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AGRICULTURAL REVIEW.

AUGUST.

CONTENTS:—Official Department.—Meeting of the Board of Agriculture on the 26th July—**Extra Prizes** offered at the Sherbrooke Provincial Exhibition—Election of the Secretary—Establishment in Montreal of a Provincial Agricultural Dept. of implements, seeds, and books.—**Editorial.**—The award of prizes to Young Cattle—**Extra Prizes**—Native vs. Foreign Breeds—First Prizes not allowed to compete again—Preparations at Sherbrooke—**Entires and Catalogue.**—The Provincial Agricultural Department—The Lower Canada Agriculturist—Provincial, State and County Exhibitions in September next—How to improve the Work-out Lanes of Soulanges—How to resist Droughts—Irrigation of Grass Lands—What increases the Productiveness of our Fields—Farms and Farming—Women Farmers in Western New York.—**Our Rambles.**—Our impressions of the London International Exhibition—The adaptation of Steam to the Tillage of the Soil—Trial of Steam Ploughs at Farningham—The different Competitors—Description of Fowler's system, with Engravings showing the Steam Plough in the field, the Self-moving Anchor, the Self-moving Steam Engine, with capstan, the Balance Plough, the Balance Cultivator, and the Draining Plough—Description of Howard's system—General view of the Universal Exhibition of the Royal Agricultural Society of England at Battersea Park.—**Farm Operations.**—Suggestions about Haying—Assorting New Hay—Sowing Indian Corn for Fodder—Buckwheat after Barley—The improvement of Stock—The proper mode of Curing the Grasses—Timothy Hay—Farmers' Club about Hay Making—How to pull Flax—Cultivation of Indian Corn—The way to Cook Barley—Apiary in August.—**Castle Department.**—How to Buy a Horse—Examination in the stable—Examination out of the stable—Pig Breeding and Feeding—Dry Food for Hogs—Hens vs. Hogs.—**Horticultural Department.**—In-door Gardening—**Domestic Economy.**—Compo of Green Gooseberries—Tomato Preserves—Good Currant Jelly.

Official Dep't.

BOARD OF AGRICULTURE FOR LOWER CANADA.

Montreal, 29th July, 1862.

Present:—Hon. L. V. Scotte, President; Hon. U. Archambault, Hon. P. Chauveau, Hon. J. Turcotte, Rev. F. Pilote, Professor of Agriculture at St. Ann's College, Kamouraska.

Mr. President takes his seat. Communication of a letter from Mr. B. Pomroy, is given to the Board, whereby W. L. Felton, Esq., is named delegate of the City of Sherbrooke to have an understanding with the Board of Agriculture regarding certain arrangements and certain corrections and additions to the prize list of the Provincial Exhibition of Sherbrooke, in September next. After some explanations given by W. L. Felton, it was unanimously resolved:

That the sum of \$600 in addition to that already appropriated be voted in aid to the Provincial Exhibition to be held in Sherbrooke in September next.

Resolved,—That the proposition of the city of Sherbrooke, such as proposed by W. L. Felton, to furnish the grounds, make all the necessary buildings and suitable fences for the Provincial Exhibition, held in Sherbrooke, next September, for the sum of \$1,600 be accepted, and that the said sum be taken in deduction of that of \$2000 that the City of Sherbrooke had promised to pay to help to defray the expenses of the Provincial Exhibition of Sherbrooke in September next.

Communication is given of a letter from Honorable the Minister of Agriculture, informing this Board that he had received a letter from his Excellency Count Strzenplitz, and from the Society of Acclimatation of Germany, asking for samples of seeds of the forest trees of Canada, and also of field seeds, to exhibit them at the exhibition which is to take place at Berlin next September. Referred to B. Chamberlin, Secretary of the Canadian Commission at the International Exhibition in London.

Resolved unanimously,—That George S. Leclere, Esq., be named Secretary-Treasurer of the Board of Agriculture for Lower Canada,

in lieu and place of Telephore Chagnon, Esq., deceased, and with the same salary.

Communication is given of a letter from Messrs. J. Smith, Thos. Dawes & Son, and others, about certain changes which they wish to be done to the prize list, and complaining of the exclusion of animals having taken prizes in preceding exhibitions.

Resolved,—That the sum of \$50 be awarded as the Prince of Wales prize for the best stallion on the exhibition grounds, and that a silver medal accompany this prize.

Resolved,—That the Secretary of this Board be instructed to enquire of the British North American Land Company of Sherbrooke, if it is its intention to offer a prize for an object whatsoever at the Provincial Exhibition of Sherbrooke in September next. If so, to be kind enough to make known to the Secretary of said Board what sum it will place at its disposition, and for what particular object shall such prize be given.

Communication is given of a letter from Major Campbell, relative to the Provincial Exhibition of Sherbrooke.

Communication is given of a letter from Chs. Brooks, Esq., asking for instruction about the Provincial Exhibition. In answer, order is given to the Secretary to send to Charles Brooks, a copy of the resolution of this Board on the subject.

Rev. F. Pilote informs the Board that the Agricultural Society of Kamouraska cannot import improved stock in accordance with an authorization given in June last, and asks permission to receive the Government Grant to that Society for the present year. (Granted).

Resolved,—That the President of the Board of Agriculture of Upper Canada be invited to the Provincial Exhibition of Sherbrooke in September next.

Resolved,—That the President together with B. Pomroy, Esq., be entrusted with the care of organizing the Provincial Exhibition, and to take all the necessary steps to attain this end with the greatest advantage.

Resolved,—That in the prize list instructions be given to the judges to read *fifteen*

months instead of eighteen with regard to the cattle.

Resolved,—That His Excellency the Governor General of this Province be invited to the Provincial Exhibition which is to be held in Sherbrooke in September next.

Resolved,—That it would be a great advantage to the farmers to have a museum and place where improved agricultural implements and sowing seeds were deposited, in the city of Montreal, under the control of the Board of Agriculture.

That a reading room ought to be kept, opened, and maintained in this place, by means of newspapers and periodicals exchanged with the "*Agriculturist*," published under the direction of this Board, and the entry to this reading room be given *gratis* to all the members of the Agricultural Societies.

That a room be prepared in that place to give public lectures at least four times a year.

That this Board in view of obtaining these advantages appropriates the sum of \$800 a year, from the 1st of September next, for the rent of a place suitable for such a museum and reading room for two successive years, and authorizes the President to fix the terms of the rent, and choose a locality in order to meet the views of the Board.

That the Board shall accept the proposition of Mr. J. Perrault to purchase at his own risk all the instruments, models, and seeds to be deposited in the museum, as also the exposition of said instruments, &c.; to furnish the newspapers and periodicals exchanged with the "*Agriculturist*" to the reading room, to keep the place heated, lighted, and have such convenient order and arrangement as required by the above four first articles.

That the Board shall have the right of fixing the condition at which these instruments will be sold to the different Agricultural Societies; also the conditions at which they will be exposed at the different exhibitions, care being taken that a sufficient reward be given to Mr. J. Perrault for his trouble.

The Board will run no risks as regards the guarantee of the instruments and seeds deposited in the museum, except as regards the payment of the rent of the locality itself, which shall be in its name as sole lessee.

In case of the non-execution of this engagement on Mr. Perrault's part, the Board shall have the right to select another person in his place.

(By order,)

GEORGES LEOLRE,
Secretary, B. A. L. C.

The report of the last meeting of the Board of Agriculture having been transmitted to our office late on the 4th, we can not be responsible for the delay which was thus brought in the publication of the *Lower Canada Agriculturist* for August. In future we will appear regularly on the first of each month, as heretofore, unless prevented to do so by unforeseen circumstances. Correspondents should address their manuscripts not later than the 20th, so as to insure their insertion;—the same for advertisements.

THE PROVINCIAL EXHIBITION.



THE Board of Agriculture at their last meeting have decided on a few additional prizes to be offered to competition at the next Provincial Exhibition at Sherbrooke, and with these

additions the prize list is certainly the most complete ever published. We must say that we, for our part, do not approve the awarding of such high recommendations to young cattle which have not yet come to their full growth. We deny the possibility for any judge to foretell what will be one, two or three years hence a colt, a calf or a lamb, which may now, out

of good keeping, appear very good samples of their breed, but which may turn out very inferior, through any number of circumstances every day arising in the farmer's life; and supposing this to be the case, what will be the immediate result of a full grown inferior animal having been awarded a first prize in its younger days? The proprietor, in a view of speculation will remind the public, in every shape and way, of the high distinction thus brought on his herd of cattle, and the Board of Agriculture will have the responsibility of having recommended stock now of inferior description, thus bringing its own influence to bear in direct opposition to its own views, and to the contemplated improvement of our indigenous breeds through a better selection. This is the result which we cannot approve of, and which has actuated the prize list committee when they came to the decision that only full grown animals should be allowed to compete in the different sections of the prize list, and we entirely concur with them on this point. The Board of Agriculture entertain the same views of the case and are not prepared to alter them. But knowing that the public are not generally prepared to accept of important sudden changes, however desirable they may be when their objects are better known, the Board at the special request of the Eastern Township Agricultural Societies, has readily agreed to additional *extra* prizes as represented by Mr. Felton, the well known member for Sherbrooke, who on this occasion, warmly advocated the interests of the farmers of his locality. Mr. Felton must have acknowledged, in the members of the Board, a very great desire to promote those interests, from the liberal way in which they accepted of all his propositions, leading to an additional expense of \$600, so as to secure a full attendance at Sherbrooke. The following are the additional *extra* prizes, and we would more particularly draw the attention of exhibitors to the *Prince of Wales* prize.

Horses.

- Extra**—1st section, Saddle Horses, Prizes, \$10, \$8, \$6.
- Extra**—2nd section, Colts, 1 year and under, Prizes, \$6, \$4, \$3.
- Extra**—3rd section, Fillies, 1 year and under, Prizes, \$8, \$4, \$2.
- Extra**—4th section, Colts, 2 years and under, Prizes, \$8, \$6, \$4.
- Extra**—5th section, Fillies, 2 years and under, Prizes, \$8, \$6, \$4.
- Extra**—6th section, Colts, 3 years and under, Prizes, \$10, \$8, \$6.
- Extra**—7th section, Fillies, 3 years and under, Prizes, \$10, \$8, \$6.

Horned Cattle.

- Extra**—1st section, Pure Devons, owned by Canadians or others.
Bulls, 2 year old and over, Prizes, \$20, \$10.
Cows, 2 year old and over, Prizes, \$20, \$10.
- Extra**—2nd section, yokes of oxen, 1 year old, \$8, \$7, \$5, \$4.
- Extra**—3rd section, yokes of oxen, 2 year old, \$10, \$8, \$6, \$5.
- Extra**—4th section, yokes of oxen, 3 year old, \$12, \$10, \$8, \$6.
- Extra**—5th section, Bull Calves, \$5, \$4, \$3.
- Do.** —6th section, Heifer Calves, \$4, \$3, \$2.
- Do.** —7th section, Yearling Heifers, \$6, \$5, \$4.

N.B.—Under the head of Cattle in the prize list, read 15 instead of 18 months.

Sheep.

- EXTRA**—1st section, Ram Lambs, long wool, \$5, \$4, \$3.
- EXTRA**—2nd section, Ewe Lambs, long wool, \$5, \$4, \$3.
- EXTRA**—3rd section, Ram Lambs, short wool, \$5, \$4, \$3.
- EXTRA**—4th section, Ewe Lambs, short wool, \$5, \$4, \$3.

Prince of Wales prize.

For the best Stallion, on the Exhibition grounds, \$50 and a Silver Medal.

Native vs. foreign breeds.

A communication, signed by names which for their sake we will not put before the public, and disapproving the principles laid out in the prize list of the Provincial Exhibition at Sherbrooke, was next submitted to the Board. The two leading arguments were,—1. That thorough bred cattle should receive an amount of prizes greater than the native breeds and crosses. 2nd. That first prizes should not be excluded from competition a second time in the same section. This communication is a model worth keeping, as an illustration of the principles of our gentlemen farmers boldly lay down who as the only basis of improvement in our stock, the importation of foreign breeds, and as a consequence their encouragement above all, through prizes offered in our provincial exhibitions. Now for any one who knows something of the history of the Durham or short horn, of the way by which this wonderful breed has been improved to its present state of perfection, of the constant care, special food and climate it requires to be kept from degenerating, of their relative inferiority when born in a foreign land, let it be France, the United

States, or Canada, there is but one conclusion from all these well known facts, and that conclusion is that the Durham is the result of special circumstances to be found in England alone, and that the moment the rearing of an animal of the same breed is not attended with these very same circumstances, degeneration takes place, and keeps increasing till the characteristic points of the Durham have one by one disappeared. It would therefore be madness on the part of any country to replace the native breeds by imported stock of any description, because climate and food determined by the system of farming are the only known basis for the general points of any breed in any country. No doubt special care in the selection may help considerably in altering for the better such and such points, but food and climate are unquestionably the true basis of the general breed.

And what can be the consequence of these facts if not that native breeds must be dealt with as the only material out of which is to be worked the general improvement sought for. They are the natural production of the soil, of the climate, of the general system of farming, and of the particular wants of the country, what then can be expected in the replacing "in toto" of the native breeds, the result of the special circumstances in which we are placed, by imported thorough bred cattle, the result of circumstances entirely different from ours. These improved breeds will necessarily degenerate till they come to that state of perfection only which our circumstances will allow and then they will but equal our native breeds.

Must we conclude from this that importation of improved cattle should be discouraged? Certainly not; our opinion is that they constitute the most powerful auxiliary to the farmer, by hastening, through well calculated crosses, the improvement of his stock, which may not keep pace with that of his farming. But it is only as a cross that we can recommend foreign breeds, and as such we do recommend them very strongly. Indeed we have imported, for our own account, ten heads of Ayrshire and that fact alone should establish the sincerity of our views in this question, when our duty calls us to oppose the pretensions of those breeders who overrate the importance of foreign stock and their claims to provincial encouragement.

As a principle we stand for the interests of the majority, and when we come to consider that breeders of imported stock in our section of the province, do not number forty, and we might say twenty we do stare at the pretensions of those mighty, would-be farmers who advocate that they hold in their hands the agricultural welfare of this province, and that they are to reap at our provincial exhibitions, prizes equal in number and value to those awarded to all the rest of the agricultural community put together. The preceding prize lists may have given grounds to such views, but the Board of Agriculture, as now constituted, is not prepared to sanction the doings of the past. They wish to call in the field the practical farmers, who constitute the majority of those engaged in agricultural pursuits. They wish to convince

them that provincial exhibitions are not calculated to benefit the gentleman farmer more particularly, but each class of the community. Indeed to this day competition has been impossible to the general farmer, through the very few prizes offered for grades and their very small amount. In fact they did not go far enough to meet expenses in attending the show, even to the successful competitor. The present prize list is calculated to meet those expenses and something more, besides offering a great number of prizes and being thus far in proportion with the competition.

First Prizes not allowed to compete again.

It was equally with the view of opening the objections to the many that the board has decided on not allowing first-prize animals to compete a second time in the same section, which decision has been the ground of the second complaint in the communication already referred to. In relation with this question what has been the experience of past years? That we have seen the same animal, year after year, taking the first prize in the same section, thus practically shutting it up to the competition of all the other farmers, and discouraging their attendance to the shows.

The moment an animal takes the first prize of his class, he must retire, for he is supposed to be very superior, and the result is gratifying to the board, to the breeder, and to the public. To the board, because its object and that of the exhibitions, is to produce, encourage, and recommend a superior class of animals, well calculated to bring about the improvement of our stock, all of which is done by the award of a first prize. To the breeder, because his object is a high recommendation which places his stock in a favorable light, adding considerably to its value in the market, also that encouragement which is represented by the amount of prize money offered; all of which is obtained by the awarding of a first prize. To the public, because its object is to know where the best cattle is to be had for improvement of stock, and this again is done by the award of a first prize. Provided always that it is not, year after year, repeatedly given to the same animal, for then all these advantages fall to the ground, and both the public and exhibitors lose all the benefit to be derived from them. We need not add anything more to justify the course followed by the Board of Agriculture on this subject, which is that of the Royal Agricultural Society of England, and of the agricultural societies of the continent.

We have insisted rather at length on this question, because it shows the principles on which our gentlemen farmers act. They appear to be so exhausted by the production or rather the purchase, at a high price, of a first prize animal, that they fear being unable to achieve again so wonderful a feat, and as a consequence insist on being allowed to take prize after prize for a succession of years, with but one superior animal, while the whole herd may oftentimes be unworthy of a commendation. The Board appreciates those views for what they are worth, and as their opinion is that the sums voted by Parliament

are not to gratify the ambition of a certain class of farmers, but to promote the agricultural welfare of the whole community, they pass those regulations best calculated to meet the requirements of the country.

