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THE
Canadian Agriculturist,

AND

JOURNAL OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XI.

TORONTO, MAY, 1859.

No. 5.

RAISING ROOT CROPS.

May is a busy month to the farmer, in which the multifarious work of Spring has to be completed. A large breadth of spring wheat has been sown under favorable circumstances, and the same remark will apply to oats and barley.— Although the Spring is not so early as was at one time anticipated, farm work has been much advanced, and plenty of time has been afforded the farmer for thoroughly preparing his ground for the planting of Indian corn, potatoes, and the root crops generally; a condition upon which after progress and final success so greatly depend. All these crops require land to be sound and dry, deeply cultivated, and, if not naturally rich, to be well-manured,—the manure intimately mixed with the soil, in order to obtain a large and profitable produce. Imperfect and slovenly culture is certain to end in loss; for one acre well managed will produce more than two, subjected to an opposite treatment. In the growth of roots, then, in particular,—although the reasoning holds good in all other crops,—the farmer should aim to obtain the maximum of produce from the minimum of space—the only principle on which root culture can be made to pay.

Mangel-wurzel should be sown as soon as the ground is in a warm and dry condition, and with but little risk of severe night-frosts. The drills are commonly made too close; on good land, and with the larger sorts of mangels, 30 to 36 inches is not too wide. All plants require abundance of light and air, which is particularly the case with farm root crops; and sufficient room should always be left for frequent cultivating with the horn-hoe during the season of growth, without the risk of bruising the succulent plants. The long, red mangel produces the heaviest crop on rich and deeply cultivated land; but upon shallow soils the yellow globe variety is better adapted. Mangel-wurzel is by far a more certain crop in this country than turnips, not being so liable to injury from insects, and rooting deeper in search of food. It will also keep longer in the Spring, and may be given in larger quantities to cows, without imparting an unpleasant flavor, as turnips do, to the milk and butter. It requires, however, to be thoroughly protected from frost, being in this respect almost as tender as potatoes. For feeding purposes it ranks inferior to Swedish turnips. From the large amount of sugar which it contains, all kinds of stock, including

horses and pigs, consume it with avidity. No farmer ought to be without a small portion, at least, of this useful root, which is invaluable to newly-calved cows in early Spring.

The Swedish turnip is a root whose valuable qualities are too well known to need particular description. It has long constituted the sheet anchor of the British farmer. In this country its culture is more uncertain; but by the exercise of judgment and liberal culture, we have seen large and remunerating crops raised in Canada. Turnips in this country succeed best on new land, rich in organic materials. They should be sown in drills from 24 to 30 inches asunder, and well thinned out in the rows. The precise distance at which the plants should stand, is an important and somewhat difficult point to ascertain in practice, and depends on the nature and strength of the soil, the variety of the turnip, character of the season, and other circumstances. As a general rule, people are too apt to crowd their plants, thereby materially injuring the quality and amount of the crop. If sown too early, Swedish turnips are peculiarly liable to mildew. The latter end of May and beginning of June will, in general, answer best; and it is particularly important that the state of the ground and weather should be such as to hasten germination, and push the young plants into what is termed the rough leaf, when they are beyond the attacks of their fatal enemy the fly. The purple top variety may be considered as yielding generally the largest weight per acre; but Laing's improved—a finer and somewhat smaller kind—is better adapted to the market and domestic use. The Swedish turnip is hardy, and may be preserved through the winter in the field, in heaps, taking care not to cover too thickly, and to allow of ventilation by means of openings through the mass, otherwise the heat generated by the mass will set up fermentation and speedily effect decomposition. The Swedish turnip is an excellent fattener of stock, and in this respect is considered for practical purposes unrivalled.

Carrots and parsnips have of late years been introduced to field culture, but to a much less extent than turnips, even in the most agriculturally advanced countries of Europe. The Belgian variety of the carrot yields a large return when not sown too thickly; and it is much recommended for horses, especially in the Spring of the year, before there is a sufficient growth of grass for feeding. It is said that horses fed with small quantities of carrots through the Winter and Spring seldom, if ever, become broken-winded. Any kind of succulent food given in conjunction with dry fodder would, no doubt, be beneficial in that respect. Both carrots and parsnips are excellent for milch cows; as the flavor of the milk and butter is not thereby affected. These crops require to be sown early in drills eighteen inches apart, upon good, well and deeply prepared soil, and should be thoroughly hoed once or twice during the period of early growth, so as to keep the surface friable and entirely free from weeds. We would advise farmers to commence their culture of these crops on a small scale. Nothing short of thorough management will pay.

In this month the great bulk of field potatoes is planted, and the season so far has been quite favorable to the operation. The seed is generally sound, and the soil, except where naturally wet, is in a good state for the reception of the tubers. Of late years the potatoe crop has been too uncertain to be generally profitable, but with proper attention in preparing the land and selecting seed, and subsequent treatment, we may reasonably hope for a liberal return next fall. If the cases of failures, which of late have been so prevalent both in our root and cereal crops, were rigidly investigated, the principal cause, we suspect, would be found to consist in the imperfect preparation of the soil and the want of drainage.—These, with the too frequent repetition of wheat, are the occasion of nine-tenths of the failures and losses experienced by farmers.

PROVINCIAL EXHIBITION.

It is, we presume, generally known to our readers, that the Annual Exhibition of the Agricultural Association of Upper Canada, including Mechanical Productions and Manufactures, Horticulture, Ladies' Work, and the Fine Arts, will take place at Kingston, commencing on the 26th of September next.

Notwithstanding the continued and severe pressure of the times it is encouraging to know that the Kingston Local Committee has been organised, and that they are determined to do their utmost to make the show successful. It can hardly be expected, under the present severe monetary pressure, that corporate bodies, any more than private individuals, can be so liberal in the support of public objects, as they would be under more favorable circumstances; yet from the following extract from a Kingston paper it will be seen that nothing will be wanted at the next Exhibition relative to the accommodation of visitors or Exhibitors. It is fortunate that Kingston already possesses a capacious and permanent exhibition building, ample grounds, permanent fence, offices, &c. The President of the Association too, happens to be a Kingston man, whose experience and public spirit in these matters are well known and appreciated, and who, in connection with an energetic committee, will no doubt render the local arrangements as full and perfect as possible. The Board of Agriculture, it is satisfactory to know, have determined not to diminish the amount of premiums from last year, near TWELVE THOUSAND DOLLARS! The prize list will therefore continue substantially the same. In our next we shall probably have something more definite to communicate. In the meantime we earnestly entreat intending competitors in every county of the Province to lose no time in commencing preparations; for much is often lost to the show, especially among mechanics, from the habit of procrastination. From the position of Kingston, it is more than probable that a large number of exhibitors will be induced to come from the Lower Province:

"A meeting of the Committee of Management of the Provincial Exhibition took place on Thursday in the City Council Chamber. Col. Cameron, in the absence of His Worship the Mayor, took the chair. The Chairman expressed a hope that the Committee would be zealous in the performance of the important duty confided to them, in organizing the Exhibition for 1859 in a manner creditable to the city, and beneficial to the entire community.

