the example shown him with an equal degree of success. He may, indeed, attempt to imitate the process: in all probability he begins his operation in a proper manner, but some unexpected obstacle occnrs which he cannot understand how to overcome; he overlooks some important step in his haste to arrive at final results, and he is obliged to abandon the undertaking in despair, in all probability attributing to what he calls *luck* on the part of his successful neighbour, what is due only to the exercise of judicious forethought, combined with perfect skill.

But the profitable exercise of this faculty is not confined to the case with which we illustrated our views. In the every day business of the farm, many opportunities arise where losses are incurred, simply from not looking forward to consequences, or from not being able to arrange mentally, everything which it is necessary to bear in mind, so as to arrive at a correct and judicious course of procedure. Now, in the apparently simple matter of setting a band of farm labourers to work, either in the general business of the

farm, or with the view of accomplishing by their united exertions some particular object, we have over and over again seen labour fruitlessly expended, time wasted, and money thrown away, which the exercise of a little forethought, based, of course, on practical skill, would have prevented. Assigning to every man his proper duties, and doing the right thing at the right time, seems to be with some people an unattainable accomplishment. No doubt every man is not constituted alike, but we believe that defective training is the exciting cause of most of the errors in management and the mistaken and circumscribed views which we meet with. The cultivation of habits of forethought is, in fact, an indispensable branch of education, without which, nearly every other acquirement is rendered of little value. A man may have learned Stephens, and Johnson, and Hodges by heart, he may have even laboured for years to acquire a practical knowledge of the business of the farm under the most favourable circumstances for acquiring such knowledge, but if, to use a homely phrase, he is unable to look an inch beyond his nose, he has yet to acquire that without which all his knowledge in other respects is merely a confused mass of nearly useless rubbish.—*Irish Farmers' Gazette.*

Fine Strawberries.—The best specimens of fruit, the largest, and the most highly coloured and flavoured, are always from these beds where the plants are kept thinned out to rows or "hills." If runners cover the whole surface, the fruit is smaller, more shaded, and the flavour is not in the highest degree of perfection. But the cultivated bed has one drawback,—the rain dashes the soil upon the fruit. This evil may be easily remedied by placing the short grass, which at this time is obtained by mowing lawns, between the rows. Tan has been recommended, and it does tolerably well, but it is itself not so clean as is desirable. Straw, chopped short, is used by some, and is cleaner and better than tan. But the soft, clean, fresh grass, only one inch or two in length, obtained from lawns, is much preferred to either, and it is easy and frequently renewed. The moisture which it assists in retaining in the soil, promotes the larger growth of the fruit. If irrigation is applied, this covering retains the moisture in the surface soil, and prevents evaporation and crusting. We have known the fruit while ripening, to be doubled in size in 24 hours, by a plentiful supply of water, dropping on the plants, and the mulching given them is next best to constant watering.—*C. Gentleman.*

Thinning Plants.—Some crops can scarcely be planted too thickly,—for example the grass crop, which has been doubled in product by quadrupling the seed; and all the excellence of fine old seeded lands may be attained by thick sowing, when otherwise the growth would be course, harsh, and meagre. The same remark will apply in some degree to sowing corn for fodder. But other crops require *thinning*, or success cannot take place. Cobbet said, in speaking of the culture of cucumbers, that two plants in a hill would bear a smaller crop than one, three less than two, four less than three, until fifty plants would bear nothing at all! The remark will apply to all cucurbitous plants, as melons, squashes, and pumpkins—which are often allowed to grow too thickly. A single plant, (or two plants at most, so as to insure one in case of accident to the other) on a rich, well prepared, and well cultivated piece of land, with a space of six or seven feet, is far better than a larger number. The culture of turnips, and especially those of the ruta baga tribe, requires a bold thinning-out. A novice in the culture of these roots may be readily distinguished by his thick drills, who would be startled at the "frightful waste" of thrifty young plants, which the experienced cultivator boldly practices, and with such decided advantage.