Preparations at Sherbrooke.

Intending exhibitors should not lose one moment in sending their entries, the 1st of September being the last day allowed, and the pressure of business at the last hour may be the cause of some misunderstanding which might lead to exclusion from the show grounds. We are satisfied to learn that the neighboring counties of Sherbrooke have joined to complete the general arrangements, and that the work is progressing steadily with the active co-operation of the local authorities. The buildings, located on the river shore, are being erected on a most lovely spot, where the visitor will have a glance at the renowned scenery of the Eastern Townships. No doubt thousands will avail themselves of this extraordinary occasion of visiting Sherbrooke, and in the expectation of the great crowd which is expected from the vicinity as well as from a distance, extensive preparations are now being made by the hotel keepers, who will be quite prepared to receive comfortably, or reasonable terms, any number of strangers induced to attend the next provincial show, either by the interest taken in the exhibition, or by the very important consideration of a half price ticket from any station on the Grand Trunk Railway. In short nothing will be wanting at this large display of our agricultural welfare, and we are happy to notice it; for although we personally are in favour of changing on each occasion, the place of our provincial exhibitions, we know of many of the most influential farmers who profess quite the reverse, and whose arguments with regard to large expenses and small attendance, would have found a very good ground in the partial failure of the Sherbrooke exhibition. But, from all we know, we see with pleasure that Sherbrooke will argue quite against them, and that the distant counties will in future as heretofore enjoy the advantages of provincial exhibitions in their neighborhood. Exhibitors must not forget to send along with their entries that information about cattle, implements, or production, which are fit materials for publication in the exhibition catalogue to be sold on the grounds at a low price.

Entries and catalogue.

Every farmer will understand at once the advantage of giving and receiving all the desirable information about all which will be exhibited on the grounds, thus saving innumerable questions, and proving a valuable note book with addresses complete, when in want of a superior article. So as to make allow us to publish this catalogue, particulars should be sent at once, with pedigrees, &c. Implement manufacturers as well, should be very particular with their descriptions. We extract the following from the catalogue of the Royal Agricultural Society of England, as models of the style in which these notes should be written.

For cattle.—“Jonas Webb, of Babraham, Cambridge, ‘First Fruit,’ white, ten months,

2 weeks and 4 days, bred by exhibitor; sire Englishman, dam Welfare, sire of dam, Lord of the North; gold medal for the best short horn bull on the grounds, at the International Exhibition of Battersea Park, 1862."

For implements.—“J. Howard, Bedford, patent iron plough with two wheels, invented and manufactured by exhibitor. This plough is constructed to cut furrows of a trapezoidal form. It is designed to meet the views of those who prefer what are termed in Scotland, ‘high cutting’ ploughs, or ploughs that lay the furrows at a very acute angle, or V-shaped. It is adapted for two horses, and although very strong, is not intended for such hard work as the larger ploughs. Price \$25.

The exhibitor is requested to give all the information which may be of interest to the buyer. No charge will be made for insertion of information in the catalogue.

The Provincial Agricultural Depot.

Next to the question of the Sherbrooke Agricultural Exhibition came that of the establishment at Montreal of a Provincial Agricultural Depot, and we have much pleasure in informing the agricultural public that our propositions have been favourably taken into consideration. In our last issue our readers have seen what we propose to do in the way of importing in this country implements, seeds, and books of the best description, for permanent exhibition in some extensive building, where farmers and mechanics could study at leisure hours, those models of which the country is so much in want, or even purchase at reasonable prices such highly recommendable articles as will be there stored up under our care. We must at once say that our expectations have been fully realized, and we have accomplished that which we promised in our June number. As may be seen by the resolution of the Board at their last meeting, we are placed under the obligation of giving a course of lectures during the winter months, and to attend generally to the expenses connected with the building, rent excepted. These obligations lay rather heavy upon us, but we have never grudged time or labour whenever a good result was at hand, and much less could we object in this case, where such an important move is made in the right direction. Indeed nothing now will be in the way of progress; the farmer will procure almost at cost price, either the very best English implements most highly recommended by the Royal Agricultural Society, or the United States or Canadian machinery, commended by practice and awards at the State or Provincial Exhibitions. Again, our arrangements with the most widely renowned seedsmen will not fail to prove of very great importance, with regard to price, quality and security, in procuring for the societies any quantity or description of seeds. As to authors, we will be always prepared to furnish reliable books, of which specimens will be on hand in the library about to be opened in the same building where our exchanges will be at the use of the visitors, either for lecture or for reference. In short all which we promised in June last will be accomplished in a few weeks hence, and on the first of Sep-

tember will be opened the Provincial Agricultural Depot. We have already received the first invoice, and we are daily expecting the rest of our collection, amounting for England alone to some fifty implements of different models, from the plough to the horse drill, all of the very best description. Orders will be received at once, at catalogue prices, which we propose publishing in a month hence.

The Lower Canada Agriculturist.

Before closing this editorial we cannot abstain from referring to what has been published about the “Lower Canada Agriculturist,” during our absence. We have not taken the trouble of reading those articles, and what we know of them is only by hearsay. Now we do not wish to discuss any question with any body out of our journal, we have neither time, nor space, nor inclination to do so. But we can say this much, that we challenge any one who finds fault with the editing of the “Lower Canada Agriculturist,” to discuss in our columns any practical or scientific question, bearing on agriculture, and we will make it a duty to show that we have not uselessly devoted our time and labour, for the last ten years, to the study of those questions not only in the best authors, but under the most eminent professors of England and France. As a pledge of our capacity we will not take the opinion of any quill driver, whoever he is, we are satisfied with the diploma we have won in the best agricultural college of the day, where out of eleven students from North America we have been alone successful. No doubt our style and expressions may not be all which could be expected from an Englishman, but we know enough of the farmers generally to be certain that they think much more of the facts themselves than of the expressions in which they are brought before them.

Provincial State and County Exhibitions.

| | | | |
|-----------------|-----------------|-------|-----------|
| Vermont..... | Rutland..... | Sept. | 9-12 |
| Ohio..... | Zanesville..... | “ | 9-12 |
| | Cleveland..... | “ | 16-19 |
| Kentucky..... | Louisville..... | “ | 16-19 |
| Canada East.... | Sherbrooke..... | “ | 17-19 |
| Michigan..... | Detroit..... | “ | 23-25 |
| Iowa..... | Dubuque..... | “ | 30-Oct. 3 |
| Indiana..... | Indianapolis... | “ | 30-Oct. 3 |
| Illinois..... | Peoria..... | “ | 30-Oct. 3 |
| New York..... | Rochester..... | “ | 30-Oct. 3 |
| New Jersey..... | Newark..... | “ | 30-Oct. 3 |
| Canada West.... | Toronto..... | “ | 30-Oct. 3 |

County fairs in Canada East.

| | | | |
|-------------------|-----------------------|-------|----|
| Laval..... | St. Vincent de Paul. | Sept. | 11 |
| Terrebonne..... | Grande lignes..... | “ | 13 |
| Stanstead..... | Barnston corners..... | “ | 13 |
| Soulanges..... | St. Clet..... | “ | 18 |
| St. Hyacinthe.... | St. Hyacinthe..... | “ | 23 |
| Chateauguay.... | St. Martine..... | “ | 25 |
| Compton..... | Cookshire, Eaton.. | “ | 25 |
| Richmond..... | Danville..... | Oct. | 1 |
| Bagot..... | Ste. Rosalie..... | “ | 1 |
| BonaventureNo.2. | Maria..... | “ | 1 |
| BonaventureNo.2. | Mann..... | “ | 8 |

We have received several prize lists from county agricultural societies with recommendation to insert them. We can only publish what is interesting to the reader generally,

that is the locality and date of each exhibition, which we give in the preceding tabular form for convenience. We notice also the state exhibitions, so that any farmer wishing to witness them or compete, may benefit from the information. We will make it a duty to attend most of these exhibitions, and report in our coming numbers. But we would feel grateful to any farmer who would send us an account of those where circumstances will not allow us to be present. The societies will thus have a record of their shows in their official organ, and in the meantime the public generally will be informed of their doings in the different counties of the province.

How to improve the worn-out Lands of Soulanges.

To understand the present state of these farms it will be necessary to make some remarks upon their antecedents and composition. The most exhausted settlements or *côtes* are those which have been longest under cultivation. When first cleared there was a deep and rich layer of vegetable mould, which in some parts was destroyed by fire; and the land, though very productive, soon ran out, for, under the system followed, no fertilizer of any sort was ever supplied except the droppings of the animals pastured alternately thereon. To call this a system seems strange, but the practice was and is so universal, that it can only be looked upon in that light, no matter how destructive the practice. Plough in the autumn, sow as early as possible in spring, well surface drain and pasture the following year comprised the whole routine, and fertile indeed must these lands have been to stand such treatment as long as they did. No seeding down to grass to rest, no manure applied but to small patches near the barn; and in old times, to avoid the accumulation of years, the manure heaps were removed and thrown away. They gradually fell off from abundant crops of wheat until the labour and seed were not covered by the return. Then came oats in the same manner and with the same result, then buckwheat, and in many parts that is now uncertain. Of course there are exceptions to the perfect exhaustion I have described, but they form the exception not the rule. Take St. Féréole for instance: Thirty years ago there was not a farmer but had from 300 to 800 bushels of wheat to sell, now you could not find 300 bushels to purchase in the whole *côte* of near six miles long, and it is a double settlement. I need not, I think, remark further on the worn out state of the lands.*

* I will mention a fact in respect to this same *côte* (St. Féréole) in hopes that some of your medical readers may furnish a remedy for the dreadful diseases that here stalk abroad I allude to gout and lunacy. How pitiable to see three or four of these poor sufferers in one house? If the learned physicians of Canada could point out a means of relief for these afflicted children of man, it would be an acceptable work in Christ's service. The evil is not now so great as in former years, and the local opinion is that it has been mitigated by using well water instead of that contained in the ditches, and keeping the feet covered.

The subsoil of nearly this whole district is a clay, the greater part blue-clay. On this bottom the surface soil is somewhat variable. Near the river from above the Cedars there is quite a depth of loam and sand from one to four feet. From about forty acres back it is composed of a black vegetable mould varying in depth and richness. Often this mould is directly on the blue clay, but commonly there is a stratum of sand between them, and the thinner this sand the more fertile is the land, but in some parts even this vegetable mould has become ineffectual. These lands were formerly subject to annual over-flowings, but now from an extensive network of *cour-d'eau*, line ditches, &c., the evil is greatly mitigated.

We now come to the means at the disposal of the farmer of renovating these lands. The small amount of stock now kept and present incapacity of the land to support more forbids resort to the most approved systems of manuring and rotation of crops. Few of the farmers have the necessary capital, even if they had the knowledge, to carry it out. Buckwheat, clover, and deep ploughing, must be the great agents.

The system I should propose would be this:

1st year.—Plough in the fall or early spring, sow as early as possible 2 or 2½ bushels of buckwheat per acre, harrow and roll, and when the crop is as long as can conveniently be turned under, plough it down and sow it again as above, to be again ploughed down before the frost takes it. This fallow will have cleaned the land from a great part of the noxious weeds, and also enriched it, in most cases, enough to carry a crop of barley and clover. If the land should be so poor that it will not start a crop of buckwheat, a small mulch of coarse manure or straw will enable it to do so.

2nd year.—Barley and clover. If the land is not ploughed in the spring, it should be worked over with a cultivator, and then harrowed and rolled. A slight top dressing of almost anything would ensure a good catch for the clover, and if the stubble was cut high it would form a good protection in the winter by retaining the snow, thereby protecting the young plants.

3rd year.—The treatment this year must depend much on circumstances. If the object is to make the land very rich, the clover should be ploughed down in June, and again sown with buckwheat, and this turned under in the fall as above, when the land would be in a fit state to give a crop of wheat and clover or barley and clover. But if a crop of hay is required, it should be cut very early, so that the after-grass would be good and furnish a rich growth to turn under in the fall. It would then be advisable, the following year, to seed down with clover and timothy, and keep in hay for a couple of years to destroy the thistles, as no amount of tillage will eradicate this pest, though two years mowing is certain death them. After this treatment, I think any careful farmer might continue to keep his land improving by keeping a good stock and husbanding his manure, but he must for ever keep in mind that no land can continue to yield good crops unless it is nourished and fed in some way etcor-

place what is taken out of it. All sorts of lands are capable of maintaining and improving their own fertility, provided what is taken off is returned in some shape. For proof of this take the forest land. Every year there is a large growth of timber, but the leaves sleep at the foot of the parent tree, and the larger and more succulent are these the more fertile and rich is the soil. All the resinous trees, such as pines, hemlocks, &c., produce a thin, sandy soil, while the maple, basswood and elm, make a fine deep, rich loam; but all renovate their own soil, and so will our land under crop if we only return a fair proportion to mother earth.

How to resist Droughts.

NEARLY every season our crops suffer more or less from drouth, and it is no strange thing for the yield of oats, hay, &c., to be lessened one-half from this cause, while in some cases almost an entire failure is reported. The importance of water in farming and gardening will be realized when we consider that plants obtain their food from the soil in a liquid, or at least in a humid condition. The best and richest manures may be applied to the soil, and yet if the ground is so dry that the particles are not dissolved, it affords plants but little nourishment, and they may starve in close contact with that which, under more favorable circumstances, would prove their best food. Those who have used guano frequently, know that in a dry season they observe but little effect from its application; and this is doubtless the reason why many who have tried this manure but once or twice have become discouraged, and are confident that under no circumstances will it be found profitable for agricultural purposes. Others who happened to try the experiment in wet seasons can make a more favorable report. But no person, we think, ever applied good Peruvian guano in a liquid form, without observing very favorable and speedy results, even in seasons when the same manure applied dry would have had but little effect. If we thus lose the effect of a manure so finely comminuted and as soluble as guano, on account of drouth, what must be the result where ordinary manures are used, often in a crude state, and not well prepared for immediate use by the plants. Of course, we do not say that these are lost, but the effect in the main is lost upon the crop for which they were especially designed.

We cannot, of course, cause the rain to fall to suit our convenience, and it is well for us that such things are placed beyond our control, as we have far more now to attend to than we do well or wisely. What, then, it may be asked, can we do to prevent the ill effects of drouth; and, if the absence of the necessary amount of water from the soil is so great an evil, why do we endeavor to get it away from the soil by underdrains?

A large quantity of water is not required in the soil, and, indeed, is positively injurious to all our commonly cultivated plants; humidity is all that is needed. By carrying off excess of water at certain seasons, this condition is obtained with more uniformity. The soil that is soaked with water for a long period, or where

water stands, becomes heavy and compact, unable to absorb, like a porous soil, the water that falls in showers during our warm weather, a great portion of which runs off without penetrating to the roots of plants. This is one reason why a drained soil is more uniform in its moisture than one undrained, and why crops in land thoroughly drained seldom if ever suffer from drouth. Again, the atmosphere contains moisture, as is seen by the dew, which is the water condensed from the atmosphere by the cold surface of plants. Another common illustration of the same principle is seen in the moisture collected on the outside of a pitcher filled with cold water. The air in summer is warmer than the soil, and therefore when it has a good opportunity to penetrate, leaves its moisture, to the great benefit of the soil in dry weather. The more porous and friable the soil is kept, and to the greater depth, the greater the amount of moisture absorbed. This is the reason why sandy loams suffer usually less from drouth than a stiff clay, although the clay is colder, and would, therefore, absorb more moisture, and is also more retentive, and under like circumstances, would suffer less. But our clay soils in a dry time, are found generally baked hard, with the surface cracked, and almost impervious to both air and water. A year or two since, very late in the season, we observed a farmer passing through his corn with the cultivator, and as it was late in the season for this work, and no weeds visible to make the necessity of the operation apparent, we inquired the reason, when he informed us that the crop was beginning to suffer from drouth, and he always found that going through with the cultivator was as good as a shower.

Near the surface the soil is dryer than further down, the moisture being evaporated by the heat of the sun; and for this reason, plants with roots near the surface suffer more than those with roots extending down into the soil a considerable distance. While our small crops are drying up, the fruit and fruit trees do not suffer for water. If the soil is kept friable, water will constantly arise to the surface, just as it will arise and moisten a whole sponge, when the lower part only is placed in water. If the soil is hard, this operation will be very much retarded. Every one will observe the difference between holding the lower part of a sponge and a piece of wood in water. In both cases the water will rise some distance, but in the latter case it rises more slowly.

From the above hints, which we designed as merely suggestive, and to induce observation and reflection on the points in question, it will be observed that, although we cannot control the clouds and rains, we can do very much to prevent the disastrous effects which so often result from drouth.

Irrigation of Grass Lands.