Mr. Ferguson and Alderman Meagher presented a report from the sub-committee appointed to prepare the buildings for the Show, which recommended that permanent accommodation should be provided on the show-grounds for 300 head of cattle and 50 horses; that a permanent building should be erected for the exhibition of castings, models, &c.; that a gallery should be erected around the Crystal Palace for the exhibition of paintings, statuary, fine arts, and ladies' work; an orchestra for musicians, and sheds for the exhibition of carriages, &c., at a cost of £1,450—making, with the amount of guaranteed debt on the Crystal Building, a sum of £2,450 required for the September Show.

It was moved by Thomas Briggs, Esq., seconded by Mr. Richmond, and carried unanimously, That the Report be received, and left for further consideration, and that the Secretary, in the name of the Local Committee, communicate with the City Council, the County Council, the Township Societies, and with all who will aid the Kingston Exhibition. After further discussion the meeting adjourned to Thursday, at 3 P. M."

TRIAL OF MOWING AND REAPING MACHINES.

We are requested to state that the West Riding of Durham Agricultural Society intends offering premiums to Mowing and Reaping Machines. The object is not so much the mere distributing of prizes amongst the competitors,

as to obtain a public exhibition of the capabilities of the machines. The riding is one of the best sections in the Province, and many of the farmers are desirous of securing machines of the best construction and adaptedness to their work; hence the Society has resolved to further the object by advertising a public trial. The trial will come off when the crops have arrived at the proper state of maturity, and in suitable fields within the riding, a committee having been appointed to make the necessary arrangements. The trial will be open to all machines manufactured in the province; they may be either single or combined. For particulars, a note addressed, post-paid, to the Secretary, E. A. McNaughton, Esq., Newcastle, will meet with prompt attention.

THE LEGISLATIVE GRANT TO AGRICULTURAL SOCIETIES.

In reply to renewed inquiries on the subject of the public grant to Agricultural Societies for the current year, we beg to say that it has not been discontinued, though somewhat restricted in amount. We refer to our notice of the subject in the March number of the Journal, page 53. We beg to call particular attention also to the following circular from the Government department of Agriculture, by which it will be seen that it will be to the advantage of each County or Electoral Division Society to obtain as large an amount of subscription as possible before the 1st July:

BUREAU OF AGRICULTURE AND STATISTICS,
Toronto, March 28, 1859.

To the Treasurer
County Agricultural Society,

As the Legislative Grant to Agricultural Societies in Upper and Lower Canada is smaller than usual this year, and will not amount to the full sum provided by 20th Victoria, caps. 32 and 49, it is hereby required that all Treasurers of County Agricultural Societies shall transmit their Returns, under Schedule B of said Acts, to the Boards of Agriculture for Upper and Lower Canada respectively, on or before the **FIRST DAY OF JULY NEXT**; in order that the Grant may be divided at a fixed rate, proportioned to the amount subscribed.

Societies omitting to send in their returns on or before that date, will be debarred from receiving any Grant for the year 1859.

By order,

WILLIAM HUTTON;
Secretary.

THE TURNIP FLY.

Many devices have been recommended against the attacks of the turnip fly, but no absolute specific appears as yet to have been discovered. Mr. Poppy's scheme for escaping it consists in sowing alternate rows, or occasional patches of common turnips in the midst of the Swedes, in the belief, to which his experience had led him, that the fly would confine itself to the former. He has since found that mustard attracts the fly from both common and Swedish turnips.

Mr. Grey, of Dilston, has for some years past planted field potatoes in rows alternately with Swedish turnips, on land which had been worked, manured, and drilled up in the previous autumn, or very early in the spring, the potato seed being put in with the spade. This he did to preserve the potatoes from the prevalent disease; and the turnips were always the best in the field.

Lord Grey states his experience of the same practice thus:—"It is a curious thing that in one field, where I have tried your experiment of sowing two drills of turnips together between the drills of potatoes, the turnips have entirely escaped the fly, though in all the rest of the field, sown at the same time, they are completely destroyed." It would seem that the potato top is so distasteful to the fly, as to afford protection to plants of another kind growing in immediate proximity.

We were told by a Canadian farmer who has had considerable experience in raising turnips, that he has never wholly lost his crop by the attacks of the fly—and seldom indeed much injured. His practice is to sow very thickly, and as soon as the smooth leaves begin to appear to scatter over the drills a quantity of quick-lime, dry wood ashes and soot, intimately mixed; the proportion of lime being equal to the other two ingredients.

Agricultural Intelligence.

SALE OF MR. WETHERELL'S HERD OF DURHAMS.

This interesting event occurred at the end of last month, and that love of Shorthorns, which Durham so bravely fostered when the century was young, received ample illustration in the sale of this celebrated herd.

"It was quite to be expected that the skill and science of its owner would be fully acknowledged by a high average, and prophecy certainly had its fulfilment. Mr. John Wetherell, of Richmond, officiated, and did the most ample justice to the stock; though, after all, there was not throughout the day any really 'slashing rally.' The bidding was, in fact, rather steady than spirited. The great Cobham sale had enabled many of the Shorthorn breeders to stop the gaps which the autumn had made in their ranks; but still, not a few cast a longing eye towards some of the Aldborough plums, and the fact of the average being within two or three shillings of £73 for 48 lots, proved that they quitted themselves like men when they did set foot on Durham soil. Combining the Calf of Young Magic Flower and her dam in one lot, there were 35 female lots, which averaged £77 15s, while the 13 bulls reached £60 4s. It was pretty evident, soon after the leading Shorthorn men assembled at head-quarters at Darlington (where they were welcomed by Mr. Wetherell with a most sumptuous entertainment, at the King's Head,) that it was not to be Statesman's day. Reports had been spread that training for shows last year had militated very severely against his efficiency, and this, added to the fact of there being only one thing (Bell Flower) by him, on the list, made many doubt whether he would even touch seventy. So much, in fact, had been said out of doors, that Mr. Wetherell felt it his imperative duty to rise in his carriage on the left of the auctioneer's waggon, and assure the company that the reports were devoid of all truth; and that the fact of so few cows having been served by him, arose from his having left home for the Chester Show, and not returning again till after the Aberdeen one."