Striped Bugs.—Notwithstanding we have heretofore published the following receipt, it will do no harm to place it again before our readers, for now is the time to head off these pests of the gardener, and save the vines. The receipt originated in the Horticulturist:—

"Dr. Hull, of Newburgh, raised a large crop of melons by the following process:—'Bugs were completely expelled by watering the plants daily with a strong decoction of quassia, made by pouring four gallons of boiling water on four pounds of quassia, in a barrel, and, after twelve hours, filling the barrel with water. The intolerable squash or pumpkin bug was thoroughly driven off by a decoction of double strength, containing a pound of glue to ten gallons, to make it adhere. The result was, a product of sixteen hundred superb melons, on less than one sixth of an acre of ground."

FALLOWS.

BY A PRACTICAL FARMER.

In the Book of Exodus, chap. xxiii., verses 10 and 11, we read: "And six years thou shalt sow thy land, and shalt gather in the fruit thereof; but the seventh year thou shalt let it rest and lie still." This was the law which God gave to the Israelites, and is the first intimation we have in the world's history, from which we may gather information relative to the requirements of the soil, and the early usages in agriculture; for I take it to be analogous to what is generally understood, in our day, to *mean* lying under fallow, or to constitute fallowing. Be that as is it may, it is certain that fallowing was practised, and was one of the reguar systems adopted in the management of land, from the earliest periods of which we have any record. It has, however, been reserved for a very recent age to make any great advances in fallowing, and to adopt totally different courses in the appropriation of land undergoing a fallow. The fallowing of land has now become a subject of very considerable scientific research, and is of immense agricultural importance, as upon the fallow crop depends, in the present day, the ultimate success of the whole system of modern farming. No green crop, no corn crop. The ancient idea of rest adopted by the Jews, pursued by the Romans, and all other nations adopting agricultural pursuits, has been nearly abandoned in this country during the past half century; and instead of *rest*, the soil or land farmed is now made to bear enormous crops of highly nutritious food, thus providing most abundant supplies for both man and beast in the season of winter, when so much is needed; and, at the same time, the soil is so much replenished with all those necessary constituents, as to ensure successful cereal cropping for several succeeding years.

What, then, are fallows? and what do we understand to constitute fallowing, in the present day? Fallows consist of all lands or soils which are undergoing the process of pulverisation, cleaning, aëration, and other amelioration, by the various means employed, either mechanical or otherwise, for these purposes. They are usually classed under several heads, or distinguishing modes of management—*i. e., winter or autumn fallows, summer fallows, bastard fallows, green-crop fallows;* to which may be added *trenching fallows, broadshare fallows, rafter fallows*, and the like; as also the various operations of *paring and burning, skim and skeleton ploughing, scarifying, subsoiling*, or other like means by which the process of cleaning, exposure, amelioration, or improvement of the soil is attempted or effected. The soil, therefore, which is subjected to any mechanical agency or order of management, for the above purposes, is under a certain course or character of fallowing, and accordingly, constitutes fallows.

What, however, are more commonly known as fallows and fallowing are those various operations of tillage which are carried on, and are indispensably necessary, to prepare the soil for a fallow crop (green crop)—*i. e.*, turnips, mangold-wurzel, rape, and the like—and those more continuous operations to prepare for the future wheat crop, being a bare or summer fallow, which on poor clays and some other soils is considered necessary. Winter or autumn fallows are those lands which have undergone various modes of tillage in the autumn, and are subsequently laid well up by the plough for winter aëration by frosts, snow, &c. Bastard fallows consist in the partial working and cleansing of the soil, prior to the putting in of the crop. Trenching fallows are the efficient trench-ploughing of the soil, for exposure to atmospheric influences, and are chiefly used prior to the coming of winter's frosts, by which it is much ameliorated and greatly benefited. Broadshare fallows are the breaking up of ths surface-soil for cleaning, by harrowing &c.; and to promote the speedy growth of annuals, in order to insure their ready extirpation. Rafter fallows are the ploughing of one furrow on to the adjoining strip, to promote aëration, &c., by more prominent exposure to atmospheric influences. Paring and burning, though not strictly coming under the appellation of fallows, are in fact a fallowing. The soil is pared, exposed, dried, burned, and spread, ploughed in, and well harrowed, by which course most of the intentions of fallowing are attained. Skim and skeleton ploughing are almost synonymous with broadshare fallowing. Scarifying fallows are the continual application of powerful drags or scarifiers, to move and expose the soil at a considerable depth, so that atmospheric influences may have greater effect.—Subsoil fallows are the breaking up of the subsoil at great depth, and bringing it near to the surface, for aeration, amelioration, and intermixture with the surface-soil, and is a wonderful improvement upon the old order of fallowing.