We are again amid the fervid heats of August, the hottest and oftentimes the driest month of the year. One now only needs to look over the parched fields, especially in a dry season, to understand the need of irrigation. Even in seasons of average moisture we could use to advantage many times the quantity of water that falls from the clouds. It would always

make the hay crop a certainty, and often quadruple the yield of grass in the irrigated fields. It was not strange that the Romans living under the bright skies of Italy, early found the advantage of damming their mountain streams and turning them at pleasure upon the meadows below. It would seem from the account of Virgil, that whole districts were famous for the crops procured mainly by this method. Irrigation must have been an art well understood long before the Christian era. It is not strange that in a climate quite as much subject to drouth as that of Italy, irrigation should be almost unknown among us? With a climate that demands it, and with unrivalled facilities for its practice, in most of the northern States, not one farmer in a thousand has availed himself of the treasures of water within his reach. Nothing could better show the neglect of agriculture among us as an art than this fact. Few people are more ingenious than ours, or more quick to take advantage of the facilities which Nature offers to save labour and to create wealth. We abound in all useful inventions and labor-saving machines. We dam the streams to turn innumerable wheels for manufacturing purposes; to make fish ponds, and adorn our ornamental grounds; to make model lakes and raise our annual crop of ice for the delight of Europe and the Indies. But how rarely is a stream turned from its course to fertilize the land and increase our harvests.

Few have any conception of the value of water as a fertilizer. Many turn the streams made by rains in the highways into the adjacent fields, but they contribute all the increased luxuriance of the grass to the matter deposited. No doubt street refuse, such as the rain washes into the meadow, is an excellent fertilizer, but the rain itself contributes to the result. Far beyond the line of deposit, you see the effects of the water.

Just how the water operates to fertilize the soil we may be able to state. Of the fact there can be no doubt. We see the power of water to make crops in every drouth that comes. There are fields of light gravelly soil, whose crops of grass are nearly doubled in wet seasons. It is pretty safe to infer that water makes the difference. Water is a powerful solvent, and helps the decomposition, not only of vegetable fibre in the soil, but of its mineral constituents. You can not wash a stone so clean that water will not act upon its surface, and after a few hours wash away something more from it. It is probable that the water is all the while preparing plant food from the soil where it is present, and of course the more of it we pass through the soil, the more nourishment the roots of plants are enabled to take up.

We have recently examined two small valleys flowed for skating during the winter and drawn off early in Spring. In both you can detect the water line in winter by the greater luxuriance of the grass. Both streams that fed these ponds are dry, or nearly so, in summer, and never carry any very large volume of water. The basins that contain the water are small, and mostly covered with grass, so that

they are turbid even in rains. There is little appearance of sediment when the water is drawn off in the spring, and it is nearly certain that the beneficial effect is mainly owing to the presence of water in the winter season. If the water helps the grass crop under those unfavourable circumstances, it must help it much more when it bears a rich deposit, and is applied at the growing season.

We have in the State of New York two examples at least of the successful application of irrigation to farms—that of A. B. Dickinson, of Steuben Co., and L. D. Clift, of Putnam county; accounts of which were published in the Agricultural Transactions for 1855. In both these cases, the method is simple and the expense not beyond the means of most thriving farmers who have streams convenient for this purpose. In both, the results are all that could have been anticipated. The method is to dam the stream at a point above the lands to be watered, and to turn it on at pleasure, by means of a gate and channels of distribution. These main channels are furnished with side conduits which are merely furrows made with the plow and having just descent enough to carry the water. When the water is turned on these channels overflow, and the water is distributed over many acres.

Mr. Clift pursues his irrigation even in winter, and it is this feature probably that will be looked upon with more hesitation than any others. The water freezes sometimes as it flows, making a broad field of ice a foot or more in thickness, where it remains until dissolved by the suns of Spring. It is probable that the ice affects the soil thus protected just as the ice covered pond does. It is completely shielded from the alternate thawing and freezing; the frost does not strike in deeply, and comes out very early in the spring. It is his testimony that "the grass in all such places is first in spring, and grows with great rapidity." He also improves other seasons when the stream is charged with sediment, and spreads it over the land as a top dressing. Besides the sediment which is carried in the water, a good deal collects in the bottom of the pond which is carted out when the water is drawn off and makes excellent manure. This is spread upon portions of the field that receive the smallest supply of water. He cuts about a hundred tons of hay on forty acres of land, which is certainly double the average for the mowing land of the state, and uses no other manure.

Mr. Dickson makes great account of increasing the natural sediment by artificial means. He plows and harrows land that is to be overflowed, and stirs up the soil after it is under water to make it very muddy. Even the subsoil that is thus spread over the grass land is found to be an excellent fertilizer. His grass crops are enormous, and the best possible commentary upon his method of irrigation.

Now we have thousands of farms all over the country quite as well, or even better situated for artificial watering than these. In many cases a few days' labor by the ordinary working force of the farm would make a pond and the necessary channels for watering a few

acres. The work once begun would demonstrate its economy and lead to the watering of all the available portions of the farm. Lands that are now an incumbrance, hardly paying taxes, might be brought into a high state of productiveness. We call the attention of our readers to this very important topic at this season, when the scythe sweeps so many acres. prolific in five-finger and briars, but poor in grass. Cheap and careless irrigation pays, and the more systematic and perfect it is the better it pays, as a general rule. Use our streams rightly, and we shall find them richer than Pactolus, plowing over golden sands.

What increases the Productiveness of our Fields.

1. Careful preparation of the ground. Draining when the soil is wet. Deep and careful plowing. The plowing of the Arabs in Palestine is not much better than our harrowing, and their crops are in proportion. A field near me was drained by tile, in the wet places, then well plowed, subsoiled, and manured, and in three or four years it produced a remarkable growth of trees, and gave abundance of fruit for the family.

2. Careful selection of seed. Poor seed, as a general rule, produces its like. A little pains in the selection of the best seed will often add materially to the amount of the produce.

3. Careful tillage. Hoeing, plowing, cultivating, all aid in the productiveness of the soil. "In the sweat of thy face shalt thou eat bread." Doubtless the more labor a man bestows in this way, the more he will be rewarded in the harvest.

4. Again, the amount of rain and heat from heaven has much to do with the productiveness of the ground. A cold and frosty season, or a wet and damp one, may take away much from the natural fruitfulness of the ground; or where the heat is abundant and the rain plenty, and all things favorable, they will sometimes add greatly to the yield of harvests. In other words, there are causes beyond the reach of human ingenuity and skill which are affecting our crops. The best prepared ground and the most careful cultivation cannot always insure abundance. A frost, a drought, or an unpropitious heaven may frustrate all one's labours. This leads to another cause, which enters largely into the productiveness of the ground, and which we are in danger of overlooking.

5. He that created the earth has a specific object for it to accomplish. Nothing was made in vain, or to be abused or misused. An all-wise God has a design for everything to accomplish. If men work in harmony with that design, they can of course produce larger results than if they work against it. If you plant and sow at the right seasons, you can do much better than if you run contrary to nature in that respect,—that is, contrary to the wishes of the Creator. If anyone undertakes to accomplish the same object which God has in view, it requires no proof to believe that he will be successful. When men work with the divine working, a better result is of course to be obtained. One cannot raise corn in winter, nor make ice in summer. To succeed, he must obey the laws of the Creator. And further,

the more of these laws he takes into consideration, and the more of them he observes, the greater of course will be his chances of success. If in all things we could work with God, doubtless the divine blessing would work wonderfully in our favour. In a certain case. He told the Israelites, "I will command my blessing upon you in the sixth year, and it shall bring forth fruit for *three years*." Lev. xxv. 21. It were surely irrational to believe that He who created all things cannot, if He choose, make them produce more at one time than another. Cannot He show His divine pleasure in the productiveness of the fields as well as by His grace and spirit? He promised His people that if they would keep His commandments, He would bless the fruit of their land, their corn, their wine, and their oil, the increase of their kine, and the flocks of their sheep. Deut. vii. 13. And so, in certain seasons they had abundance; and again, when the people displeased Him, they had famine, bad harvests, and trouble. This is not an old and forgotten truth only. A slight effort to reason will convince any one that God has as specific a purpose to work out now as ever. He wants to use the creation and the works of His hands to accomplish His designs as much at the present moment as at the beginning. And He will accomplish those designs. If men will aid him in performing His will on earth, doubtless they will obtain much larger results than in any other way. God wants men to be social, benevolent, doing good to each other. He wants all His gifts to be used for the benefit of the world. But if men take and use them for selfish purposes, for sin, for crime and shame, can we expect things to go on as smoothly as when used for the good of men? If men pervert the productions of the harvest can they expect them to be as abundant as when they are made to benefit the people and cause of God? In other words, when we put goodness and righteousness and truth and benevolence and the kingdom of heaven first, then we may expect the blessing of heaven to abound in our harvests as well as in our hearts. Where the Creator of all things is pleased, all things will work well.

Here, then, are *five things* to be attended to by farmers and others, in connection with their labors in the field. May neither one of them be omitted.

Farmers and Farming.

Who are the farmer's servants? Chemistry; the pure air; the water brook; the lightning cloud; the winds that have blown an interminable succession of years before he was born; the sun which has for ages soaked the land with light and heat, melted the earth, decomposed the rocks and covered them with frost, and accumulated the stagnum which makes the heat of the meadow. The students of all nations have, in past ages, been dedicating their education to universal science, and they have reformed our school books and our terminology. The four quarters of the globe are no longer Europe, Asia, Africa, and America, but carbon, oxygen, hydrogen and nitrogen. The four seasons of the year are now gravitation, light, heat and electricity. Science

has been showing how nature has been working in regard to the support of marine animals by marine plants. So nature works on the land—on a plan of all for each and for all. You cannot detach any portion of its forces and perfect nature. The flame of fire that comes out of a cubic foot of wood or coal is exactly the same amount as the light and heat taken in from the sunshine in the form of leaves and roots, and now given out after a hundred thousand years. Thus lie in the farm inexhaustible magazines. The eternal rocks have held their oxygen and lime undiminished and entire as they were. No particle of oxygen can run away or wear out, but has the same energy as on the first morning. The great rocks seem to say, 'Patient waiters are no losers.' We have not lost so much as a spasm of the power we received.

The earth works for man. It is a machine which yields new service to every application of intellect. Every plant is a manufactory of soil. In the stem of the plant, development begins. The tree can draw on the whole air, the whole earth, or the rolling main. The tree is all suction pipe imbibing from the ground by its roots, from the air by its twigs, with all its might. The atmosphere is an immense distillery, drinking in the oxygen and carbon from plants, and absorbing the essence from every solid on the globe. It is a receptacle from which all things spring, and into which all return. The invisible air takes form and solid mass. Our senses are skeptical, and only believe the impression of the moment. They do not believe what is demonstrated to them, that these vast mountain chains are made of gasses and rolling wind. They do not believe, what is true, that one-half the rocks which compose the great globe, every solid substance, the soil we cultivate, are made up of animals and plants, and invisible oxygen. Nature is as subtle as she is strong. Her processes of decomposition and reconstruction might be followed on in high grades of existence; and to sentient beings. They burn internal fire which wastes while it works. The great agencies work in man as in all.

There is no power like gravitation who will bring down any weight which you cannot carry, and if he wants aid he knows how to find his laborers. Water works in masses, and sets his irresistible shoulder to your mills and shops, or transports vast boulders of rocks a thousand miles. But its far greater power lies in its capacity to enter the smallest holes and pores. By its agency the vegetable world exists, carrying in solution the elements needed for every plant. Water that daily miracle—a substance as explosive as gun-powder—the electric force contained in a drop of water being equal in amount to that discharged from a thunder cloud.

While the farmer has these grand fellow-laborers to assist him, and these majestic tools to work with, it must be owned that he is not quite competent to their directions. His servants are sometimes too strong for him. His tools are too sharp. But his inequality finds its remedy in practice. Experience gradually teaches him, and he is thoughtful. The farmer hates

innovation; he hates the hoe till he has tried, preferring to scratch with a stick: he will walk till he has tried the railway car; but the oldest fogies among us, now that steamers are running, would hardly set out to dispatch a letter across the ocean by swimming with it in his mouth. While such great energies are working for the farmer, he is also to recollect the great power that is in small things. It is very little that is required. Its internal force consists in a few simple arrangements. Look, for instance, at the power of chestnut rail. Look at the prairie hundreds of miles off, not a stick nor a stone upon it, except at rare intervals. Well, the farmers manage to put a rail fence, and at once seeds sprout and crops rise. It was only the browse and fire that kept them down. Plant a fruit tree by the roadside, and it will not produce, although it receives many hints from projected stones and sticks, that fruit is desired to come down, and though fruit has gone crude into the bowls of small boys. But put a fence around it; the boys will let it alone, and you will have fruit so large and luscious as to seem almost inviting you to take its picture before sent to the horticultural fair.

Women Farmers in Western New-York.

The following letter from H. C. Wright was read at a recent meeting of the Farmers' Club, New York. It bears date Pekin, Niagara Co., N. Y., May 20th, 1862. Mr. Wright says:

"I am in the family of Marvin and Pauline Roberts, farmers with three hundred and fifty acres of land, as good as any in the State. There are 8 children 7 daughters and 1 son—the latter 9 years old. They have been on this farm two years. The failure of their wheat crop the past year—they having sowed 100 acres, and only 20 being worth harvesting—has been a great hindrance to their progress in surrounding themselves with the beautiful and ornamental. The Spring work was begun on the 19th of April; since which time, four of the daughters, aged respectively 19, 15, 13, and 11 assisted by a niece aged 17, and by their mother, have accomplished the following labour, i. e. plowed 75 acres, dragged 100 acres, 3 times, sowed broadcast 100, and rolled 100. More plowing has been done, but the above amount of labor has been done exclusively by the mother and the five young daughters. They have now growing 45 acres of wheat, 15 of winter and 30 of Spring; 50 acres of oats; 30 acres of flax; and are to put in 10 acres of corn, 10 of beans, 3 of carrots, $\frac{3}{4}$ of an acre of onions, and 10 acres of potatoes.

To-day I saw one of the daughters plowing, aged 13, holding the plow and driving her own team. During the day she plowed one acre and a half, the usual labor of a day in plowing. Last Saturday, I saw two of the girls, one aged 17, the other 15, sowing wheat broadcast, and their sowing was done as well as any one would do it. I saw another, aged 13, dragging, and another aged 19 rolling, and another piling and burning brush with her father. These daughters have the care of their own teams. One of them, who is 17, is detailed to do the house work this season. She is as good at plowing, sowing, dragging and roll-

ing as any of them. The house-work is considered by them the hardest and most difficult to perform. They all prefer the out-door farm work.

During the two years they have been on this farm, they have labored mainly to get the land in a state to raise good crops. They have succeeded. They spent \$1,400 the past year in draining. This work has been done by men. During the two years, over 50 acres have been cleared of bushes, stumps and roots, and this has been done mainly by the mother and daughters.

I cannot now speak as to the results of this effort of a woman to train her daughters to be practical farmers, as to their physical, intellectual or moral development. These speak for themselves. No one who knows the family and the facts connected with their efforts to point out the way to woman to an independent, honest and honorable subsistence, can have any misgivings as to what those results will be. They will be good, and only good. Already the example of mother and daughters most beneficially affects the region around them. Women are becoming practical gardeners. They will soon become practical farmers; and plowing, dragging, sowing, rolling, planting, hoeing and harvesting will become the pleasant, healthful and remunerative occupation of women as well as of men.

I know no movement more auspicious of good to the future of woman, than this effort of Paulina Roberts and her young daughters. Their effort is above all praise, and deserves and will receive the hearty approval of all who truly seek to elevate the race by improving the health and elevating and ennobling the character of woman. Woman must engage in out-door labour, or the health and character of man must degenerate. As is the health of woman, so must be the destiny of man.

OUR RAMBLES.

"Where we went and what we saw."