The following particulars, indicating how they do these matters in the old country, will be interesting to many of our readers:—

"Although a few snow-flakes fell at last, the day was most lovely, and at an early hour nearly every conveyance in Darlington was chartered for the scene of action, which lies about nine miles from that town, and is reached by a very delightful ride through Melsonby. The Shorthorn men 'stole away' very early for a peep at the lots; and when we arrived there about 11 o'clock, we found the boxes and beautiful meadow below the High Grange one busy herd-mart. A large blue bullock van, inscribed 'The Cumberland Ox,' was for the nonce turned into a counting-house, and there the cheque and catalogue business of the sale was transacted. Farmers and holiday folk had kept gradually pouring in, and the meadow with its staked ring and waggons, and the gaudy striped Durham horticultural tent, over which the union-jack waved, lent to the whole the air of a great village festival. One celebrated turfite was so struck with the *tout*

ensemble, that in the fulness of his heart he confided to us that it looked like the Derby Day, and that he felt quite odd at not having "to make up a book" on the coming events.

On the whole we should guess the assembly at about a thousand. Among them were Lord Bolton, Sir Maxwell Wallace, and the Hon. W. Duncombe; and we also observed Colonels Heeley and Gandy, and Messrs. Jaques, Neasham, Gilpin, Cradock, R. Booth, Swan, Douglas, Torr, Doig, C. Spencer, Drewry, Sanday, Aylmer, Neilson, J. Booth, T. Booth, Atkinson, Knowles, Gambell, Culshaw, H. Smith, Thompson, Carr, Mitchell, Pole, Barclay, Wilson, Thompson, James, Jackson, and several others. The most interesting feature, after all, of the attendance, was that of the octogenarians, Messrs. Wiley and Charge, both of whom were purchasers at the Ketton sale, nine-and-forty years before. They thus furnished two remarkable living links with the past, as one was the fourth-part purchaser of the thousand-guinea Comet, and the other, if we remember rightly, took Midas home. Age has told its tale on the former; but the latter stood by the side of the ring for four hours, with all the energy and spirit of a boy.

About an hour before the sale, people began to find out what the long oval staked ring on the hill-side meant, as the whole eight-and-forty lots were seen, each with an attendant, winding their way in Indian file out of the farm-stead. Mr. Wetherell, on his pony, acted as field-marshal; and in a few minutes they were all arranged in families, and drawn up in a serried line. The word of command was then given, the parade commenced, and a more masterly movement was never executed. In fact, it is one which we should like to see carried out at all sales. The pull is in favor of the seller, as the cattle show themselves so well; but at the same time, good judges have an opportunity of seeing them in action, and satisfying themselves better upon little points, than if they wandered hour after hour through their stalls, and "nipped 'em" ever so diligently. They were moving slowly round their quarter-of-a-mile course, when dinner was announced, and in a few minutes three hundred had enrolled themselves as welcome guests, and were doing full justice to a most admirable repast, to which sherry and punch lent the fullest zest. Mr. Torr, of Aylesby, was in the chair; and when he had introduced the health of Mr. Wetherell, that gentleman in a few brief and feeling sentences acknowledged the toast, and led the way to the ring."

We select from the list of prices a few instances of the larger items. *Lady Scarborough*, a splendid white cow, 8 years old, fetched 200 guineas, as did also *Moss Rose*, 6 years old; *Duchess of Northumberland*, 8 years, went off at 100 guineas; *Ayrshire Rose*, 3 years, 165 guineas. The bulls brought lower figures. *Statesman*, 4 years old, fetched 82 guineas; *Alderman*, 2 years, 70 guineas; *Lord Scarborough*, 125 guineas; and *Lord Aberdeen*, a roan calf, 7 months old, 91 guineas.

To these lots a few Horses succeeded, and when "we left the ground," observes the reporter of the *Mark Lane Express*, to which we are indebted for the preceding information, "some merry peals from the tent, and roars of applause, proved that the Turf was not forgotten, and that a well-known member of the Ring, and owner of race-horses, was on his legs returning thanks. And so the Aldborough herd was dispersed into all lands, and we cannot quit the subject without expressing a hope that its owner will not desert that cause in the evening of his days, for which he has done so much in his prime; and that at many a show (Royal or local) to come, we may have the pleasure of recording his triumphs."

PERIODICAL FAIRS.

A pretty extensive movement has taken place during the past year or two in the establishment of Fairs at certain localities, for the sale of stock and farm produce, and the transaction of other business, to be held monthly, quarterly, or at other stated periods. Such Fairs when thoroughly established and known will, no doubt, conduce greatly to the advantage and convenience of those who have either to buy or sell, and of the agricultural community generally. Amongst those near Toronto, we believe the Richmond Hill Fair has been in successful operation for several years, and has been found extremely satisfactory in its operation. During the present season quarterly fairs have been started at Weston and Mimico, and we understand that they promise to be successful. As an evidence of how much such fairs are likely to be re-

sorted to, we take from the *Wellington Mercury* the following description of the last monthly Fair, together with the Agricultural Society's Spring Fair, held at the town of Guelph on May 4th:—

"The semi-annual Spring Fair, and also the regular Monthly Cattle Fair, was held on Wednesday last; and proved, as was previously anticipated, the occasion of the largest gathering of business men ever held in this town or county. A considerable amount of good stock was brought into town on Tuesday evening, and, we believe, was speedily disposed of. On Wednesday morning, the large area on the easterly side of the Market House was literally 'cramped' with stock of various sorts and quality, and everything worth the attention of either butchers or drovers was soon disposed of at good prices, and cash paid down. There were a few horses offered for sale, but not much business was done in that line, the main sale of stock being confined to cattle in good condition.

There was a considerable amount of business done in the sale of farming implements, new and second hand furniture, fruit trees, grain, and a variety of other articles of commerce or traffic. About mid-day there could not have been less than from four to five thousand people in the Market Square and neighboring streets,—all occupied with business, pleasure, or sight-seeing. The various merchants' stores were crowded during the greater part of the day and many of the proprietors reaped a rich harvest. We have been informed by one merchant doing business in Wyndham Street, that \$700 were taken in cash sales over his counters during the day; and another gentleman doing business in the same street, says he has never, in the course of 25 years experience as a business man, had such a busy and "splendid" day as the day in question. Other parties give us information of a similar character."