Take the astonishing fact as proved by the experiments conducted under the eye of Mr. Lawes. Good loamy soil contains a large superabundant stock of ammonia: required that it be brought into useful action in promoting the growth of plants. Here, then, we learn the true idea and benefit of fallowing. It is proved by Mr. L., that an acre of average loamy soil, taking it at one foot in depth, contains about three tons and a half of ammonia. The best Peruvian guano contains about seventeen per cent., or about equal to eighteen pounds to the cwt.; most of the home-made guanos and manures a far less proportion; and yet apply some of these to advance the growth of a crop, and the result is astonishing. The direct application of a few pounds of ammonia results in a surpassing accession of strength and power to advance vegetation and mature the crops, while at the very time the soil abounds in the identical constituent, and only requiring or waiting the skill of man to be made available. It is by deep, continuous perseverance in fallowing that this can best be accomplished. By this, we mean those oft-repeated deep stirrings of the soil, whereby the greatest number of particles can be brought into contact with the atmosphere, and laid open to the action of the sun, winds, rains frosts, dews, &c., and that without being run together by excessive rains, or compressed too much by field-rollers; in fact, the soil requires to be kept open, chequery, and friable during summer working, and at as great a depth as possible, consistent with the character and staple of the soil.

We often look forward in hopeful anticipation of the grand advent and full development of steam cultivation for this purpose. We are fully assured that our present appliances are altogether inadequate to bring out truly and fully the inherent and latent powers of the soil, in the limited time included in an English summer, without the loss of the green crop, which on no account can be dispensed with. We frequently find ourselves desiring the aid of all the horses in the parish (not a little on) to make proper use of the all-important time for fallowing. The doing enough in season seems an impossibility with our present means. We do bring to bear all the available power of the farm, besides occasional extraneous aid, and our crops equal those of our neighbours; but this is achieved mainly by the expensive additions of guano, superphosphate, or other similar applications, along with a very liberal dressing of farmyard dung. But this is not the all-important point: we want to gain more power, more nutritive food for the turnips and other plants from the existing stock in the soil itself; and this can only be done powerfully, and must chiefly be obtained through the intervention of deep, continuous fallowing or working the soil, in the precise, the exact season, when the sun, rains, winds and dews act most in conjunction and effectively. The greatest amount of heat and drought is required; but these would be nearly if not totally inactive without rain-water or distilling dews. Those of us who read a little, if but superficially, those works and papers of our agricultural chemists which are continually appearing in the public prints, learn that rain-water is one of the most powerful essentials yet known or discovered for setting free the ammonaical constituents in the soil, and preparing its wonderful powers for the food and nourishment of plants. These agriculiural chemists tell us that many of the component parts of solids have been subjected to the most intense chemical experiments, with the view of extracting their inherent values; they have been boiled in the most powerful acids known, without effect; but when the same or similar ingredients have been repeatedly, continuously subjected to atmospheric changes by the unremitted, free, deep working of the soil in fallowing, in the proper season and under proper judgment and management, these exceedingly valuable chemical essentials are by these means, aided most powerfully by occasional rains, disintegrated and rendered available for every farmer's use. It is to obtain these invaluable properties frow the soil that ought, and ultimately will constitute the chief design and aim in fallowing land; while, at the same time, the soil by these various operations is much better prepared to receive and render most available those deposits of manure which every farmer's judgment will dictate the application thereof to advance his growing crop, and to ensure it from loss or injury, as the quicker its growth in its early stages the greater safety.

In my next paper or papers I will endeavour to show what constitutes fallowing, or what are the tillage processes necessary to constitute a good fallow. Under this new idea and order of management I also propose to enquire how the soil can be well managed, and good farming can proceed without fallows, particularly according to the present mode of fallowing. I also propose to enquire if fallows and fallowing, as now practised, shall be abandoned, and what system will supersede this practice; and further, to inquire if good green crops can be generally grown without such fallowing.—*Mark Lane Ex.*

PIE PLANT.