SCARCELY have fifty two days elapsed since our departure from Quebec on board the *Anglo-Saxon*, and we are now prepared to report to the best of our ability, either on the valuable collections of the eastern armen at Kensington, or on the unrivalled display made by the Royal Agricultural Society of England, at Battersea. For a whole month we have been day by day through the different courts, wondering at the boasted productions of each country, and the impression conveyed to our mind was a deep sense of the greatness and power of human skill and industry. Great Britain, we are proud to say, has its fair share of superiority and distinctions, but in no department is this superiority more evident than in the agricultural. We will not venture to go through the details of all we have seen; indeed the whole volume of the year would not prove sufficient to contain our remarks on the subject. But in the hurry in which this number is published, leaving for future

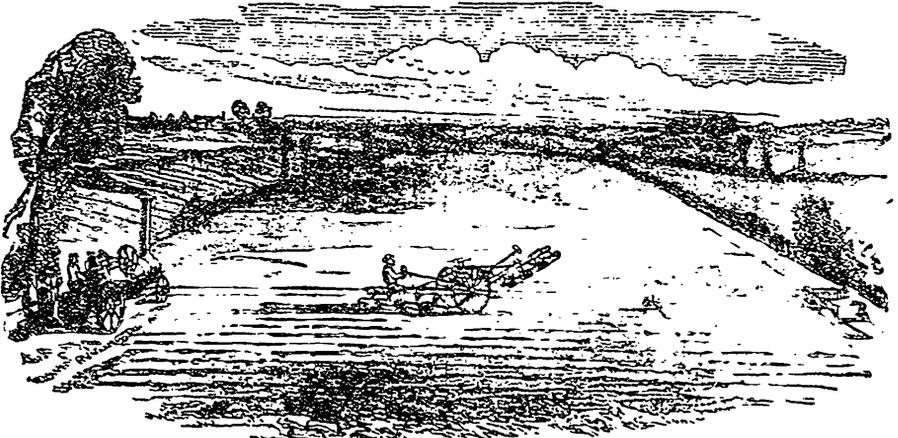
numbers a more satisfactory account of the Exhibition, we will only put before our readers that improvement in agricultural machinery which has most attracted the attention of farmers at home and abroad, which is calculated to bring about quite a revolution in farming generally, and which consists of the adaptation of steam to the tillage of the soil. These powerful implements when at work at Farningham for several days, during the show of the Royal Agricultural Society, afforded a very good occasion of witnessing their wonderful performance.

To those who have not become accustomed to the nice contrivance and beautiful work of an iron wheeled plough, this must, of course, be a step in advance not to be contemplated without an ejaculation. Many of them are as unprepared for the steam engine in the field as the astounded toll-gate keeper who flung wide the gate to the "Steam Dragoon," which conveyed its inventors "Captain" Trevethick and his cousin Vivian from Cornwall to Plymouth, with the exclamation "No-noth. nothing to pay! my de-dear Mr. Devil, do drive on as fast as you can! nothing to pay!" There were seven sets of apparatus at work upon the farms of Mr. Beadle and Mr. Russel. These belonged to Mr. Smith, of Woolston; Mr. Fowler, of Leeds; Messrs J. and F. Howard, of Bedford; Messrs Coleman and Sons, of Chelmsford; Messrs Tasker, of Andover; and Messrs Brown and May, of Devizes. They all exhibited one principle, that of traction by wire rope; but some worked with a stationary engine and windlass, and others with a moveable one; in some cases the engine and windlass were combined, in others they were separate. That known as the rotary system of steam culture, wherein the engine is locomotive and carries at its tail a great revolving cylinder, the circumference of which is armed with cutting teeth, appears to be abandoned, after having cost its inventors many thousands of pounds. Neither do we see anything of any attempt to employ locomotive engines for drawing implements over the land behind them, *a la* Boydell. These schemes have one by one given way before the expression of public opinion, and we have now centred our interest in a system which has proved itself superior in the following respects to horse power. For the hard work of the farm it is cheaper, deeper, and more efficient cultivation can be obtained by it; by its means the farmer is enabled to perform his tillage operations at the best season of the year; it utiises our clays, and brings better crops than formerly without manure; it strikes at the root of that unproductive system of dead fallows which, before its introduction, extended over all our heavy clay land districts; it enables us to affect deep culture, and gives vertical extension to the land, where an extension of superficial area is not possible; land by its means can be worked in unfavorable seasons, and at times when with horses nothing can be done; a large number of horses can be dispensed with, and the remainder, by its employment, can be kept with less outlay. Having thus briefly enumerated the advantages attending the use of the steam plough or cultivator,

we will devote a little time to a description of the various implements and modes of working exhibited at Farningham, for the sake of such as were not able to be present. Mr. Smith, of Woolston, the first man who cultivated a farm by steam power, showed little or no improvement in his apparatus, which consisted of an ordinary 10-horse power portable engine, a stationary windlass, containing two winding drums on horizontal axes, 1,400 yards of steel wire rope, a "No. 3" cultivating implement, and a combined machine for cultivating, drilling, and harrowing land; total price without the latter and the engine £207. The apparatus exhibited by Messrs. Brown and May consisted of a double cylinder portable steam engine, an improved windlass on the same plan as Smith's, but with drums of much larger diameter, 1,400 yards of wire rope, with all necessary anchors, pulleys, &c. complete, without engine £200.

Messrs J. and F. Howard exhibited in another form an apparatus for cultivating land with a stationary engine and windlass. They showed, in fact, two sets of tackle—one a working

plough, and another a cultivator. With this difference, they consisted of a 10-horse power, double cylinder, self-propelling, or ordinary portable engine, a two-wheeled windlass, 1,400 yards of steel wire rope, a double-action cultivator, with snatch-blocks, pulleys, &c. and cultivator; price £220. The windlass which used to be identical with Mr. Smith's now exists in a much improved form. The winding drums revolve on a very strong wrought iron axle, attached to brackets which carry the driving shaft and a pair of travelling wheels. By a simple lever movement these drums drop out of gear instantaneously, which enables the windlass man to attend to the proper coiling of the rope, on which its preservation so much depends; and also, in case of accident, to stop the implement at once, without stopping the engine. At Leeds meeting great objection was made to the loss of power which ensued in an endeavour to keep the slack rope from sledging on the ground. The friction break then used has been dispensed with, and a new snatch block has been introduced to serve its purpose.



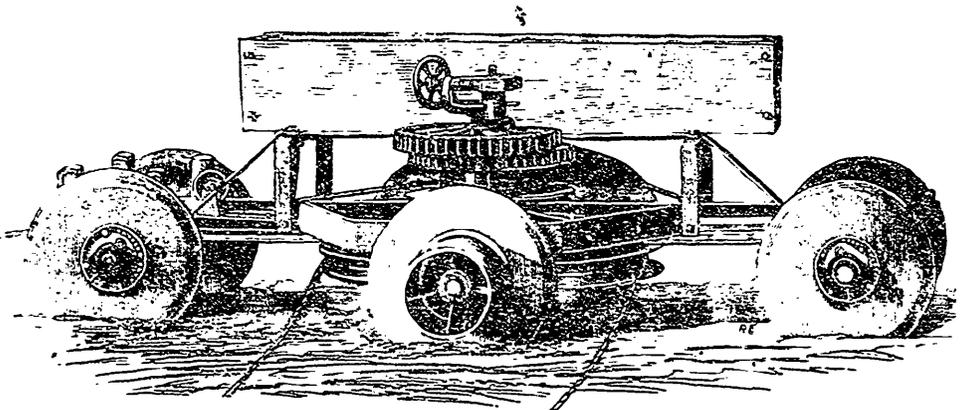
Fowler's Patent Steam Plough in the field.

This consists of three sheaves, two of cast iron, of the usual size, and between, forming a triangle with them, is what may be termed a floating solid sheave, with soft iron circumference, so forged as to enter the grooved periphery of its larger neighbors, and to bite the rope there. This floating sheave is carried on a radial arm, which centres on the side of the wooden frame farthest from the windlass, ascends between the two sheaves, and allows its charge two or three inches play on either side. This triangular group is so fixed in front of the windlass that the hauling rope inevitably forces the floating wheel to bite the slack rope in the grooves of the opposing sheave. The break may now be said to be transferred from the windlass to the rope, but with this advantage, that the floating wheel in revolving exercises a constraining force on the slack rope, and diminishes the force otherwise required to haul the implement through its work, and to pull out the slack rope at the same time. The cultivator consists of a square frame, holding a

series of scarifier teeth, placed back to back, so that they are ready to enter the ground in either direction. It is improved by the addition of a cutting share and moveable horn for breaking the top crust more effectually. The Leeds turn over plough is quite abandoned, and a very capital one is substituted, which does not leave much to be desired on the part of the employers of the system. It consists of a frame riding upon three wheels, one in the furrow bottom, two on the land used for steerage, two sets of plough on two lever frames, hinged at the forward end of the travelling frame. A shaft, supported by the side standards of the frame, carries eccentrics set at opposite diameters, and by chains from these to the lever frames the ploughs are raised or lowered. The peculiarity is, that though the ploughs balance at half elevation, when one set is in the ground, the other set bears with about half its weight only, and tends to lift the first set out of the land. The remainder of the weight tends to tilt the wheel frame forward.

Here, then, we have the different sets of apparatus for working by means of a fixed engine and stationary windlass. I have only omitted one devised by Mr. Fowler, but which is of little moment in comparison with his other sets of tackle to which reference is about to be made. The stationary apparatus is worked in the following manner:—Suppose it is desirable to plough a field of 10 acres. Let A B C D be the corners of the square enclosure, with a gate in the north side, A D, in the corner A. Outside that gateway the engine may be placed, with the windlass holding 700 yards of rope on each drum, on one side driven by a connecting rod, and the patent snatch-block staked down immediately in front of the drums. One rope leads straight down side A B, passes through an anchored sheave or pulley at B, and fastens to the implement. The other rope makes a sharp bend immediately it passes the snatch block, passes through a sheave anchored in the middle of west side, D C, another at C, and runs along until it joins the implement at B, to which it is fastened. Motion being given

to one drum the implement is drawn from B to C at the south end; when at C the engine is reversed, another drum is brought into motion, and the implement is brought back to B, ploughing or breaking up 30 or 40 inches in width at each bout. There are men stationed at C and B, who shift the anchorages 30 or 40 inches every time the implement departs from their end; and thus the plough is perpetually making its backward and forward journey, until the last furrow is turned against the north hedge, D A. Should there be four fields no larger than this to the north and east, they can be similarly dealt with without any great movement of the windlass or engine. The number of men employed may easily be ascertained: the engineman, one for the windlass, two at the anchors, one to steer the implement, and a couple of boys to move the porters which support the rope and otherwise help. The advantages of this method are manifold, inasmuch as, all expenses being calculated, there is a saving affected, as compared with two-horse ploughing, of from 1s 6d to 3s an acre; a saving which is



Fowler's self-moving Anchor.

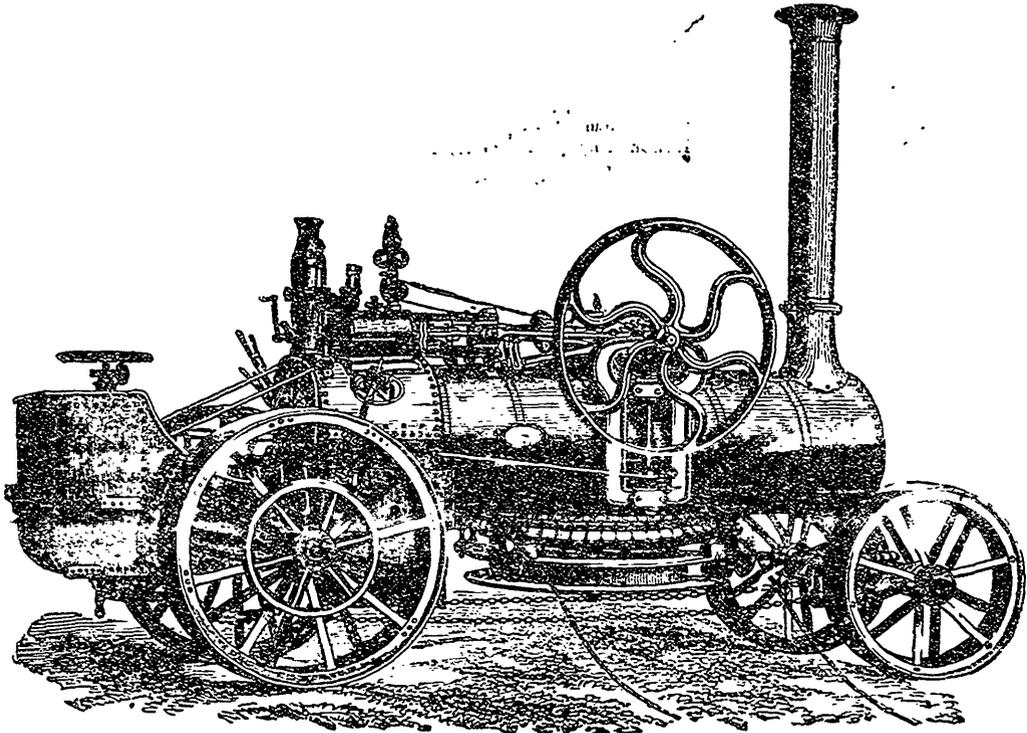
increased in proportion to the adhesiveness of the soil. The disadvantages of the stationary windlass are only seen when it is placed in opposition to the windlass which shifts along the headland. The crushing of the rope upon itself, as it is coiled upon the windlass, the wear of the rope upon the ground, the loss of power which must necessarily be sustained when the implement is at a distance from the engine, all these are objectionable points.

Mr. Fowler is the best exponent of the travelling windlass plan. It was this, in fact, which was first to prove the superiority of steam to horse tillage. The actual contrivance which decided this victory is abandoned for one which appeared at Leeds last year for the first time, and took the lion's share of the prize offered for steam-ploughing machinery. This Leeds prize tackle was at Farningham, in no way altered. Imagine, for the sake of clearness, the same field A, B, C, D, which illustrated Howard's mode of working. The engine, with windlass or "clip drum" slung beneath the

boiler, propels itself along the headland from A round to C, carrying the anchorage with it. The latter is dropped at C, and the engine takes up its own position at B. An endless wire rope stretches between, making one half turn round the "clip drum," and another round the sheave carried by the anchorage. The "clip drum" is upon a vertical axis. The single groove in which the rope runs is formed of pairs of knuckle joints or nipping pieces, which grasp the rope as it impinges upon them, and free it as it gains the straight line on the other side. The drum is driven by a shaft and pinion from the crank shaft, and the rope, thus prevented from slipping, is enabled to exercise sufficient power upon the implement to pull it through any difficulty. The implement in which the two ends of the rope meet thus plies between the engine and the anchorage, which gradually and spontaneously move forward in the direction of A, D, from south to north. The implement consists of two opposing sets of four ploughs each, balanced upon

a pair of light carriage wheels; while one set is working, the other rides in the air. It carries also a neat contrivance for gathering up the slack rope which acts when the steersman takes his seat. This is rendered necessary because of the varying length of furrows. The anchor is made to resist the side strain of the implement worked by the cutting into the ground of six disc wheels. It is moved along the headland at pleasure by the motion of the five foot sheave, which is turned by the ploughing rope. As the plough recedes from the anchor, the heave winds up a rope stretched along the headland, and keeps the anchor opposite its work. One man at the engine, another to steer the implement, and a couple of

boys to attend to the porters which carry the rope and to steer the anchor is all the labour this apparatus requires. In this case the implement is near the source of power, and the rope, instead of making as many as fourteen different bends, as in some other cases, a fact most disastrous to its integrity, makes but two; there is less difficulty in keeping the rope off the ground, and a better provision for preserving the slack rope tolerably tight. The plough is not the only implement adapted to this apparatus. There is a cultivator which takes 6 feet, and will cultivate from 16 to 20 acres a day, drawn by a double cylinder 14 horse power engine. There is also a trench or subsoil balance plough which performs an ope-



Fowler's Patent—Engine and Windlass combined.

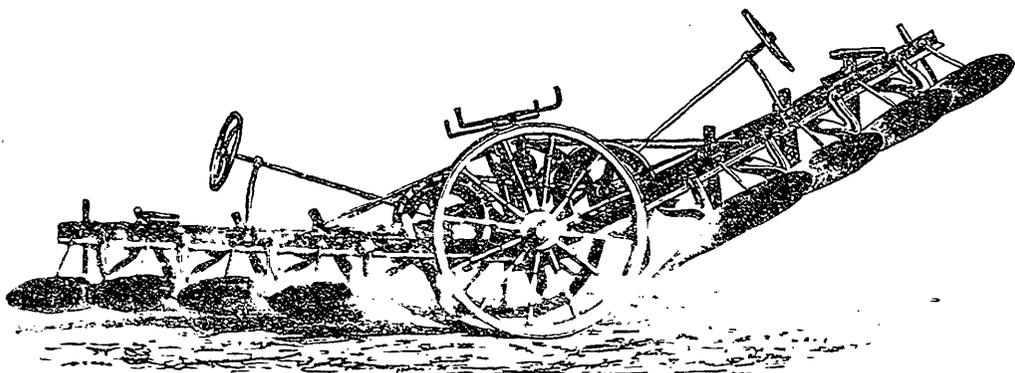
ration not to be done by horses at all, namely, the stirring of the soil to a depth of 18 inches. This apparatus, comprising 14-horse power engine and four furrow plough anchor, and 800 yards of steel-wire rope, is priced at £875. Such a sum prevented its coming into general use. Large farmers were glad to obtain it, and in Russia and Hungary, where manual labour is scarce, or prejudiced, or sluggish, great landed proprietors esteemed themselves fortunate in finding such a strong ungrumbling slave to plough their vast tracts of land. Smaller farmers on their 300 or 400 acres of land, not thinking themselves justified in making such an outlay, patronise the less expensive, though less efficient, machines already alluded to. But Mr. Fowler having no mind to let this cus-

tom slip by him, determined to accommodate himself to the possessors of small portable engines, by the invention, first of a stationary, and now of a travelling windlass independent of the engine. This gives the owner of an eight-horse portable engine all the advantages of the other tackle except extreme power, for about £285. For some readers a description of this, the greatest novelty at Farningham, may prove acceptable. One of the self-moving disc anchors is fitted with a clip drum instead of a pulley; the engine horse shafts are taken off, and a connecting iron hooks the engine to the anchor, so that when the anchor travels along the headland the engine follows it. Motion is communicated to the gear work and clip drum of the anchorage by a chain and

riggers, the latter being on the engine crank shaft. It is obvious that the use of a belt which depends upon very nice adjustment of the riggers round which it passes would be quite inadmissible. Everybody in such circumstances suggests a pitch chain, but Mr. Fowler has devised a chain which will work in V shaped riggers, without slipping, made of a compound of iron and leather. This windlass is anchored forward, and gradually coils up the rope which fastens it, and so moves forward in the same way as the anchorage on the opposing headland, the plough or grubber working between.