HOPE FARMERS' CLUB.

MONDAY, April 11, 1859.

The Farmers Club met, but owing to the unfavorable state of the weather, the attendance was not as large as it otherwise would have been, however, some thirty were present. The President, N. Choate, Esq., in calling the meeting to order, stated that the subject was one of the greatest importance to the farmers of Canada, as by the growth of Roots we were enabled to keep a large number of cattle, which is one of the chief sources of wealth to our country, and also it affords an excellent preparation for wheat. He thought the selection of good seed of great importance; he had purchased from different parties, all equally recommended, and found some seed germinate much quicker than others. He considered the preparation of the soil required greater attention. He generally selected the weediest soils for his root crops, and gave them a thorough cultivation, and concluded by calling on Mr. Harris to read an Essay, as follows:—

MR. CHAIRMAN AND GENTLEMEN,—

The subject we have met here this day to discuss, is one of great importance. The important relation which Green Crops bear to other departments of husbandry renders it a question of the highest moment and worthy of the most careful consideration. Upon a due appreciation of the value and a proper regard to the culture of green crops depends in a great measure the successful cultivation of the soil. I shall notice in this paper, only those green crops which are mostly cultivated, and chiefly valuable for winter food for stock. In all good husbandry, the amount of stock kept upon a farm, must bear such a proportion to the number of acres cultivated, as will be sufficient to supply to the soil those elements of fertility which have been extracted by the growth of these crops. Without stock there can be little manure—to expect that what stock will subsist on, the straw raised on the farm, will produce a sufficient supply of manure to maintain the fertility of the soil, is an error, the practice of which accounts in a measure, for the impoverishment of many farms, and these yearly reducing average crops; hence we gather the necessity of a system that will at once be profitable, and maintain the fertility of the soil. By the use of roots we can keep sufficient stock

to supply our markets with meat, and our farms with those rich manure elements, absolutely essential to the growth of plants. Roots are cheaply raised, stored, and fed on the ground; well worked, they yield abundantly; they are not exhausting, but ameliorating to all soils; all animals improve upon them, and retain a healthy state during a season of dry feeding, and make from them a large amount of rich and well divided manure. Here then are all the elements of profit, and that too in a much higher ratio than other crops supply, when fairly disposed of in the market. There is no root better adapted for the feeding of stock than the turnip. The variety that is most cultivated and most profitable, is the Swedish or Ruta бага, of which there are several varieties.

Clayey soils are not so favourable to the growth of turnips; at least, they require a much greater amount of labor in cultivation, than soils of a loamy nature. A deep rich loam is better suited to the growth of any root than clay. In root culture, there are three important things to be attended to. First, the soil should be deep and mellow, if of a clayey nature, the fall ploughing should be deep, in order that the frost may have its mellowing influence upon it. Second, the land should be well manured; well rotted barnyard manure is the only kind with which I have had any experience. Third, the land should be kept free from grass and weeds—the last is very important, and one that is sometimes neglected. The best method of manuring is to deposit the manure and cover it in the drill. The drills should not be less than 30 inches apart. I shall not speak of the broad cast system of sowing, because I believe the drill system to be the most practised, and altogether the best. The after culture is much easier performed in drills, as it can be done mostly by machinery. In drills, the amount of seed required is about a pound and a half. The final distance between the plants should not be less than 10 or 12 inches. All roots require to have ample space for growth. Turnips are subject to the depredations of numerous insects the most destructive of which is the Black Fly. Different remedies are practised by different ones, for preventing the ravages of the fly; some apply the remedy to the seed, and others to the plant. One remedy is to mix the seed with blimestone before sowing; another is to apply soot or ashes to the leaves of the plant while the dew is on, in order that the dust may adhere to the leaves of the plant. These remedies I have found to be very beneficial. Last year, however, a new enemy presented itself, in the grasshopper, more destructive in its effects than all the others put together. From the nature of the animal I do not think that any remedy could be applied to prevent its ravages. The amount of nutritious matter contained in an acre of turnips is more than four times that of an acre of any kind of grain; add to this the advantage of having the ground in a high state of preparation for any kind of grain crop, and we see some of the advantages of turnip growing.

Next in importance to the turnip I would place the mangel wurzel, although not cultivated to the extent which turnips are. It is a valuable root, and probably a greater amount of food could be produced from an acre of mangel wurtzel, if properly cultivated, than any other root, and it has this advantage over other roots; it is a much surer crop, and adapted to a greater variety of soil, and will succeed upon almost any kind of soil that is properly tilled and richly manured. On deep rich loam it succeeds best and with most certainty, and least trouble. Clay soils will produce heavy crops, but require a much greater amount of labor, both in preparing the ground for the seed, and in the after culture, and the same thing may be said respecting clay soils in regard to other roots. The preparation of the soil is much the same as for turnip, but requires a deeper cultivation. The only varieties which I have had experience in growing are the large red or marbled mangel wurtzel, and the yellow turnip rooted. The width of drill should be adapted to the variety intended to be sown—the larger variety requiring wider drills than the smaller varieties. For the larger variety and wider drill I should prefer manuring in the drill; for the smaller varieties and narrow ridges, the broadcast system of manuring is equally as good in soils of a clayey nature, that have a tendency to bake and become very hard; long coarse manure has the advantage of keeping the ground somewhat open. The distance between the drills should be such as to leave ample space for growth and the performance of the after culture. Thirty inches between the drills, and twelve inches between

the plants, is the least distance in which the ground can be properly worked, and the plants attain their full size. The time of sowing ought not to be later than the month of May. The quantity of seed to there ought to be about four pounds—a much smaller quantity would produce the required number of plants, but this amount affords a choice of plant at thinning, and provides against a partial failure of the crop. I am not aware of any machinery for sowing the seed; a common method is to make a ridge or track along the top of the drill, and scatter the seed along by hand. This method is tedious, compared with sowing turnip seed by the use of the drill. Mangel wurzel bear transplanting better than most other plants.