The *Country Gentleman*, in reply to a correspondent who wished to know the best varieties of the Pie Plant, mode of cultivation &c., gives the following hints on the subject:—

"Many new varieties of the Pie Plant are constantly springing into existence, every plant from seed varying more or less from the parent. The Tobolsk is an early, red variety; the Giant is a large, later, green variety; these are the two leading old sorts.—There are many newer and more approved, among which Downing's Colossal is highly esteemed for its excellence, and Cahoon's for its great size. There are now many others of high merit, under experiment. Our correspondent should however observe, that there is less difference in the inherent tendency to large growth than many suppose, great size depending on the depth, richness, and cultivation of the soil—or as we have heard a skilful gardener remark, "tell me how much manure and deep digging you have given your plants, and I will tell you whether you have the large kind or not."

When Pie Plant is raised from seed, it should be planted very early in the spring, and as the seed is about a month in coming up, a few radish seed should be mixed with them, to mark the row, and show where to hoe. The radishes will be large enough to use before the rhubarb has attained much size. It will require three years for the seedling pie plants to be ready to use. Although seedling plants will vary in character, yet from fine sorts all will be good. To preserve the exact identity of any variety, the roots must be divided in autumn by cutting each eye separately, and planting out about two inches below the surface, protecting them through winter by a few inches of leaves. The second year they will do to use. They may be divided about every three years, the time varying however with the richness of cultivation. The size will depend much on their having plenty of room—which should not be less than two feet in the row, and the rows four feet apart.

Report on the Murrain of Cattle.—The report of Dr. E. Headlam Greenhow on the murrain in horned cattle, and the effects of the consumption of their flesh on human health, has been sent in to the General Board of Health, and since printed. It forms a blue book of 60 or 70 pages. The learned doctor gives a lucid account of the disease among cattle as manifested in England and on the continent. The result of his inquiry is, that the cattle disease which he was desired to investigate, is not of recent origin, but has prevailed in the United Kingdon among horned cattle for the last 15 or 16 years; that it is not peculiar to London; that it is probably infectious, but is also developed spontaneously in consequence of some unknown peculiarities of breed, management, season, or locality, and is not supposed to have been imported from abroad; that it is identical with the *lungenseuche*, or pulmonary murrain, now prevalent in Mecklenburg, Holstein, and elsewhere; and that it has no affinity with the *rinderpest*, or steppe-murrain, with which it has been confounded by some English writers. The doctor suggests that the importation of the steppe-murrain (which would be most probably by way of Prussia) should be prevented by the prohibition of the importation of cattle except from countries which have clean bills of health. It appears that meat derived from animals suffering from the pulmonary murrain, and probably other diseases, is commonly and extensively sold in London and elsewhere for human food, but that there is no satisfactory proof that the consequences of consuming it are directly injurious. There are reasons to suppose that the use of meat from animals suffering under diseases unknown among the cattle of the United Kingdom has, abroad, been frequently attended with severe consequences on human health. The consumption of meat undergoing decomposition has frequently been injurious but such meat cannot be eaten with safety even when cooked.

Education in Sweden.—We learn that a system of Public Schools is about being introduced in Sweden. The government is taking measures to improve teachers and schools, and to make the schools Public or Free. Friends of popular education will rejoice to see such a policy become general in the old world. The Agent of that government has shown an appreciation of one of the essentials of a good school, by ordering some School Desks from Boston. These desks are to be sent to the palace of Stockholm and will show royalty, what talent and skill, educated in public schools, are furnishing so generally for American children.

Simplicity.—Our life is frittered away by detail. Simplicity, simplicity, simplicity! I say, let your affairs be as two or three, and not a hundred, or a thousand; instead of a million, count half a dozen, and keep your accounts on your thumb nail. In the midst of this chopping sea of civilized life, such are the clouds, and storms, and quick-sands; and thousand-and-one items to be allowed for, that a man has to live, if he would not founder and go to the bottom, and not make his port at all, by dead reckoning, and he must be a great calculator, indeed, who succeeds. Simplify, simplify. Instead of three meals a day, if it be necessary, eat but one; instead of a hundred dishes, five; and reduce other things in proportion. Our life is like a German confederacy, made up of petty states, with its boundary forever fluctuating, so that even a German cannot tell you how it is bounded at any moment. Our nation itself, with all its so called internal improvements, which, by the way, are all external and superficial, is just such an unwieldy and overgrown establishment cluttered with furniture and tripped up by its own traps—ruin want of calculation and a worthy aim, as the million households in the land, and the only cure for it, as for them, is a rigid economy, a stern and more than Spartan simplicity of life, and elevation of purpose. It lives too fast.