On Thursday little was done at Farningham. The new implements were tested; there was a great loss of time. On Friday the work done by Fowler and Howard was splendid. The plowing of Fowler we never saw excelled by any team work for regularity and precision of cut. He was at work upon a piece of tare land trampled by sheep. We made several observations upon the amount of work being done. They were not of the most satisfactory kind, because no trial properly speaking, was going forward, and the implements were constantly

being checked by the crowd of people who paved the way, or required answers to questions. Fowler's 14 horse power, with steam pressure from 40lb. to 50lb. was pulling the 4 furrow plough, which inverted a slip of soil each about 40 inches wide, to a depth of from seven to eight inches. This operation was performed at the rate of 3½ roods per hour, or 9¼ acres per day of ten hours. This large tackle, with the 7-tined grubber, taking 6½ feet on the following day, did keep work at the rate it is said, of three acres a day. Such an achievement is perfectly unprecedented, but as we did not ourself make the observation we will not vouch for the fact, though we believe it to be perfectly reliable. Should it be true the fact may be again repeated, and we shall then hear more about it. Mr. Fowler's small tackle, adapted to portable engines of a small power was at work at a short distance from the above. The engine was a single cylinder portable 10-horse, running with 60lb. or 70lb. steam pressure, and the implement was a 4 furrow balance plough, with digging breasts. Each plough lifted a furrow 10 inches by 7½. The rate of work was a little more than one acre per hour.



Fowler's Patent Balance Plough.

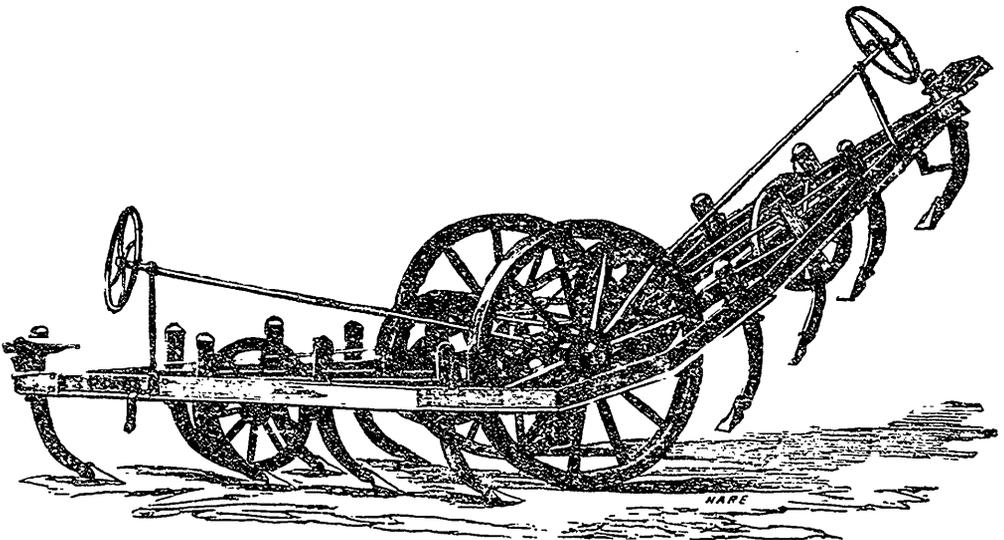
Some part of the time a harrow was drawn on the side of the plough, but as this hid the true nature of the work, it was removed. Nothing certainly could be more complete and perfect than this operation, which fairly astonished all beholders. It required the labour of three men and two boys, and this work, be it remembered, was upon land where the turning of a furrow of the same size could scarcely be effected with less than three horses. Some calculations with respect to the other sets of tackle were made. One or two concerning the Howard's we now give, and these for the same reasons as we have stated above, must be received with considerable allowances. This firm worked the grubber with ten horse power double cylinder engine, at 75lb. taking 30 inches at the rate of nine acres in ten hours. The land was well cut and broken to a depth of seven inches. An engine of the same power, hauling the three furrow plough, which carried three furrows, 10 inches by 7 each, with 70lb. pressure, got over three roods an hour, or seven acres and a half a day. The new implement is certain-

ly a capital one, and made regular, beautiful work, with the Kent breasts. The field operated upon was clover lea, good three horse ploughing. The novel features of these two sets of course attracted a great deal of scrutiny. Every one wished to see how the Howards had surmounted the difficulty which acted against them at Leeds. Some said that the new snatch block perfectly economised the power lost in holding up and dragging out the slack rope, while others considered that the rope must needs be much worn and bent in passing through it. As this is a question which will be decided in a very short time by experience there is not much need for an opinion. The wear, at any rate, cannot be so great in the case of the travelling windlass with the eight hundred yards of endless rope making a half turn round two sheaves. A good deal is said because Fowler does not plough his headlands. The fact is, not that he cannot do so, but that it proves to be most economical to let the tackle go on to another field rather than be filing about a little bit of land which can

be ploughed by a team of horses for less money. If we look far enough, too, it requires no great gift of prophecy to foresee the time when these headlands will be permanent roads, hedges being done away with. Where will the present objection then be? The support of the rope has been more an object of attention than ever, since it is in the wear of this member of the apparatus that the chief expense lies. Howard and Fowler now sustain it thoroughly. Their competitors were somewhat careless in this respect, and their expenditure of power compared with work done was consequently much greater. Mr. Smith and those who worked on his plan were upon heavy land at a considerable distance from the station. They experienced however no lack of attention. Their work was useful but it lacked that superiority which belonged to the ploughing, cultivating, and digging already

noticed. By way of summary we may say the Farningham exhibition indicates a very considerable advance, tending to further the practice of steam culture amongst the ordinary tenant farmers of this country. This conclusion is confirmed by the numbers of orders taken, especially by Mr. Fowler and Messrs. Howard. We believe between forty and fifty sets have been purchased, many to go abroad, and some to lend their efficient aid for the pulverisation of our tenacious clays.

Not a little were we amused on reaching the summit of one of the neighbouring hills, to which we had been directed, to find an arrangement of ploughs drawn by steam, which acted as a most powerful relief for the apparatuses which occupied the foreground of the picture. There was an 8-horse power single cylinder engine, with steam indicator at 78 lb.



Fowler's Patent Balance Scarifier or Cultivator.

hauling along on Smith's plan two lumbering Kentish ploughs, taking one furrow 10 inches by 6. Eight men and one boy were engaged, the course of the implements was slow, and from a minute to a minute and a half was lost at each end in lifting out and altering the mould board, and starting again. Kent, never very famous for cheap ploughing, perhaps never experienced such a dear piece of work as that must have been. If steam is worth anything, it is certainly to reduce cost, not to increase it.

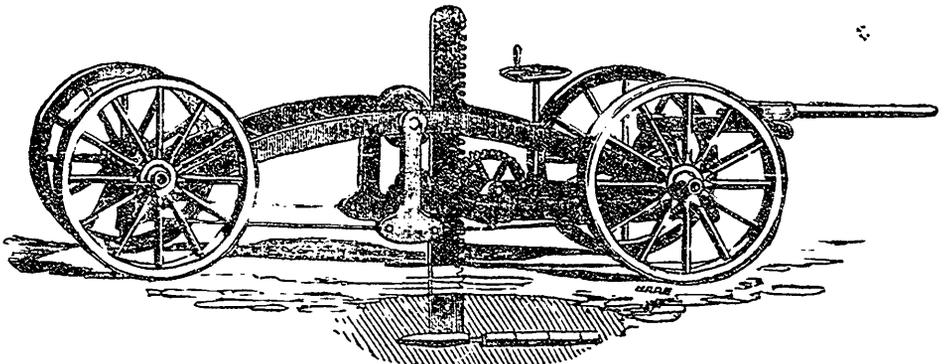
Amongst the horses the Suffolks and Clydesdales were immeasurably superior to anything we have ever seen before. The classes of shorthorns were more distinguished for their extent than for the remarkable character of the animals exhibited. The Herefords were in decided advance of the former position; and though the Devons showed largely, they do not seem to be making much headway in this meat producing age. The Scotch cattle well repaid close inspection. The milch kine of Ayr, numbering sixty entries, were at the head of their

department, and will help, together with the Swiss, French channel Islands, Welsh, Irish, and Suffolk polled cows, to turn the attention to the importance of a better kind of dairy stock than either of the pedigreed classes. These pedigreed classes, by way, are to be increased, for I hear of a *Polled Herd Book* just coming out from about the dusky forms of the north. The pigs were fine—and very large and good show, all the main varieties being well represented.

The Merino Sheep, cultivated exclusively for their wool, were in great force, particularly the Saxon and French varieties. It seems probable, however that although these sheep may be bred with advantage in England, as they are by Mr. Sturgeon, with a strength of constitution which fits them for the Australian colonies, where fresh supplies of vigorous blood are rendered periodically necessary by the character of that climate, they will cease ere long to be cultivated in Europe because the Australian merino wool is fast superseding the

Saxon, and French, and Spanish wool. For the continent, sheep combining wool and mutton are wanted. The French have always crossed their Merinos with the Leicesters, Downs, and Cotswolds, and it may be observed that the Lincoln, with his lustrous wool, is making friends in Pomerania. The Merino expends all his vital energies in the production of about 3lb., to 5lb., of wool, which is usually worth from 4s 6d to 5s 3d per lb. English farmers would think this a rather sorry return for the great care these animals require, and would prefer a coarser wool, accompanied with a good leg of mutton. Our friends in those regions would hardly know what to make of a great Lincoln, weighing at fifteen months from 30lb, to 40lb, a quarter, and cutting a fleece of 1lb, a yield not difficult to be met with. The little Chinese sheep, producing two crops of lambs a year, excited great attention, for those who are fond of lamb would have no objection to that delicacy at Michaelmas as well as at Easter. We have to thank the Acclimatisation Society for their introduction, who

tell us that these sheep not only bear twice, but produce four or five lambs at a birth—a fact monstrously creditable to them certainly. On the Saturday the yard was visited by the Duchess of Cambridge, the Duchess of Mecklenburg Stralitz, the Duke of Cambridge and the Viceroy of Egypt, who inspected the whole of the exhibition with great interest, and chatted with the Swiss and French herdsmen. The Duke again visited the yard on the Monday, and all the principal members of the aristocracy showed the most lively interest in all the proceedings at Battersea. The shilling days drew large numbers but not so many as was expected. At Leeds the greatest number was 74,000, in one day; Battersea has not exceeded 40,000 in one day. The two first days the attendance was below 2,000, the guinea day it was 1,200, or thereabouts, the 6s day an increase was observed. Friday and Saturday gathered from 11,000 to 12,000 each day, while Monday and Tuesday averaged a little over 30,000, on Wednesday a barely 40,000, people paid for admission. The society must, therefore, be losers



Fowler's Patent Draining Plough.

by their Metropolitan meeting. The expenses have been unusually heavy, and the objects of interest on view in London have we daresay, had a great deal to do in causing this apparent failure. This must not be regarded as an absolute loss; the society has gained credit; it has increased its number of supporters; it has collected a splendid show of the maxima of production, both animal and vegetable, and of mechanical invention, which will be sure to be followed by results highly advantageous to this country and to those countries which have sent their representatives to see what England is doing. So the loss of £3,000 or £4,000 must be viewed as capital sunk for the benefit of the nation. Seed sown in the waters, which will appear after many days, bearing a crop of prodigious results. At any rate, we will back the steam plough and short-horn bull, and other distinguishing characteristics of modern British farming, against Armstrong guns or iron gunboats for settling those national prejudices out of which wars arise. Let the people of the continent be put in the way of obtaining plenty

of bread and meat, and there will be less tendency to war. People who have rich growing crops, and a finally cultivated soil, will be wary how they draw the sword. France thoroughly productive and well fed would show a very different spirit to France with sterile field and hungry stomach. A great deal of business has been done during the week. The prize Merino ram has been sold for Australia for £200; Lord Shrewsbury bought Mr. Biddle's Suffolk Colonel for £250; Lord Lucan Mr. Crisp's Champion, for a large sum; Mr. Giles's colt goes to New Pomerania at £200, and Mr. Glead's is booked for New Zealand. There were not so many purchasers among the short-horns as was expected; Mr. Duckham's bull, the best animal of the Hereford class made £100. The Swiss cattle were to have been sold by auction on Wednesday evening, but the crowd so discomforted the auctioneer (Mr. Stafford) by breaking into the ring and flocking after everything which showed a tail and a tendency to locomotion, that he was obliged to forego the advantages of a larger company than he will ever obtain again.



Farm Operations.
HE sickle and the scythe, the rake and the fork, are prominent among the agricultural emblems of August; although the labors

of the field are various. In this month—perhaps quite as much or more than in any other—farmers must be forecasting—looking ahead—in many of their plans, and be active and judicious in devising the best means for expediting the different kinds of labour that need to be performed during the month. When the weather is fair, and when it is wet and lowly, if all plans are properly laid, but little time among laborers may run to waste. In this latitude Indian corn receives the second or third cultivation; haying is in full progress; summer fallows are broken and cross plowed; and in the early part of this month wheat and barley harvest will commence.

Suggestions about Haying.—Why do we not allow the grass of our pastures to grow up tall and heavy before our cattle are allowed to graze therein? And why do cattle like fresh, tender grass far better than that which is tough and old, and partly dried up? Because it affords them more nourishment, and is not so very hard of digestion. All right: thus far we agree. Now, then, if tender grass affords more nourishment than the old and dried up grass, surely the hay that has been made of tender grass will be far better than it would be were it allowed to become fully ripe before it is cut.

Many argue that “hay will go farther” if it is allowed to become fully ripe before it is cut. This cannot be successfully refuted. But if it will go farther, or last longer next winter, that same hay, if it had been cut when it was in full bloom, would have afforded more nourishment to stock than they can possibly derive from it. In other words, a ton of hay that has been made of grass fully ripe will not be consumed as soon as if it had been cut when it was greener, or when in full bloom. It is a very erroneous principle that has long been inculcated and zealously defended, that grass should be cut for hay at a period when “it will go the farthest” in feeding stock. If the idea is chiefly to have hay last a long time, or go a good way, then let it stand until the leaves are dry, and most of the stems changed to woody fibre.

Most of our fathers have instructed as that a ton of old hay—if two or three years old the better still—is worth more, as it will go much farther than a ton of good hay. This is all correct in one sense; and in another it is very incorrect.

Here is the point that settles the entire mis-

understanding between us all on the subject under consideration.—There is a period in the stage of the growth of grass, and of all plants, when for certain different purposes, those plants may be said to be at their *acme*, or highest state of perfection for a given purpose.

In gathering herbs for medicinal purposes, every one will acknowledge that when those herbs or flowers are in full bloom they will afford the greatest amount of *aroma*, or medicinal properties, and much greater than they will if allowed to stand until they are dead ripe.

Now it is precisely so with grass and hay. When your grass is in full bloom it will afford the greatest amount of nourishment to stock; but as soon as, or even before the blossoms begin to fall off, the nourishment begins to diminish, as much of the substance which would have nourished stock had the grass been cut sooner, is changed to woody fibre; and although it will last longer and go farther, the stock that consume it will be nourished less and grow poorer.