Carrots also are much relished, and are a valuable food for all kinds of animals. The varieties of field carrots with which I had any experience, are the large Orange, and the large White Field Carrot. The soil best adapted for the field carrot is a deep loam; sandy loam, depth and openness of soil is more essential to the growth of carrots than even richness. They are cultivated in much the same manner as turnips or mangel wurzel. Manure for carrots requires to be well rotted. Very fine carrot seed to be good requires to be fully ripe and heavy; yet if two or three years old, will vegetate quite as well as new. Carrot seed remaining time in the ground before germinating, and if the land be inclined to be weedy, is apt to be preceid and choked by weeds; this difficulty may be obviated in a measure, by forcing the seed before sowing, which may be done by keeping the seed in moist sand, eight or ten days before sowing, taking care to keep the sand loose and moist. Being very delicate and tender in the first stages of its growth, it cannot be cultivated to the extent or with the profit of other roots. The earlier in spring the seed is sown, provided the land is suitable, the larger will be the crop, and the better the quality of the roots. Carrots contain more nutriment than either turnips or mangolds, and are valuable for all kind of stock feeding; but their greatest use is for strengthening and medicinal food for horses. They are much relished by the horse, and are often preferred to oats. They are beneficial in all diseases connected with breathing, and have a marked influence on Chronic Cough, and Broken-wind. Horses will do with a much less quantity of hay and oats, and retain a much healthier state, if liberally supplied with carrots, than without them. Carrots are very productive, I have heard of 1,000 bushels to the acre being raised; this altogether exceeds any experience I have had in their growth; but if properly cultivated, on the right kind of soil, I think from four to five hundred bushels to the acre, might easily be grown.

Turnips are highly productive, and are said to be much better for cattle in certain conditions, than other roots; but as I have not had any experience in their growth or use, I shall not speak of them. But in conclusion, I would recommend that we sow liberally of every kind of root, and not depend upon any one kind. In so doing we provide against a failure of the crops, as it is not likely that all kind of roots will fail in the same year.

Mr. F. Champion thought the cultivation of mangel wurzel, did not receive that attention they should, as they afforded excellent food for much cows during the Winter month. He said the milk from cows fed on them was richer, and had none of that disagreeable taste that it had when the cattle were fed on turnips. He also recommended the carrot as being very valuable for wintering stock. He thought roots succeeded best on light or loamy soil.

Mr. Vanstone said he had been raising roots for a number of years. The largest crop he ever raised was on a heavy clay soil, but preferred loamy soil for their growth. He generally selected green soil for his root crops, as it was less weedy. He also recommended the growth of carrots, as every animal on the farm was fond of them.

Mr. Guy said he had not much experience in the growth of roots in Canada as yet. His crop last year was eaten up by the grasshoppers. In England they generally selected stubble land for their root crops, and manured heavily with Guano. He also recommended sowing the seed on the flat instead of in drills, as it did not suffer so much from drought. He thought we ought to raise more mangel wurzel, as they were excellent to feed stock on in the Spring, when the turnip failed. He said the best variety was the Ox-horn, but he did not know whether we had any of that kind here or not.

Mr. Rosevear said he had not much experience with roots. Thought light soils the best for their growth. He preferred carrots and mangold wurzel to turnips, as being more certain.

Mr. Rider thought the use of artificial manure for the growth of roots important, as it would quicken the growth of the young plant, and consequently the fly would have less time to injure it.

Mr. Oke agreed with Mr. Guy in sowing the seed on the flat; he had tried it last year, and had a good crop. Had raised some mangel wurzels, but considered them not as certain as turnips. Would like to have heard something about the potatoe culture.

Mr. J. E. Champion said he would like to have heard more about the potatoe. He thought the culture of it next in importance to wheat. Would like to have heard from the farmers here present their experience in cutting seed, and went on to argue in favor of cutting the seed potato. Starch being the principle thing in the composition of the potato. But as starch is insoluble in water, it must be changed to sugar or gum, before it can be beneficial to the growth of the embryo plant. He agreed with Mr. Oke in respect to late sown turnips. Thought the bulk much better from late than from early sown seeds. He thought the growth of mangold wurzel of great importance, although he did not like the labor of thinning them, but when raised he thought them preferable to turnips. He also thought much of the objections that he had heard against clay soils, lay with the farmer in his lack of skill, as it is an established fact, that clay soils are richer in manure elements than the much praised light soils.

W. F. Allen said that he preferred the cut potato for seed. Had experimented with potatoes, and found if the seed end was cut off, and the other end planted, with from one to two eyes in it, the yield was more bounteous, and uniform in size; and urged farmers to try the experiment, and report their success. He said seed sowing on the flat had, no doubt, some advantages, as in dry seasons it was nearer moisture; but he preferred the drill ridge, as he thought it invariably better, because the ammoniacal gases are better absorbed by the young plant, and the bulk is more out of ground than if sown on the flat. He concluded by urging farmers not to depend on one kind of root, but raise some of each variety.

Mr. Brock said his farm was not adapted to the growth of turnips. Had raised as good a crop of carrots as any raised in the Township, and thought mixing seeds a good plan, as if one failed another might succeed.

J. K. Allen was of a different opinion, from the last speaker, about mixing turnip or carrot seed; he thought different varieties of turnip or carrot required separate culture, because some varieties were more valuable for spring feeding, than others. He agreed with the essay, in importance of the hoe crop, in keeping up the productiveness of our farms. He thought if we did not pay more attention to it, we would be ere long, in the same position as the farmers of the Eastern States, that were compelled to emigrate to find soil of sufficient productiveness to pay for laboring. He thought more attention ought to be given to the culture of corn; he thought the fodder valuable for milch cows, and if the midge destroyed our wheat, we would not starve so long as we had corn. He had helped to raise a crop of corn that yielded at the rate of 88 bushels per acre.

Mr. Curtis advocated hilling or plowing carrots like potatoes. Had tried half of his crop each way, and had a better yield from those he hilled.

W. F. ALLEN, *Secretary.*

MANURES, AND THE PRACTICABILITY OF INTRODUCING THE MANUFACTURE INTO CANADA.

BY F. STERRY HUNT, ESQ., M. A. S. D., PROFESSOR UNIVERSITY OF LAVAL, CHEMIST TO THE GEOLOGICAL COMMISSION OF CANADA.