Butter Cooler.—"Septimus Piesse," in the Scientific American, gives this simple method for keeping butter cool:—

Procure a large new flower-pot, of a sufficient size to cover the butter plate, and also a saucer large enough for the flower-pot to rest in upside down; place a trivet or meat-stand (such as is sent to the oven when a joint is baked) in the saucer, and put on this trivet the plate of butter; then fill the saucer with water, and turn the flower-pot over the butter, so that the bottom edge will be below the water. The hole in the flower-pot must be fitted with a cork; the butter will then be in what we call an air-tight chamber. Let the whole of the outside of the flower-pot be thoroughly drenched with water, and place it in as cool a spot as you can. If this be done over night, the butter will be as "firm as a rock" at breakfast time: or if placed there in the morning, the butter will be quite hard for use at the tea hour. The reason of this is, that when water evaporates, it produces cold; the porous pot draws up the water, which in warm weather quickly evaporates from the sides, and thus cools it, and as no warm air can now get at the butter, it becomes firm and cool in the hottest day.

To Sweeten Rancid Butter.—An agriculturist, near Brussels, having succeeded in removing the bad smell and disagreeable taste of some butter by beating or mixing it with chloride of lime, he was encouraged by this happy result to continue his experiments by trying them upon butter so rancid as to be past use; and he has restored to butter the odour and taste of which was insupportable all the sweetness of fresh butter. This operation is extremely simple and practicable for all. It consists of beating the butter in a sufficient quantity of water, into which had been mixed 25 or 30 drops of chloride lime to two pounds of butter. After having brought all its parts in contact with the water, it may be left for an hour or two; afterwards withdrawn and washed anew in fresh water. The chloride of lime used, having nothing injurious in it, can be safely increased; but after having verified the experiment, it was found that 25 or 30 drops to two and a half pounds of butter were sufficient.

How to head the Bugs and all the Vermin that Destroy your Vines.—Take six inch siding, slit it into three inch strips, tack them together and place them around the vines, with a pain of glass over them. If the glass fits the frames on the top, all controversy is at an end with the bugs; besides your plants will be much benefited by an increase of heat. I have just placed fifty frames over my vines and find it effectual; while all other nostrums going the rounds, such as flour and pepper and other things not a little nasty, I have given repeated trials and found unreliable. Try the eight by ten frames, they will cost you less than sixpense, and you may leave and return home, without the mortification of finding your hopes of a crop of melons blasted.—H. N. L.

A Hint about Potatoe Tops.—A New York potatoe cultivator says:—"The potatoe itself exhausts the soil but very litle, as its elements are derived mainly from the atmosphere—but the potatoe top exhausts more than any other one vegetable, as its elements are derived more from the soil. Potatoe tops then, should all be carefully buried when and where they are dug. If this practice were universally followed, no crop would exhaust the soil less. Let the farmers try the experiment, and write the result for the benefit of others."

Is There a Maelstrom?—This question is thus answered by a contemporary. Every school-boy of the last century has been taught to believe that there is a wonderfull vortex on the coast of Norway, with an eddy of several miles in diameter, and that ships, and even huge whales, were sometimes dragged within its terrible liquid coils, and buried forever "in ocean's awful depths." A corresdondent of the *Scientific American* says;

"I have been informed by an European acquaintance that the maelstrom has no existence. A nautical and scientiffe commission went out and sailed around and all over where the maelstrom was said to be, but could not find it: the sea was as smooth where the whirlpool ought to be as any other part of the German ocean."

We presume the above is correct. The latest geographers and gazetteers barely allude to the maelstrom, Colton, in his large atlas, gives the site upon his map, but does not allude to it in his description of Norway. Harper's Gazetteer, in his article on Norway, says that, "among the islands on the west coast there are violent and irregular currents, which render the coast navigation dangerous. Among these is the celebrated *Mael-Strom*, or Moskenaes-Strom, the danger from which has been greatly exagerated, since it can, at nearly all times, be passed over even by boats."—The romance of the maelstrom has been pretty effectually destroyed.