Every farmer who will give this subject proper thought, will appreciate the force of this reasoning, and understand the importance of cutting grass before it is dead ripe if he would secure the greatest amount of nourishment for his stock. When grass is in full bloom, the most of the saccharine matter—the starch and gum in it—is in a fluid, semi-fluid, or dough state, and may be very easily digested; and if it is cut and the water dried out of it, it will then digest very readily. But allow the grass to stand until it is dry, or partially dry, a large proportion of that nourishment is gone or changed, so that it will not be available as nourishment to stock of any kind.

There is another consideration connected with haying which is seldom thought of until it is too late, which is

Assorting New Hay.—In almost every meadow, or at least in many old meadows, the hay will be of various qualities, not only so far as the quality of the grass is concerned, but in the manner in which the hay has been made.

My own practice always has been on this point to endeavour to have the poorer and coarser quality of hay put by itself, where it can be got at in the coldest weather in the winter, or at any time, and have it cut up with straw-cutter, and mingled with straw and a little meal. Of course such a preparation of poor hay does not make it *good*, nor make it more nourishing; but it renders it more palatable, and prepares it to be more easily and more effectually digested than if it were fed whole.

The best quality of hay should always be placed where it can be fed to lambs and calves and other young animals at any time, or at all times during the foddering season; and I always aimed to have a ton or more of my best hay put where it would be at hand the next spring to be fed to teams and milch cows. This is a very important consideration, as teams and milch cows in the spring need the best of hay at that season of the year. But in case

no regard is paid to assorting hay, the best hay is very liable to be all fed out in the winter, and much of the poorest quality of it will be kept until spring, when stock will not eat it well.

Sowing Indian Corn for Fodder.—In very many localities meadows are very light, and in some places insects have injured the grass so that it will not afford half a crop. If the grass be light, it will not be too late to plow the ground and sow about three or four bushels of Indian corn per acre for fodder. But when such a job is performed in August, the soil should be neatly plowed and well harrowed or pulverized. And if there could be a sprinkling of fine manure harrowed in with it, it would have a very beneficial effect on the crop. In some places, where the barley is removed early in the month, the soil might be plowed immediately and Indian corn sowed, with the assurance of a tolerably good crop, unless there should be a very early frost in autumn.

Buckwheat after Barley.—Two crops in one season is running land rather too hard; but in certain instances it would not be objectionable to raise two crops on the same field in one season.

I have known a few instances in which buckwheat was sowed as soon as the barley was removed, and a good crop was obtained. I have my mind on a man in Tompkins county, who a few years ago sowed buckwheat after barley, on the 20th of July, and raised a bountiful crop.

The bailey was raked into winrows as soon as it was fit to rake, and the plow was started immediately. When the ground was all plowed up to the rows, and the buckwheat sowed and harrowed in, the barley was removed and cocked on the plowed ground, when the soil beneath the winnow was plowed and sowed.

Another very important consideration during this month is

The Improvement of Stock.—When a farmer has cows and raises his own cattle, August usually is the most important month of all the year to attend to the improvement of his neat cattle.

But this branch of business is too often sadly neglected, on account of the pressure of field labors, even when a farmer aims to avail himself of every advantage in this respect within his reach.

There are a good number of the best bulls at the present time in almost every part of the country, and however urgent the labors of the field may be, farmers should not fail to secure the services of the best of these animals during the present month.

The Proper Mode of Curing the Grasses.—Haymaking, with too many farmers, is like manuremaking—it is turned out too much to the weather. This is especially the case with clover hay. How often is it that five acres or ten acres of clover are cut down before the forks on the horse-rakes are set to work to gather it into winrows and cocks. I have seen it lie two days in the swath, exposed to dews, the leaves blackened, and the stems hard and brittle, instead of soft and pliant.

The making must proceed with the cutting.

Clover should be allowed to wilt in the swath—nothing more. If the weather is hot, and the ground dry, it will do so in two hours; if the weather is cool and the ground wet, it may be unraked for half a day. When wilted and raked or forked into winrows, it should be put up in small cocks as speedily as possible; in the evening, when cut in the morning, and early the following day, if not cut until the afternoon. As clover hay is very easily injured by rain, it should not be left out longer than is absolutely necessary to let it heat in the cock, that it may there undergo its sweating, rather than when in bulk in the mow. This it will do in the course of from thirty-six to forty-eight hours after being put into the cocks. When it is heated, it may be hauled in, being scattered as much as convenient while being loaded, so that it may cool and dry. But if the weather threatens rain, it should be secured by a topping of timothy grass, or hauled in before it is well heated. The weather must be watched. But no matter what the indications of the weather are, as soon as the clover is well heated, in with it—into the barn or in the stack, for the weather is not to be so far trusted as to accumulate hay in the field. If the raking and cocking of the grass should proceed with the cutting, so should the hauling. Secure as you go, is the undeviating rule of clover hay making. Thus made, clover hay should have a yellowish green color, with a bright stem, soft and pliant. When the leaves are turned black, and the stems hard and brittle, the hay is spoiled.

Timothy Hay.—When timothy grass is cut down soon after the blossoms have fallen, it has much sap in it—more or less according to the condition of the ground and of the atmosphere. At this stage it is more difficult to cure than clover, because its stems have joints, and they are of more compact organization. If cut with a scythe and the grass is heavy, the swaths should be turned over after the upper side is between the wilted and dried state. When so turned and cured, all ought to be put in winrows as rapidly as possible, and put into cocks, where the curing is to be completed. If the hay is entirely cured before it is raked into winrows, it is too much bleached with dews, and is too hard. It should have a greenish yellow color, bright and soft and pliant stems and leaves. To make it such, it must not be exposed too long to the sun's rays. If the grass is not cut until the seed is ripe, and the ground and air are dry, the swath need not be turned, but may be raked into winrows. If cut with the mower, the raking should be commenced sooner. In all cases and conditions of the grass, the final curing should be done in cocks. The sweating it then undergoes softens it, and when thus cured, both cattle and horses will eat it up clean, but if the stems are hard, too much of the butts will be wasted.

Timothy hay may be made in very large cocks, but the most convenient size is one that a single horse can easily draw to the stacking place in the field. To make them larger requires too much pitching in the winrow. Care should be taken not to roll the hay in

piles, and thus place it on the cocks, for they are apt either to fall down from winds, or to take water in case of rain. The hay should be collected in bunches by lifting it up and laying it on the cocks so as to be spread out flat. These flat layers may be put into the stack without disturbing them, or on the waggon, and the stack more solidly built.

As to the proper time for cutting hay, and the philosophy of curing, the following from the *Ohio Farmer* is sensible and to the point.

"Don't dry your hay too much. Hay may be dried till it is as worthless as straw. As a good coffee-maker would say, 'Don't burn your coffee, but brown it;' so we say, don't dry your hay, but cure it. Our good old mothers, who relied upon herb tea instead of 'potecary medicine,' gathered their herbs when in blossom and cured them in the shade. This is the philosophy of making good hay. Cut in the blossom, and cure in the shade. The sugar of the plant when it is in bloom, is in the stalk, ready to form the seeds. If the plant is cut earlier the sugar is not there; if later, the sugar has become converted to woody matter.

Hay should be well wilted in the sun, but cured in the cock. Better to be a little too green than too dry. If, on putting it into the barn, there is danger of 'heating in the mow,' put on some salt. Cattle will like it none the less.

Heat, light, and dry winds, will soon take the starch and sugar, which constitute the goodness of hay, out of it; and the addition of showers render it almost worthless. Grass cured with the least exposure to the drying winds and searching sunshine, is more nutritious than if longer exposed, however, good the weather may be. If ever cured, it contains more woody fibre and less nutritive matter.

The true art of hay-making, then, consists in cutting the grass when the starch and sugar are most fully developed, and before they are converted into seed and woody fibre; and curing it to the point when it will answer to put it into the barn without heating, and no more."

Farmer's Club about Hay-Making.

Col. Hawks, of Deerfield, states that he preferred to cut grass when two-thirds of it was in the blow. Did not dry it as much as formerly. Hay can be dried too much to pack or spend well. Likes to have it green enough to retain its green tea smell when opened in winter.

Mr. Lyman, of Northfield, cuts his hay one day and gets it in the next. Wants it all cocked up at night, and prefers to have it raked for this purpose before 3 P. M., and in heaps when warm. Likes to cart clover the second day. Can get hay dry as he wants it, in one good day.

Hon. Hugh Green, of Northfield, thought that hay was dried too much in the sun and too little in the shade. Dew bleaches and injures hay more than many suppose. He not only gets his hay in cocks early in the afternoon, but covers it with cloth caps at night, whether it rains or not. Had 400-yards of cotton burnitized for this purpose last year. It was cheaply done in Lowell, saves the caps from mildew, and is said to make them four times as durable.

Gov. Cushman also spoke highly of hay caps.

Those two yards square, hemmed with a sewing machine in his own house, cost last year 35 cents each. The Boston manufacturer's price is 54 cents each. He had 75 made, and thought he had saved half their cost already.

Dea. Buffum of Winchester, N. H., and Messrs. Leverett and Hatch of Keene, each endorsed the hay caps, and claimed that they would not ravel if simply torn off the right size and had a stone the size of a man's fist tied in each corner, to keep them in place on the hay. They use hay caps whether it rains or not. The former stated that he usually cut his hay in the afternoon, cocked it the next day, and the following day got it in. Cattle do better on hay cut early. They will grow and give more milk on such hay. First crop hay gives nearly one-third more tallow than the second crop. He weighs his cattle once a month regularly. Thinks clover cut early the best hay used. Likes to have it stand two or three days in the cock under hay caps, as the sun injures hay. Lowland hay needs more drying than English upland hay. Mr. Leverett uses Manny's mower. Likes in the haying season to mow every evening and cart every afternoon. Wants his hay cocked up early the second day, and the day following simply turned over without spreading. Clover needs two or three days curing in the cock. It costs about \$80 to cut, cure, and house fifty tons of hay in this way. Estimates the wear, and tear of his mowing machine \$6 a year. His men hoe mornings when he has no hand mowing.

Moses Stebbins of South Deerfield said he cut but little natural hay. He mows his lands six years, and stocks with herds grass and clover. The former will run the latter out in three years. He never mows when the dew is on, nor latterly uses salt in packing hay. Thinks he injured sheep formerly by salt. Cuts clover in the afternoon, and carts it if the weather is good the next day. The hay sweats if housed too green, and six or eight inches of the top of the mow spoils, but has had no hay mould during the last thirty years, unless it was unnaturally damp. The second crop or rowen is more apt to smoke than the first crop. Hay free from dew and rain is not much in danger of spoiling if housed rapidly after one begins. Herds grass is apt to be dried too much, and he often, particularly in the last of the season, carts it the same day he mows it. Considers clover well ripened the best hay for sheep, after an experience of sixteen years. Hay will shrink 15 to 20 per cent. in the barn, and when moved never spends like that kept in the solid mow. Thinks a mowing machine is as necessary to a farmer as a plow.

The Hay-Harvest

The hay crop is usually the first of the harvest that requires attention. Before he can determine the proper time for mowing, the farmer must consider for what purposes his hay is to be used—whether he is to feed cows in milk, horses and working oxen, or young stock with it.

If it be used for feeding milch cows, it should be cut earlier than if it is intended for some other kinds of stock, and at such a time and in such a manner as to preserve its juiciness

and leave it as much like the green grass of the pasture as possible.

If it is to be fed to cows in milk, and the farmer wishes to get the greatest quantity of milk, grass should be cut just before coming into blossom. It is then most juicy, and will therefore produce a greater flow of milk than if allowed to stand longer. If the object is to secure the best quality of milk, with less regard to quantity, it may be cut in the blossom.

For feeding to store cattle, the grasses may be cut when in full blossom; for horses at work and for fattening cattle, it is better just after it has passed out of the blossom, or when the seed is said to be in the milk.

Grasses attain their full development at the time of flowering, and then contain the largest quantity of soluble materials, such as starch, gum, and sugar, these, with the nitrogenous compounds which are also most abundant at this time, are of the highest value supplying nutriment to animals.

After flowering, and as the seed forms and ripens, the starch, sugar, &c., are gradually changed into woody fibre, which is nearly insoluble and innutritious.

This fact is well established, and shows that grasses in general should not be allowed to stand after the time of flowering. There is, indeed, a great deal of nourishment in the ripe seed; but not enough to make up for the loss in the stalk and leaves, if the mowing is put off till the seed is ripe. Grasses fully ripe will make hay little better than straw.

Grass is cut either by hand with the common scythe, or by the mowing machine. With the former, a good mower will go over an acre a day. With the latter, on smooth land, two horses and one man will mow at the rate of an acre an hour, or from ten to twelve acres a day, without over-exertion.

Besides mowing so much faster, the machine also spreads the grass evenly, saving the labor of spreading by hand. It also enables the farmer to cut all his grass nearer the proper time, and he is not obliged to let a part of it stand till it is too ripe.

After being cut, the grass should be frequently spread and turned, so as to dry as rapidly and as uniformly as possible. This may be done by hand with a common fork, or by a hay machine called a hay-tender, a light revolving cylinder set with tines and drawn by one horse, by means of which the grass may be constantly stirred and kept in motion, and much time and labor may be saved.

When grass is partially or wholly cured, it may be raked by hand, or by a horse-rake. Raking by hand is easy but slow, and thrifty farmers now generally use the horse-rake whenever they can. With the horse-rake, one man and horse can do as much work as ten men can in the same time without it. Hay cut in the forenoon should be raked before night, that it may not be exposed to the dews.

The time required for curing hay depends partly on its ripeness when cut, and much on the state of the weather. In good weather if machinery is used, it may be cut in the morning after the dew has risen, and dried so as to be put in light cocks early in the afternoon, or

before the dews of evening. A slight opening to the sun for an hour or two the next day should dry it enough, if it was out while in blossom or before. Hay should be got in during the heat of the day.

Grass cured rapidly and with the least exposure, is more nutritious than that cured more slowly and longer exposed to the sun. If dried too much, it contains more useless woody fibre and less nutriment. The more succulent and juicy the hay, the more it is relished by cattle.

After the grass has been cut at the proper time, the true art of haymaking consists in curing it just enough to make it fit for storing away, and no more. The loss of the nutritive substances, which make the hay most valuable, is then stopped at the earliest moment. It is as great a mistake to dry grass too much, as to let it stand too long before cutting.

If the hay has not been perfectly dried, and there is danger that it may heat in the mow, it is well to have alternate layers of the new hay and straw or old hay. In this way the heating may be prevented, and the straw or old hay will be so far flavored and improved, as to be relished by stock of all kinds. If there is much reason for apprehension, four quarts of salt to the ton may be sprinkled in.

Experience has shown that hay properly dried is not likely to be injured by its own juices alone; if it has been exposed to rain, it should never be put into the mow until it has been thoroughly dried.

How to pull Flax.

We have been given to understand that a far greater amount of land than usual has been sown with flax, in expectation of a great demand for it, to be used for manufacturing purposes. We believe there will be such a demand for it, but the profit to the farmer will depend much upon the manner he harvests and takes care of his crop. We will, therefore, give some practical information on this subject. The flax plant is of rapid growth, and it usually commences to flower within two months after its green spears first appear above the ground. It is generally agreed that the fibre is in the best condition for manufacturing purposes before the seed becomes quite ripe.

But a small quantity of seed can be obtained from the flax that is designed for the finest fibre. When both seed and fibre are required, which will generally be the case with our farmers, the flax should stand until the seed are plump and shiny. The fibre of ripe flax is not so fine and strong as that of partial green flax, still it is the very kind which may be used for most coarse fabrics, either to mix with cotton or for making mixed linen and woollen cloth.

In Belgium, where fine flax culture has long been practised with distinguished success, a full-grown plant is selected, and the best-matured and ripest capsule is taken. This is cut across with a sharp knife, and the section of the seeds examined. If they have become firm inside, and the outside has assumed a good deep green color, the plant is considered fit for immediate pulling. At this time the entire plant will exhibit signs of its approaching maturity, the bottom of the stalk will be seen

to have assumed a yellowish tint, and have become much harder to the touch than it was before—good indications of an interruption to the circulation of the juices of the plant. If this altered condition be allowed to go on by the plant remaining in the ground, the change of color will rapidly make its way up the stem until it reaches the capsules, and then the seeds will be found to be fully matured, quite hard, and to have assumed the dark color with which we are so familiar in the market samples. The next stage of the plant would be the bursting of the seed vessels and dissection of their contents, but to preserve both seed and fibre, the plant should be harvested at the earlier stage, at which time the fibre is at its best condition. If left until the seeds are quite matured, the stems get hard and woody, and the fibre is apt to get much broken in the subsequent process of separation. Long experience has proved that this is the most profitable time to pull flax.