Before describing the results of some enquiries into the value of these manures, and the practicability of introducing their manufacture into Canada, it may be well to explain briefly certain principles which may serve to guide us in the appreciation of the subject. Modern investigations of the chemistry of vegetation have led to a more or less correct understanding of the laws of vegetable nutrition and the theory of manures, and we are all aware how many natural and artificial matters have been proposed as

substitutes for the manure of the stable and farm-yard. Foremost among these ranks the Peruvian guano, composed for the most part of the exuvie of sea-birds, and employed for centuries by the Peruvians as a powerful stimulant to vegetation. This substance owes its value to the phosphoric acid and ammonia which it is capable of affording to the growing plant; the former element being indispensable to the healthy development of vegetation and entering in large proportion into the mineral matter of the cereals, while ammonia furnishes, in a form capable of assimilation, the nitrogen, which, with the elements of water and carbonic acid, make up the organic tissues of plants.— Besides these essential principles, plants require sulphuric acid, chlorine, potash, soda, magnesia, and oxyd of iron, all of which elements are found in their ashes, and are required for their healthy growth. In a fertile soil all of these ingredients are present, as well as phosphoric acid and ammonia, which last substance is constantly produced by the decay of animal and vegetable matters, and is either at once retained by the soil, which has the power of absorbing a certain portion of it, or is evolved into the air, and afterwards dissolved and brought down by the rains to the earth.

Many of the mineral elements of a soil are present in it in an insoluble form, and are only set free by the slow chemical reactions constantly going on under the influence of air and water. Such is the case with the alkalies, potash, and soda, and to a certain extent with the phosphates. Now, although there is probably no soil which does not yield by analysis quantities of all the mineral elements sufficient for many crops, yet by long and uninterrupted tillage the more soluble combinations of these elements may be all taken up, and the land will then require a certain time of repose in order that a store of more soluble matters may be formed. Hence the utility of fallows.

In my analyses of the soils of the Richelieu valley, in the Report for 1850, pp. 79-90, I have shown, by comparing the virgin soils with those exhausted by continued crops of wheat during fifty years, the proportions of phosphoric acid and magnesia, elements which are contained in large quantities in this grain, have been greatly diminished, but the soil still contains as much phosphate as it has lost, and this only requires to be rendered soluble in order to be available to vegetation.

In forests and untilled lands the conditions of a healthy vegetable growth are seldom wanting; the soil affords in sufficient quantity all the chemical elements required, while the leaves and seeds which annually fall and decay, give back to the earth a great proportion of the elements which it has yielded. In this way the only loss of mineral matter is that which remains stored up in the growing wood, or is removed by water from the soil. Far different is the case in cultivated fields, since in the shape of corn, of fat cattle, and the products of the dairy, we remove from the soil its phosphates, alkalies, and nitrogen, and send them to foreign markets. The effect of tillage becomes doubly exhaustive when by artificial means we stimulate vegetation without furnishing all the materials required for the growing plants. Such is the effect of many special manures, which while they supply certain elements, enable the plants to remove the others more rapidly from the soil. A partial exhaustion of the soil results likewise from repeated crops of the same kind; for the elements of which the cereals require the largest quantity, are taken in smaller proportions by green crops, and reciprocally, so that by judicious alternations the balance between the different mineral ingredients of the soil is preserved.

One of the great problems in scientific agriculture is to supply to the soil the ammonia and the mineral matters necessary to support an abundant vegetation, and to obtain from various sources these different elements at prices which will permit of their being economically made use of. Nowhere but in the manure of the stable and farm-yard can we find combined all the fertilizing elements required, but several of them may be very cheaply procured. Thus lime and magnesia are abundant in the shape of marl and limestones; soda is readily obtained, together with chlorine, in common salt; while gypsum or plaster of Paris supplies at a low price both sulphuric acid and lime. Potash, when wanting, may be easily supplied to the soil by wood-ashes, but phosphoric acid and ammonia are less easily obtained and command higher prices.

An abundant supply of phosphate of lime is found in bones, which when dried contain from 50.0 to 60.0 per cent of mineral matter, consisting of phosphate of lime, with a little carbonate, and small portions of salt of magnesia and soda. The remainder is organic matter, which is destroyed when the bones are burned. This phosphate of lime of bones contains 46.0 per cent of phosphoric acid, and the refuse bone-black of the sugar-refiners usually affords about 32.0 per cent of the acid. The different guanos also contain large amounts of phosphoric acid, and that known as Columbian guano is prin-

cially phosphate of lime. Various deposits of mineral phosphate of lime have of late attracted the attention of scientific agriculturists. I may mention in this connection the crystalline phosphate of lime or apatite of our Laurentian limestones, and the phosphatic nodules found in different parts of the Lower Silurian strata of Canada, and described in previous Reports

These mineral phosphates are in such a state of aggregation, that it is necessary to decompose them by sulphuric acid before applying them to the soil. The same process is also very often applied to bones; for this end the phosphate of lime in powder is to mingled with nearly two-thirds its weight of sulphuric acid, which converts two-thirds of the lime into sulphate, and leaves the remainder combined with the phosphoric acid as a soluble super-phosphate. In this way, the phosphoric acid may be applied to the soil in a much more divided state, and its efficiency is thereby greatly increased. Even in its soluble form, however, the phosphoric acid is at once neutralized by the basic oxides in the soil, and Mr. Paul Thenard has lately shown that ordinary phosphate of lime, when dissolved in carbonic acid water, is decomposed by digestion with earth, insoluble phosphates of iron and alumina being formed, which are again slowly decomposed by the somewhat soluble silicate of lime present in the soil, and transformed into silicates with formation of phosphate of lime. It is probable that alkaline silicates may also play a similar part in the soil. These considerations show that the superior value of soluble phosphate of lime as a manure, depends solely upon its greater subdivision. A portion of the phosphoric acid in Peruvian guano exists in a soluble condition as phosphate of ammonia.

With regard to the nitrogen in manures, it may exist in the form of ammoniacal salts, or combined in organic matters which evolve ammonia by their slow decay. The ammonia which the latter are capable of thus yielding, is designated as potential or possible ammonia, as distinguished from the ammonia of the ammoniacal salts, which is generally soluble in water, and is at once disengaged when these matters are mingled with potash or quick-lime. Such is the sulphate of ammonia, which is prepared on a large scale from the alkaline liquid condensed in the manufacture of coal-gas. In Peruvian guano a large amount of the nitrogen is present as a salt of ammonia, and the remainder chiefly as uric acid, a substance which readily decomposes, and produces a great deal of ammonia. In fact, this decomposition takes place spontaneously, with so much rapidity, that the best guanos may, it is said, lose more than one-fifth of their nitrogen, in the form of ammonia, in a few months' time, if exposed to a moist atmosphere.

Other manures, however, contain nitrogen in combinations which undergo decomposition less readily than uric acid. Thus, unburned bones yield from 6 to 7 per cent of ammonia, and dried blood, fifteen or sixteen per cent, while woollen rags and leather yield about as large a quantity. In estimating the value of such matters as manures, the difference in the facility with which they enter into decomposition, must be taken into account. Thus, if too large quantities of guano are applied to the soil, a portion of the ammonia may be volatilized and lost, while with leather and wool the decay is so slow, that these materials have but little immediate effect as manures. The nitrogen of blood and flesh is converted into ammonia with so much ease, that it may be considered almost as available for the purpose of a manure as that which is contained in ammoniacal salts.