Recipe for Prosperity.—A gloomy correspondent who signs himself "Merchant's Clerk," writes to the *Journal of Commerce* that he believes we are on the eve of a general grand financial smash-up The editors endeavour to soothe his apprehensions, and add the following excellent suggestion:—

"Merchant's Clerk does well to keep a bright look-out for the future; but if he will eschew stock speculations, fast horses, fast women, costly segars, mixed drinks, the theatre and billiard rooms; will dress economically, spare a portion of his surplus earnings for the gifts of a true charity, and deposit the remainder in a savings bank; avoid unprofitable companions, keep the Sabbath, go to bed early, and devote his time, his thoughts, and his energies, to the interest of his employers, we will insure him against the effects of the most severe commercial revolution."

No person ever planted a tree, without feeling that he had rendered an important service to the community.

Nature, where she plants a vegetable poison, generally provides an antidote, so in the moral world, she causes sympathies to spring up by the side of antipathies.

Outward politeness can be learned in set forms at school, for, at the best, it will be hollow and deceptive; genuine politeness, like every thing else genuine, comes from the heart.

Genius.—A contemporary, in dilating on genius, thus sagely remarks:—The talents granted to a single individual do not benefit himself alone, but are gifts to the world; every one shares them, for every one suffers or benefits by his actions. Genius is a light-house, meant to give light from afar: the man who bears it is but the rock upon which the light-house is built.

Lampass.—All young horses are subject to the lampass, and some suffer extremely before it is discovered.

It is a swelling or enlarging of the gums on the inside of the upper jaw; the growth is sometimes so luxuriant as to prevent a horse from eating with any comfort. The cure is simple; and after being performed, a horse will improve in his condition with great rapidity.

Take a hot iron, flat, sharp, and a little crooked at the end, burn the lampass out just below the level of the teeth, using great care to prevent the hot iron from bearing or resting upon the teeth. After the operation is performed, the horse should be given a little bran or meal, with a small quantity of salt in it.

Some farriers have recommended cutting for the lampass, which only gives momentary relief, and would require the same operation to be performed every three or four months; but when it is once burnt out, it never again makes its appearance.

A Tribute to the Horse.—John Wall's Receipe.—Take half a pound of saltpetre, half a pound of alum, and half a pound of alum salt; pulverize and mix them well together, and every eight days give him a table spoonful in his food; his coat, flesh, and spirits will soon reward his master for his care.

EDITOR'S TABLE.

To Our Friends.—We have now sent out several extra sheets with the *Agriculturist*, a shall continue to do so until the end of the volume. The extra labour and expense we have imposed upon ourselves by this arrangement has been considerable,—more, indeed, than we anticipated before we undertook it. We derive no benefit, that we are aware of, by supplying our subscribers with *two* publications at the price of one, unless it results in an increase to our subscription list. The County and Township Agricultural Societies especially ought, we think, to patronize the *Agriculturist*, now that we give them the official reports, prize essays, and "Transactions" of their principal organisations, the Association and Board of Agriculture. Yet a large number of Societies do not supply their members with the information contained in these publications, although it may be had at little more than the cost of the white paper. Why is this? Do not Directors forget or neglect a part of their duty when they fail to place this information in the hands of every member of their Society? We have still a considerable number of copies of this year's edition on hand, as well as accompanying sheets of Transactions, which we shall be glad to supply to Societies that have not yet sent in orders. Will not our friends, *individually*, aid us also by recommending the *Agriculturist* to their neighbours?

South Downs.—We learn that Mr. John Spencer, of Whitby, has just received another supply of improved South Downs from Dorsetshire and Hants., England. They were selected with much care by his son. Mr. Spencer's sheep have carried off prizes at several of our Provincial fairs.

The Prize List.—The prize list accompanies the present number. We expected to have received it in time for the last number, but after waiting two or three days, we were obliged to send out the June number without it. Some subscribers may have supposed they were specially overlooked when they found the "list" had not reached them, but the deprivation was general. We sent off the parcels to Agricultural Societies, &c., as soon as the copies were delivered to us, but to have mailed them to subscribers generally would have entailed much trouble and considerable expense We hope they will reach intending competitors in time to enable them to make all needful preparations.

☞ Subscribers whose papers fail to reach them will be good enough to notify us at the first opportunity, and we shall always be happy to supply the missing numbers. We are obliged to trust a part of the work of mailing to employees, who may not always be as careful as we could wish.

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