In order to get the greatest length of fibre, which is a matter of great importance, flax is pulled up by the roots. "The flax is pulled by hand, each singly grasping a small handful carefully by the neck, just below the seed vessels, and drawing it up out of the soil, and laying it in rows across one another. These are allowed to remain lying open on the ground for a certain time, generally one or two days; they are then collected together, and bound into small-sized sheaves or bundles, care being taken that the band shall be placed just under the seed heads of the plant, and the bottoms or butts left unconfined and open. If the crop has been irregular in its growth, and the stems are of unequal lengths, it is desirable, as far as it can be managed, to pull them in different bundles, according to their length, as both its steeping and scutching much fibre is otherwise lost. It is also desirable in binding them, that the butts should be gently pressed on the ground, in order to regulate the length of the different stems. After the sheaves, or "bundles" as they are termed, are bound, they are arranged in small stocks, usually of four, five or six each, placed in a circle, the butts being well spread out, so as to admit the air freely to their centres—the weather, and the condition of the crop when pulled, of course regulating the period they have to remain on the field."

Cultivation of Indian Corn.

The *Boston Cultivator* publishes the following colloquy between farmers A and B:

A. On what kind of land do you raise corn this year, neighbor B?

B. I have planted a part of "the plain," which, you know, is rather light, dry soil.

A. How do you cultivate it—I mean what is the course after planting?

B. It is planted in hills about four feet each way; I plough it and hoe it three times—weeding, half-hilling and hilling. I use the common "horse plough," and make two furrows to the row at each hoeing, working over with a hoe the spaces not plowed. Sometimes I go both ways, but I always intend to plough the second time the contrary way from the first. I am not very particular as to the first and sec-

ond hoeings or ploughings, but at the third I want the plough put down *deep*—no matter how high the corn is—I don't care if it is all tasselled out and is higher than the horse's back.

A. I confess I don't see the advantages of your mode of cultivation over mine. Most of my corn land is similar in character to yours, and I plant my corn in a similar way. I don't use the plough among my corn at all; I use a cultivator, and with that I can work over the surface of the ground, close up to the young corn itself, going twice in a row. This kills the weeds, if it is done at the right time, and sufficiently stirs the ground. It leaves but a narrow strip to be hoed. I have no set number of times to hoe or cultivate my corn—I do it as often as it is required. Something depends on the season: I make it a rule to keep the weeds down, whether it requires two workings or four to do it. If the ground is clean and the surface tolerably light, I do not think it will pay to work it after the corn is a foot high. Then, as to your practice of running a plough deeply between the rows after the corn has fully tasselled out; it cuts off, turns up, and destroys myriads of roots. By the time the stalks have attained the height you speak of, the roots have formed a complete network through the soil from row to row. If you examine closely after you have plowed a furrow, you will see the fine white fibres almost as numerous and close together as the threads in a piece of sheeting. If rain happens soon after you have ploughed, you can see the roots *very* plainly.—Now, why should these roots, which the vital energies of the plant have produced, be destroyed? Is it reasonable to suppose that their destruction can aid the plant in the great object for which it was designed by nature, and which is also the great object of man, viz., *the production of seed?*

B. Well, I don't know about that; but I have raised corn in the way I mention, and am satisfied with it.

A. But did you ever try an experiment fairly, between ploughing deeply between the rows after the corn gets as high as the horse's back, and working over two or three inches of the surface just as the tassel begins to shoot from the sheath, and then *laying the field by*, as they say at the West?

B. No, I never did, because I am satisfied with the way I have adopted. But did you ever try *my* way?

A. Yes, or something very similar to it. I had a field of corn which I intended to finish cultivating, and *lay by* before haying, but was under the necessity of leaving a part of it for a week or ten days after the main portion had been worked over. During this time the ground had become more compact, and the weeds had grown some. The man who was sent to finish up the work thought he could not make the cultivator, which had been used on the other portion of the field, answer for this, and he therefore took a horse-plough, such as you say you use. With this he went through the corn twice to a row, putting the plow pretty well down. It was hoed as the other portion had been, and left till harvest. The

corn on the part worked last was soon noticed not to be doing so well as that on the other part, and when it was gathered, the difference, to a row, was so marked and striking as to attract the attention of the harvesters the moment they passed from one portion to the other. There certainly was not *half* the corn per acre on the part that was worked over last that there was on the other part. It is right to say that pretty dry weather followed the last working, and the operation produced the effect on the corn which in some sections is called *fired*. I wish to state another objection to the use of the common plough among corn on dry land; it exposes the land to drought. It is impossible to use this implement withoutt browing the ground more or less into ridges and hollows, thereby exposing more surface to the sun and air, and making more channels for the rain water to escape.

Remarks on the foregoing.—Methods of cultivating corn should be varied according to the character of the soil. Loose, open soils can be readily worked with the common cultivator. Even those with cast-iron teeth or feet will answer on this kind of land. But on soils which tend to become too solid, this implement will not produce the requisite friability. Something must be used frequently almost from the time the corn is put in the ground, that will keep the soil tolerably open to the depth it was plowed for the crop. The common horse plough is not adapted to this purpose, because it has not much pulverizing effect, and in passing through the soil actually compresses that at the bottom of the furrow. Neither is this a good implement for cultivating corn on light soils, for the reasons mentioned in the above colloquy. A cultivator or horse hoe can be made which will do this work in a proper manner; but steel must be used instead of cast-iron. If the teeth or feet are of the right shape, they will penetrate even tenacious soils sufficiently, and at the same time destroy the weeds.

In sections where the greatest success is attained in the cultivation of corn on soils which are liable to become too compact, it is considered highly important to keep the soil from baking or packing early in the season. Implements are therefore run close to the corn in its early stage, before the roots have spread much, and the space between the rows is kept mellow by cultivation till the corn attains such height that it chiefly shades the ground, which it usually does about the time the tassels appear. After this the soil is less likely to become baked or hardened; the corn roots quickly extend themselves through the soil, and they are left to draw from it all the support it is capable of giving.

The way to Cock Barley.

If barley be properly cocked, it will stand a very hard rain, without being wet but very little; whereas, if it be thrown together in a hap-hazard manner, almost every straw will wet through the entire cock during an ordinary shower. If the cocks are to be covered with hay caps during a shower, it matters little how the bunches of barley are placed. But in case barley must remain in the cock during a

storm, unprotected by caps, it should be so cocked that it will shed rain. If the straw is long, the cocks should be about one-third larger in diameter than the length of the straw. Then we should always endeavour to keep the middle the highest, by placing the heads near the middle of the cock, with the straw slanting in a direction to carry the rain from the middle. Let the cocks be trimmed up, by raking them off smooth, and forming a very conical top. Now take a gavel of short barley and spread it over the top of a cock, by walking entirely round it, placing the straws in such a position that they will conduct the rain away from the middle of the cock. The rain will be conducted along the straws, if they do not lie entirely level; and if the straws have a little inclination, the greater portion of the water that falls—unless it should rain very hard—will all be conducted off, and the barley will be wet but little. But when a good portion of the straw slants inwards towards the middle of the cock, the water will be conducted inwards, and the cocks will be well saturated with water.

Farmers should show their awkward boys and unskilful men how to handle the gavels or bundles of barley with skill, when they are cocking it, in order to have the bunches, when they are placed in the cock, lie in such a position that they will not conduct the rain towards the middle of the cock.

The same principle holds equally good and important in cocking hay. A skilful labourer will put up cocks of barley or hay so that they will turn a good shower of rain, while another man who pays little or no attention to the principle alluded to here, will put it in cocks which will not turn the rain at all.

Apiary in August.

In this month the bees usually obtain their best stores. If the colony is strong, their combs are soon filled to overflowing. A large portion at this time should contain brood, but when honey is abundant, and store room limited, the comb which may contain brood, is apt to be much reduced, so much so, that in some instances when cold weather comes on, the colony is quite too small. The Italians, particularly, are apt to fill up with honey instead of brood; but as they are longer-lived than the black bees, the effect is not so disastrous. A hive stored to its utmost capacity is not in as good condition for Winter as one that has a portion of its cells empty. The use of surplus boxes, then, is not only an advantage in securing honey, but a benefit to the bees. During the yield of honey, the full boxes should be changed for empty ones as fast as filled. In getting the bees from the boxes much honey is often lost by the ordinary methods recommended. As long as flowers yield honey plentifully, it will do to set the full boxes down by the hive, in the shade of some tree or out-building, or in a darkened room with a small crevice to let out the bees. But as soon as it is scarce, the boxes so left are sure to be robbed.—One man put nearly his whole crop in the barn, shut the doors and went off to his work. On his return at noon he found his boxes empty. The utmost care and some skill

are required on some occasions—especially with Italians—to get rid of the bees and save the honey. Take an empty box bee-tight, put in the boxes on their sides, combs vertical, in such a way that the bees may creep out of all. Throw over them a sheet, that no bees may get in or out. After standing a little time, the bees, in their endeavor to escape, will get on the under side of the sheet, when it may be turned over; by repeating this a few times, all may be disposed of. Bees in this way will not sting, unless provoked at first. To save the honey through the hot weather, put it in a dry place, and cool, if possible, to prevent the moth eggs from hatching. Paper or cloth may be pasted over the bottom to keep out ants and other insects. Boxes should stand the same side up as they did on the hives.

There are more moths about the hives this month than in any preceding month of the year; and there are more chances of their finding places for depositing their eggs. Very small swarms, old stocks that have swarmed freely, and but few bees left to protect the combs, and above all, queenless stocks afford great inducements to the moth to deposit her eggs. Although a few worms may not destroy the colony, they will injure a weak one much more than a strong one. The number that destroys one might hardly injure the other. Ascertain *which* are weak and by frequent examinations, assist in destroying the worms. Strong colonies will do well without much help. Put old pieces of comb under the hives that are part full; take out once in two or three days and kill the worms that have gathered in them.—Set shallow dishes containing sweetened water near the hives at night; hundreds will get drowned.

CATTLE DEPARTMENT.

How to Buy a Horse.

In order to make a thorough examination, it becomes necessary to consider the height and condition of the horse, not only in the stable, but also when led out of the stall, and outside the stable; in a state of repose, and in motion.

Horses are measured with tape and rule. The tape measure is somewhat deceptive, as a low horse, with a well-rounded, fleshy shoulder, may measure as much as a taller but thinner animal. The rule is, therefore, to be preferred; this is a simple stick, with a short, movable arm, at right angles; the long part is divided into inches. To measure a horse correctly, it should stand perfectly level and care taken that the seller practises no tricks, such as putting the fore arm on higher ground; chucking it under the chin, to make it hold up its head, or even grasping the mane from the opposite side, apparently for the purpose of noticing the measurement. Notice should be taken, also, whether the horse is shod or unshod; whether the shoes are high or low. To secure a good span, the height of the head should be observed; also position and movement of the crest (neck). A good match, as to color, is of less consequence than a similarity of temper. The examination, in the stable, is a delicate matter. A horse which lies down, and,

on being called, does not rise quickly, generally suffers from bad feet; a tired animal stands on two or three legs, and is apt to lean its head against the manger; this, however, is the case also with lazy horses. Crib-biters are easily found out, if the seller has not previously smeared the crib with soap or grease.

Perfectly sound and kind horses look at persons entering the stable, pleasantly and fearlessly, and not unfrequently neigh. Tricky ones lay back their ears, snort and snap. Shy horses always act timid and frightened. Slow eating, and difficult, audible swallowing, are signs of trouble in the gullet. Biting of crib and halter, also a drawn-up belly, betoken animals that feed poorly. Worms, in young horses, are easily detected; the horse thus affected, rubs its muzzle against the crib. Horses affected with the staggers take large quantities of hay out of the rack, throw it down, eat it slowly, and at intervals, seemingly listening as if surprised. They keep their food in the mouth for a long time without swallowing it, and have a dull, fixed look; they also push their heads against the wall, or into a dark corner. It is an often-practised trick with dealers to trop some oil into the ears of such horses, or a little cayenne pepper applied to the passage, to make them look attentive and spirited. Broken-winded horses have a short, dull cough, with a double beating of the flanks.

Are the horse's feet on a level, and one hip higher than the other? then he is one-sided. If perceptible in any other position, it must be the result of disease in the muscular part of the croup.

Stiff hairs in the tail, and bare places on the same, indicate itching; sore spots, suppurated sores, or scabs, betray the scab. Horses with visible or invisible spavin, are loath to step from one side to the other. Wind-galls seldom impair the usefulness of the animal.

Clap in the sinews betrays itself through swelling and pain in the tendon, hindering the horse from stepping firmly, which ultimately results in a stiff foot.

The mallenders, appearing mostly in the hind pastern joints, are recognized by more or less deep cracks and sores, emitting an unpleasant, bad-smelling fluid. This sign distinguishes it from wounds caused by overreaching. Neglected cracks, with warts covered with stiff, bristly hairs, are the indication of malignant mallenders, known under the name of crown-scab. The hinder hoofs should be well examined, particularly the coronet, to see about wounds from striking. Look well at the frog, to see if there are any ulcers or cancer; the latter disease may be considered incurable.

The examination of the horse, outside the stable, relates particularly to eyes, muzzle and nose. The contraction and expansion of the pupil of the eye deserves special attention. Amaurosis may be recognized by an immovable pupil, and a beautiful black coloring of the eye.

Albugo may be detected by a speck, of a white or mother-of-pearl color, in the eye, or a turbid look of the same. Closed eyelids, with inflammation and watery flow, are mostly the cause of some hay or dust, or even of whip-cuts, and seldom dangerous. The last-men-

tioned cause is frequently adduced by unprincipled horse-dealers, as a pretext to conceal more dangerous evils; and the utmost caution is needed. Slight inflammation and dimness of the eye result, sometimes, from the shedding of the teeth. Is one eye smaller than the other, it indicates impaired or lost sight. Wrinkles in the upper eyelid betray a weak sight. Periodical inflammation of the eyes may be recognized by the peculiar position of the inside corner of the eye, continuous slight flow of tears, hairless shiny spots below the eyes, and shunning the light.

Next in order, comes the examination of the mouth. Find out the age, but be not deceived by artificially-marked teeth. Often the dealer likes his horse to seem older than he really is, which he effects by drawing two milk-teeth, thus making the horse appear one year older. If the fore and middle teeth appear badly worn, it indicates a crib-biter. Knots on the lips, as large or larger than peas, betray farcy; also knots and stringy swellings on the throat, the ribs, and the inner part of the hind-leg. The nose and throat deserve careful looking into. A greenish yellow or whitish flow, from one or both nostrils, more or less swelling of the glands of the throat, and a cough, with expectoration of phlegm, shows the strangles. Suppuration of the glands of the throat results from the same cause, and is not dangerous. A sticky, ash-grey flow from the nose, and milk-white membrano, with a hard movable, and almost painless appearance of the glands of the throat, are bad signs; but if, at the same time, there are ulcers on the inside partition of the nose, then it is a complete case of glanders.

Dishonest dealers clean nose and nostrils, put oil or fat inside, to produce an easy flow, and prevent the hardening of the same. They also employ caustic to produce a healthy appearance of the glands.

The examination of the horse out of the stable, should be both in a state of repose and action. A healthy, lively animal breathes, on coming into the air, easily, and with open nostrils; while a wind broken horse breathes with widely extended ones, making a most singular motion with the same. Horses thus affected are exercised before the sale, which improves their breathing. Dropping or hanging the lower lip, is a sign of prostration. Mettlesome horses are apt to hang their tongues out. A touch with a hot iron is the rogue's cure of this fault.

After having carefully examined ears, gullet, crest, the posture of the head and neck, the mane, chest, withers, shoulders, fore-arm, knee, shank, pastern and hoof lift his fore-foot, to look at the sole, and also to find out whether the horse can be shod; and proceed likewise with his hind legs. Look also at the spot where the animal might have bled, or had application of an issue, on head, chest, belly, and throat.

Lifting the hoof, (stepping or reaching,) and putting the foot down, are three actions which should take place at the same time, regularly, vigorously, and quickly. Horses with lame withers or shoulders, cannot lift well the leading fore-foot, and are not sure in the act of

reaching. A bad hoof is seen in the incomplete act of stepping and treading. The tread of a horse with the staggers, is insecure and heavy. Avoid horses that strike the fore-feet with their hind-feet; those that throw their fore-feet outward too much; those with a too fleshy hock; and those that interfere or kick. Aside from all that has been said above, it is of the utmost importance that the buyer should always bear in mind for what purpose he wants to buy a horse.

Stiff horses are improved by exercise, prior to the sale; lame horses are exhibited on soft ground. Lazy animals, or stupid and inattentive ones, are kept attentive and active by the sound of the whip. Common, or even cayenne pepper is introduced into the passage, to make the horse carry his tail high, and improve the position of the croup. The latter trick may be discovered if the horse passes dung frequently during the examination. Grey hair over the eyes of old horses, light spots, and even the feet, are dyed, which trick can only be found out after the horse sheds its coat. To guard against all the tricks of the trade, requires a knowledge of the outward appearance of the horse, as well as its anatomy and physiology, to which may be added pathology; and no connoisseur or veterinarian should be without these qualifications.