Attempts have been made to fix the money value of the ammonia and the phosphates in manures, and thus to enable us from the results of analyses, to estimate the value of any fertilizer containing these elements. This was, I believe, first suggested a few years since, by an eminent agricultural chemist of Saxony, Dr. Stockhardt, and has been adopted by the scientific agriculturists of Great Britain, France, and the United States. These values vary of course very much for different countries; but I shall avail myself of the calculations made by Professor S. W. Johnson, of New Haven, Connecticut, which are based on the prices of manures in the United States, in 1857. In order to fix the value of phosphoric acid, in its insoluble combinations, he has taken the market prices of Columbian guano, and the refuse bone-ash of the sugar refiners, which contain respectively about 40 and 32 per cent of phosphoric acid, and from this he deduces as a mean $4\frac{1}{2}$ cents the pound as the value of phosphoric acid, when present in the form of phosphate of lime. This would give \$1.44 as the value of 100 pounds of bone-ash, and \$1.60 for the same amount of guano, while they were sold for \$30 and \$35 the ton.

The value of soluble phosphoric acid has been fixed by Dr. Voelcker in England and

by Stockhardt in Saxony, at 12½ cents the pound. This evaluation is based upon the market price of the commercial super-phosphates of lime. Mr. Way, of the Royal Agricultural Society, however, estimates the value of phosphoric acid, in its soluble combination, at only 10½ cents the pound; and Mr. Johnson, although adopting the higher price, regards it as above the true value.

In order to fix the real value of ammonia, Professor Johnson deducts from the price of Peruvian guano, at \$65 the ton, the value of phosphoric acid it contains, and this arrives at 14 cents the pound for the price of the available ammonia present. This kind of guano, however, now commands a price considerably above that which serves for the basis of the above calculation; and both Voelcker and Stockhardt fix the value of ammonia at 20-cents the pound. The price of potash as a manure is estimated by Mr. Johnson at 4-cents the pound; but this alkali rarely enters to any considerable extent into any concentrated manures, and may therefore be neglected in estimates of their value.—*Journal of Board of Agriculture of Lower Canada.*

JUDICIOUS CULTURE MAY TEND TO IMPROVE CLIMATE.

It has hitherto been a prevailing opinion with the many, that the constitution of plants must be altered and adapted to climate, with taking into consideration the practicability of altering or adapting, by artificial means, the climate to the constitution of plants. The first process has been called acclimatizing; but we shall endeavor to show, that, by familiar expedients, the climate may be altered so as to suit the habits and requirements of the vegetation.

It is absolutely necessary to consider the conditions of the atmosphere in which plants live and move, and have their being; but, as regards the latter, the generality are apt to omit, or overlook, that the conditions and temperature of the soil in which the roots of plants and trees are placed and permeate, are of at least as much importance, if not more, to their successful cultivation.

The root or underground extension of the plant, is quite as sensitive to the-extremes and modifications of moisture, dryness,—of heat and cold,—as the branches, leaves, fruit, and flowers, that wanton in the sunshine, or wither in the inhospitable wind. The summer shower is as grateful to the buried rootlets, as to the verdant leaves; and unhealthful influences, or fostering warmth, which, the one or the other, withers or expands the gay blossoms, are not without inflicting kindred influences on the responding and suffering radicles; so that the breath of spring and gentle breezes of summer affect equally the portions of the plant which beautify the landscape, or seek for sustenance from amongst the ingredients composing the body of the soil in which it stands.

It follows, then, that the regulation of the circulation of air underground, and the condition of its volume, must influence materially the growth of the vegetation on its surface; and it also follows, that the amount of contained moisture, and its conditions, must equally affect the growth of the plant it bears. But we have it in our power, by judicious culture, to regulate these conditions; and thus far is it in our power to alter the climate to suit the habits and conditions of the various agricultural and other plants, the subjects of cultivation.

Now this result is to be obtained by securing the thorough working and comminution of the soil, for the purpose of aëration, or the introduction and distribution of atmospheric air through the cells—and, by thorough drainage, so as to secure the removal of superabundant, and therefore, injurious moisture; for when the interstices between the particles of earth are filled with water to the expulsion and exclusion of the air, except the small portion contained in the superfluous water itself—the plants, or their rootlets rather, are deprived of the most essential part of their food. Remove the superabundant water, and air takes its place, holding in suspension a sufficiency of moisture for the subsistence of the roots, and the system of growth dependent upon them for nourishment; for be it clearly understood, that it is not water in a fluid state, which is generally preferred or appropriated by plants,—but rather when it has assumed the state of air-borne vapor, it becomes adapted for facile assimilation.

But it is also noticeable, that drained land, in summer, may be from 10° to 20° Fahrenheit warmer, than when saturated and gorged, so to speak, with moisture; so that

thorough drainage has the effect of *raising* the temperature of the soil, and we thus have it in our power to improve, if we may so express ourselves, the underground climate. It has been ascertained that heat cannot be transmitted downwards through water, therefore land injuriously saturated with moisture must proportionally decrease in temperature. On the contrary, if the soil be open, and not injuriously saturated, the warm rain descends through the cells and pores of the earth, carrying with it the high temperature it has gained at the surface—imparting it to the soil as it passes onwards and downwards, and thus distributes that increase of temperature—familiarily called “bottom heat”—so essential to the luxuriant growth of the various plants, the subjects of culture. So that deep draining, when efficiently conducted, modifies and alters the underground temperature to a very appreciable extent; and thorough culture, and a due separation or comminution of the constituent particles, open the soil at once, for the more easy extension of the rootlets, and permit of the free access of the air; and when both these objects are attained, an appreciable improvement will be speedily apparent, both in the vigor and luxuriance of the vegetation. The plants will be more able to resist the action of unhealthy influences—less subject to rust or mildew—less easily affected, retarded, or destroyed by the attacks of insect enemies—less likely to fall a prey to drought; the robustness and vigor of their growth rendering them superior to the injurious influences which might otherwise overpower their recuperative energies.

—*Ibid.* J. A.

CULTIVATION OF MUSTARD.