PIG BREEDING AND FEEDING.

A short time ago Mr. Baldwyn, of Bredon House, near Birmingham, England, delivered a lecture on the breeding and feeding of pigs, and as it contains much which may prove of value to American pork raisers, we condense therefrom:

In opening the lecture, Mr. Baldwyn said:—"In 1845 he entered on a farm at Kingsnorton. In 1846 he purchased two gilts and a boar, of the Tamworth breed, from his cousin, who was famed for his breeds of Tamworths; and although he (the lecturer) commenced breeding with three pigs in 1846, in 1851 he sold £1,000 worth of store and fat pigs within one year; and in the years 1852, 1853, 1854 and 1855 he sold £1,000 worth each year. When he had got his stock up to about 40 breeding sows, in picking the breeders he used to pick them several times over, as it frequently happened that those which looked the prettiest and best when young, altered considerably when they got three, four, or five months old. The rule was to pick long-growing pigs, and those that were straight and thick through the shoulder and heart; and experience had convinced him that his method of choosing was a correct one. There need be no greater proof of that than the number of medals and prizes he had obtained. He always kept to the Tamworth breeds, generally purchasing the boars, but breeding the sows. If he found the pigs getting too fine, he purchased a good strong boar, and if the animal exhibited tendencies the other way, he picked a boar of good small bone, but was always particular to pick a boar that was thick through the shoulder and heart, and a straight-growing pig of the same color and breed. By carefully following this plan he got the breed so good that it was a rare occurrence to see even a middling pig in the

flock, though he bred from 250 to 300 each year.

His plan of keeping was as follows:—As soon as the sows littered they were kept on kibbled oats, scalded, with raw swedes or cabbage; and when the pigs got to the age of three weeks or a month, he turned the sows out from them for a short time every day, and gave the pigs a few peas or a little Indian corn while the sow was away. When the weather was fine and warm the pigs went out with the mother into a grassy field for a short time. He found that young pigs, from the age of three weeks, required dirt or grit, and therefore, if the weather was bad, and they could not be turned out, it was necessary to put some grit into the sty. This was very important, as he believed it was quite necessary for the proper digestion of their food. At seven or eight weeks old all the pigs he did not require for breeding he had cut, and began to wean them a fortnight afterwards. He then turned them out into a grass field, with a hovel for them to run into, and allowed each pig a quart per day of peas, Egyptian beans, or Indian corn. English beans did not answer for young pigs, being too heating. He gave them one pint of corn in the morning, and the other in the evening, with regularity as to time and quantity, and found it better to give to them on the grass, in a clean place each time, than in a trough, as it prevented quarrelling, and each pig got his share. With this quart of corn per day, and what grass they got during the seven months of the year, with nothing but water to drink, the pigs would, on an average, make five pounds of pork each per week. After eight months, he allowed an extra half pint of corn per day. One man attended well to from 200 to 250 pigs; he must like the job sufficiently well to take an interest in the pig, as carelessness on the part of the man materially decreased the profit. He kept the store sows when in pig the same as the other stores. They ran about in a field till a fortnight before pigging, when he placed them in a covered shed, so constructed as to admit as much sun as possible. Young pigs kept in the manner described were always nearly fat enough for porkers, and did not require more than two or three weeks feeding on meal. It was time enough to begin to feed pigs for bacon at eight or ten months old. It was desirable in breeding animals to have as little bone as possible in proportion to flesh. He had tested a cut sow of his breed, about thirty months old, which weighed thirty-two score, (640 pounds,) and the whole of the bones, after the flesh had been boiled from them, only weighed twenty pounds; so that for every pound of bone there were thirty-two pounds of meat, which he believed to be a fair average of his breed. His pigs made two pounds of flesh for every four pound of Indian corn, barley, or pea meal; as a rule, he preferred the Indian corn. He considered it always to be more profitable to feed upon good food than upon inferior. As a rule, pigs would thrive better for being turned out once a day, except in wet weather, and they will also be healthier, more active, have a cleaner appearance, and would possess a great

advantage in the show-yard over heavy, ungainly pigs, which could not move about to show themselves.

Dry food for Hogs.

A correspondent of the *Country Gentleman* says: "Many hogs are kept comparatively poor by the high dilution of their food. Take in so much water that there is not room for a good supply of nutriment. Hence the reason that those farmers who carefully feed *undiluted* sour milk to their hogs have so much finer animals than those who give them *slop*. The hog has not room for so much water; and if food which contains much is fed, to him, it makes him big-bellied, but poor." Hogs, as well as all other animals, should be allowed all the water they will drink, but it should not be mixed with their food in excessive quantity.

HENS VERSUS HOGS.

I commenced the year with 15 hens and one turkey, and raised during the year 40 chickens and 28 turkeys. I kept an exact account of expenditure and income as follows:

| | |
|---|---------|
| Dr.—To 15 hens and one turkey, Jan. 1, 1861,..... | \$8.50 |
| Corn, 37 bushels at 68 cts., average price,..... | 23.31 |
| Oats 35 cts., barley \$1.45,..... | 1.80 |
| Meal \$1.50, shorts 25c., potatoes 62c.,..... | 1.37 |
| | <hr/> |
| | \$34.98 |
| Cr.—My poultry sold, 351 lbs. at 13c.,..... | \$45.63 |
| Eggs 166 doz. at 15½c.,..... | 25.90 |
| Hens alive 24 lbs. at 10c.,..... | 2.40 |
| On hand Jan. 1, 1862,..... | 11.75 |
| | <hr/> |
| | \$85.68 |
| Deduct expense,..... | 34.98 |

Profit,.....\$50.70

During the spring several of the hens were engaged in hatching eggs and taking care of young, and during the summer several were killed, so that the average number of laying hens during the year, was about eleven. Then 165 dozen eggs divided by 11 hens gives 15 dozen to each hen, and 15 multiplied by 15½ cents (average price) gives \$2.35 as the produce of one hen. As to the cost of keeping hens, I gave during the winter one quart of corn per day to each eight hens; or for one hen 1¼ bushel per year. This at 53 cents per bushel is 34 cents. This gives \$1.41 as the profit on one laying hen.

During the year I had two hogs, and kept an account with them as follows:

| | |
|---|---------|
| Dr.—To estimate value, Jan. 1, 1861,.. | \$8.00 |
| Corn 42 bushels at 63c., average price,..... | 26.46 |
| Barley 3 bushels at 76c., average price,..... | 2.28 |
| Turnips 20 bushels at 15c. per bushel,..... | 3.00 |
| Skim milk of two cows, 60 gal. at 4c.,..... | 2.40 |
| | <hr/> |
| | \$55.74 |

| | |
|---|---------|
| Cr.—By 810 pounds pork at 7c. per lb.,..... | \$56.70 |
| Deduct expense,..... | 55.74 |

Profit,..... 96

It will be seen that with corn at 65 cents per bushel and skim milk at 4 cents per gal-

lon—which I take to be about its value as compared with the corn—one pound of pork will cost $6\frac{1}{2}$ cents, while the cost of raising the poultry, according to my estimate, was $6\frac{1}{2}$ cents.

It will be noticed that the prices of corn, eggs, poultry and pork were correspondingly low. My poultry did well and so did my hogs—the two hogs averaging over 400 lbs. each, rather better than the average of my neighbors' hogs.

The refuse from the kitchen and dining room of a small family has been about equally divided between hens and hogs, the meat being given exclusively to the hens. Hogs require much less care than poultry. In the winter hens need a warm, light pen, with plenty of room. They also need a variety of food—grains, roots and meat. Oats are useful, unless the hens have access to a barn floor with hay and litter. Sand, gravel, crushed bones, clam or oyster shells, and wood or coal ashes for wallowing in, should be furnished in abundance; also water, not snow nor ice—should be furnished at all times.

HORTICULTURAL DEPARTMENT.

In-door Gardening.

At the present time our stands are "filled" with a single plant; one great white azalea, standing with drooping boughs and its lily-like blossoms, makes a more lovely picture than a dozen colors. Low-growing mosses, little ferns, cyclamens, and blue scillas are, for such, a ground work among the most appropriate. How to keep these things healthy ought not to be difficult. The grand thing for this is to provide a covert! It is perfectly absurd the way in which people think of what they see their plants suffer, wholly forgetful of their acuter sufferings where given up to the tender mercies of housemaids and their brooms; good housemaids doubtless cover up the furniture, but they are the last gardeners to whom I would trust my plants. Fancy the plants—groups of fragile flowers at the point of every spray—and fancy the covering, even though perhaps it is light, thrown over these and resting against or knocking off the petals! The very first step taken towards making flowers last, will, I am sure, be found in something like Chinese lanterns. Great thin paper or transparent linen covers, made up on slender frames, and put over the stands each night a large bell glass. There is always some slight change at night in the temperature of a room, and a plan like this equalizes and confines that air which surrounds the plants. It protects them from dust, and more than all it shelters them from the draughts that are prevalent in the early morning.

This being arranged, a regular morning's task should be to see what plants require water, everything being watered always with warm water. Azaleas in blossom should be daily watered, and sometimes it is practicable to bedew the foliage from the side away from the window, so as a little to refresh the foliage of the undergrowth, without letting water fall on the open blossoms. Sometimes, too, while a

plant is blossoming, there is a sort of gap between two sets of blossoms; with roses and azaleas this very often happens. Then the foliage and buds can have a thorough dewing. The cyclamens, also, in which I so exceedingly delight, derive untold benefit from a proper washing every few days or so. The foliage looks charming when kept so fresh and clean, and a plant I had last November beginning then to blossom, has now got upwards of 30 buds and blossoms still; the scent, too, becoming more and more delightful.

It is a heavy trial, these said cyclamens; they ought to be close to the light; and who can resist having them on the table! However, if anything, they are prettiest by candle light, so it is possible to give them by day the full light they crave, and yet to enjoy them perfectly in the evening. Mine are watered every morning regularly, but never are allowed to be in the least sodden; being lightly potted, the water runs through quickly, and is instantly discontinued. Each plant receives thus about a coffee cupful daily. These plants, however, are standing out, contrary to rule, in flower pots. Violets I find do best treated in exactly the same manner. Neither seem to bear being covered up, or having a steamy atmosphere.

There is something extremely charming to the mind of a window gardener in being able to point to some special plant, and to declare she grew it. New beginners sometimes are, indeed, so tenacious that they quite look down upon buying even seedlings which are ready raised. Still this, by London people who have not got a hot-bed or a heated seed-bed, or any sort of green-house, may fairly be looked upon quite as an advantage, in the case of tender annuals, or other seeds of this kind.

I confess, notwithstanding, my sympathy is with the former class—it so pleasant to have all the work oneself. Nor shall I soon forget a box I had one spring, in which it seemed to me that every seed came up, and which stored my windows afterwards with many delightful flowers. The great thing of course is to sow such seeds as will bear pot culture, and to sow moreover what will do well in the place we live in. In London, it seems to me that plants which grow up most quickly are those that answer best; and then we have to bethink us of the sweet smelling things and also of those that remain long in blossom.

In towns it is a blessing that people are not critical in regard to flowers; everything green and bright finds a most ready welcome, and hence the tangled balconies wreathed with dark tropæolums, and festooned by branches of cobæas and sweet peas, which look so fresh and gay. The seed sowing has two classes. There are the hardy annuals, which ought to be sown directly; sweet peas, mignonette, minor convolvulus, white alyssum, tropæolums, asters, nemophilis, Indian pinks, larkspurs, and stocks, all of which require pots of soil, not quite brimful—the seeds to be scattered thinly, and to be covered about their own depth with some soil or cocoa stuff. Kept moist, but not watered overhead, things come on well in a light and airy place. A frame on the leads, if

there is no other spot for one, or a box in a window, will bring them on very well, the great thing to rejoice in being a short and stumpy stature, to attain which advantage we must thin or prick off carefully.

The more tender annuals are, however, the interest of this season. The exquisite ipomœas, with their bells of white, and blue, and rose, and purple, which grow so quickly and blossom so profusely as to render themselves among the most general favorites, ought now to be sown in-doors. Last year I had quantities of these pretty flowers trained over wire stands and up besides some windows, and though they do best in a sunny aspect they still require to have a great deal of shade and water. The pleasantest plan of any is to have a wire frame or trellis filled up low down with shorter, bushier plants, which screen, but do not very often mix with, the climbing things behind.

The Ipomœas do best, if in 5-inch pots, when they are sown about five or six all round, but for the earliest flowers I have always found that a single seed sown in a three-inch flower-pot and left undisturbed will be sure to give a bright little wreath of blossoms. Burrige, rose-coloured; bona nox, white; and rubra cœrulea, a purplish blue, are very pretty kinds. It is best, I think, in sowing, to leave a hole in the middle of the pot, or to scoop out a little ditch round the edge, in which to pour the water. It never does with seedlings and amateurs to set the seed pots floating. The object is simply not to wet, but to keep the soil from actually drying up.

Digging the surface is also a great thing. Fault of a better spade a steel pen answers well for this purpose; and surface roots with seedlings ought to be much encouraged by little earthings-up when we see tiny white points appearing.

Balsams again are most amusing things to grow, because they contrive to get over the ground so fast. A good plan is that of sowing first in small 60-pots, letting them make their way up through successive changes, watering well, and giving them a warm and light and well-sheltered place. I say well sheltered, because no one knows how easily the stems of balsams snap. This reminds me of flower sticks. Ladies are frightfully apt to bury just one inch of the stick in soil, and then to wonder that the support is shak'y. Where a pot is being prepared for even a seed which is destined to grow up in it, the future stick should be fixed in with the soil, going down absolutely to the very hole, and being surrounded by the drainage. A shak'y stick is always hurting not only the stems but roots, not to speak of its unpleasant quality of making the whole untidy.

Celosias are very pretty plants to grow in pots, and so are some of the amaranths, treated like balsams, only with less water. Canary-flower ought always to be sown in the pots in which it may remain, and a large drainage hole in these cases is a great advantage. Transplanting or pricking out climbing plants is always injurious, as it checks their growth. Then there is the charming phlog Drummondii, and mimulus, Indian pinks, primulas, lobelias,

and petunias, even most part of the hardy annuals, which are none the worse for a little heat. The only thing is to mind they do not get drawn up too tall, for it is not always gratifying to be assured "our plants have been growing beautifully—they are—oh, so long!"

A very great point, indeed, is to guard against heavy showers and against twisting winds. A little dew might benefit the young plants, but if they are grown in boxes or plant cases, closing up the front when the sun is shining provides an instant vapor bath and an immediate shade from what would be too hot.

A thin sheet of moss laid over each pot is said to be very useful in keeping the soil from drying, and so it no doubt is. Still there is the awkwardness of separating it if the plants must be pricked out, and one is apt to fidget about small things getting choked. Unless, therefore, they are seeds sown to stand, I hardly advocate the use of the moss by window gardeners, except to cover the drainage. Sweet peas and climbers root down into it wonderfully. I even mean to experimentize on no drainage, but a quantity of moss.

In growing seeds in plant cases I think it is best to give no hot water at night. It saves a vast deal of "drawing-up," and if the top of the case is open then it is all the better. I always am glad to give a quiet cool place as soon as may be to seedlings. Many, too, as German asters, for instance, require to be where they can have light on all sides to keep up the pyramidal form, and this is hard to give where we have a crowd.

DOMESTIC ECONOMY.

Compote of Green Gooseberries.

This is an excellent compote, if made with fine sugar, and very good with any kind. Break five ounces into small lumps, and pour on them half a pint of water, boil these gently for ten minutes, and clear off all the scum; then add to them a pint of fresh gooseberries freed from the tops and stalks, washed and well drained, simmer them gently from eight to ten minutes, and serve hot or cold. Increase the quantity for a large dish.

TOMATO PRESERVES.—Take the round yellow variety as soon as ripe, scald and peel; then to seven pounds of tomatoes add seven pounds of white sugar, and let them stand over night; take the tomatoes out of the sugar, and boil the syrup, removing the scum, put in the tomatoes, and boil gently fifteen or twenty minutes; remove the fruit again, and boil until the syrup thickens. On cooling, put the fruit into jars, and pour the syrup over it, and add a few slices of lemon to each jar, and you will have something to please the taste of the most fastidious.

GOOD CURRANT JELLY.—Have four pounds of currants after picking over. Then dissolve in water four pounds of loaf sugar, which boil to a pretty thick syrup. Now put the currants in and let them come to a boil, boiling hard for six minutes. Pour the contents in a sieve, to drain off all the liquid. Put this liquor again in the pan and boil it, till, dropping a little on a plate, it congeals as it cools. It is then done.