There are two kinds of mustard used in commerce—*Sinapis nigra*, or black mustard; and *Sinapis alba*, or white mustard. The former, which is commonly termed brown mustard, is the species that furnishes the valuable condiment used at table, the white mustard being chiefly grown for salad in the gardens, and for the sake of the oil it contains. The oil is valuable for burning, as it does not freeze; it is also used in the manufacture of soap.

The following method of cultivating the black or brown mustard has been recommended in agricultural works:—The land having been duly prepared in the winter, as for other spring crops, sow moderately thick, either in drills from six to twelve inches apart, according to the quality of the soil, or broadcast, harrowing in the seed. When the plants are two or three inches high, thin them moderately where they stand too thick, and keep them clear of weeds. They will soon run up to stalks, and will be ripened in July, August, or September, according to the time of sowing, and the favorableness of the season. They should then be cut or pulled up, and tied in sheaves like wheat, and left on the stubble a few days, protected, if possible, from rain, which does much injury to it, and causes it to sprout. It is a very exhausting crop, and when once sown is difficult to be eradicated, as it readily shells when ripe, and like its relative the charlock (*Sinapis arvensis*) will retain its vitality an indefinite period. It contains 28 per cent. of volatile oil, heavier than water.

The cultivation of the white mustard for the use of the table is too well known to require stating here. When grown for a crop of seed for manufacturing purposes, the cultivation does not differ from that of the brown mustard. It is less pungent than the latter, and the oil expressed from both is mild and insipid, and as free from acridity as that of almonds.—*Mark Lane Express.*

BUTTER MAKING.

A lady who takes the prize for butter in a celebrated dairy county in Canada, furnishes us with the following description of her method of making butter:—

1st. Have a good milk-house with stone or hard earth floor, with only one window placed opposite the door, and that screened so as not to admit dust or flies; this room should be situated as far as possible from manure heaps or anything offensive, and be kept quite clean.

2. Have the usual shallow earthenware, tin or zinc pans, kept scrupulously clean. After use these dishes should be thoroughly washed, and, before using again, should be scalded and left to cool.

3. Strain the new milk carefully into these dishes, and set past till the cream be cast up, not exceeding, in summer, 24 hours. The sooner the cream is churned the better, but it should not, in summer, stand more than two days.

4. The heat of the cream in churning should on no account be over 65 degrees. The reason that so much butter is so white and inferior is that many churn at too high temperature, perhaps 70 or 75 degrees. If the cream be above 65, reduce the temperature with cold spring water. When warmer, it churns easier and sooner, but it does not make nearly such good butter. In no case should the process of churning last less than 40 minutes, and often an hour, in order to have good butter. Thus it will be seen that a thermometer is a necessary addition to the dairy, in order to make good butter, and every farmer should buy one.

5. The washing process is of extreme importance, as upon it the keeping of the butter depends. On taking the butter out of the churn, place it in a tub and wash with clear spring water; pour off the water, which will be like milk; then hair the butter carefully, and wash it twice, making three washings in all, until the water comes away quite clear.

6. The salting process is a very delicate and important one, which is generally greatly abused. The finer and purer the salt the better. The ordinary American or Liverpool salt gives butter a very inferior character. Nothing but the purest should be added, and that should be well worked in. Upon no account put too much salt; great dishonesty is practised in this respect.

7. Packing. The keg or tinnet should be made of white ash, or other suitable wood, thoroughly seasoned; but no elm sap wood should be employed. The butter should be packed closely so as to leave no air holes, and the whole quantity in a package should be alike in color and quality.

Butter made as above will keep a year perfectly sweet, and will bring, on the average, at least 2 cents a pound, perhaps 3 or 4 cents a pound more than butter made in the ordinary careless way.—*Montreal Witness.*

Horticultural.

STREET TREES.

BY PROFESSOR J. LINDLEY.

There are three new roads leading out of London, England, which are about to be planted with shade trees by order of the Royal Commissioners. These gentlemen are reported to have decided on planting these roads with the European Linden or Lime tree, or what we would call the Basswood. Against this, Dr. Lindley protests in the following very excellent article, which gives many useful hints as to the qualities of trees suitable for streets and ornamental grounds and parks, and which is likely to prove as useful to street commissioners here as on the other side of the Atlantic.

It is reported that the Royal Commissioners for 1859 are about to plant their three great roads, viz: Exhibition Road, Cornwall Road, and Prince Albert's Road, with Lime trees. Notwithstanding the beauty of this tree, we cannot but hope that the statement is erroneous, and that an opportunity will not be lost of showing what effect can be produced by something less hacknied. Surely, it will be highly discreditable to this, the greatest horticultural country in the world, if nothing more can be found for avenues than trees employed in the days of the Tudors. For forty years very large sums have been annually spent in procuring new hardy plants from every accessible climate, and it will reflect little credit upon the advisers of the Royal Commissioners, if they should prove so poor in resources, as to have in 1859 nothing better to recommend for avenues than might, indeed, have been had at the Conquest.

What is required for avenues near London? Trees that are durable, have handsome foliage, that grow fast, that will bear occasional winter fogs, and the long east winds that prevail here in the spring. The handsomest, the fastest growing, and the

latest in leafing, because the least likely to suffer from cold northeast winds, are the best for this purpose. Elm trees, Lime trees, and Beech trees, are most in use because they were the trees of our forefathers, and people in country places when avenues were made, even if they had had other trees, would not have thought of looking beyond what they could find in their own neighborhood. But that Elm trees and Lime trees have formidable rivals is sufficiently proved, by the glorious Horse Chestnuts of Bushy.—Avenue's of Horse Chestnuts at Kensington would indeed be far preferable to Lime trees, if we must trot along at the pace of pack-horses.

But are we to disregard everything that modern experience has shown to be suitable for avenues, except the trees just mentioned? Have North American Maples no merit, nor Sweet Chestnuts, nor Oriental Planes, nor any of the Oaks, nor the glorious Tulip trees, nor graceful Ailanthus, nor the noble American Black Walnuts? Surely among all these something may be found more worthy the Royal Commission roads than Elms, Beeches, Limes, and even Horse Chestnuts. Elms indeed are not to be thought of; it would never do to plant by road-sides trees so rotten in their old age as to be dangerous to passers-by. The experience of Hyde Park is a warning. Nor would Beeches answer, because of their invariable secretion of honey dew, which would gum London soot to their leaves and speedily throw them out of health.

It may be asked why Spanish Chestnuts are not selected, trees far more beautiful than Lime, both in foliage and flower, graceful in youth, majestic in old age, and possessing every quality that is required. True sessile-fruited Oaks, among the finest of trees, will bear London atmosphere, and might be associated with Spanish Chestnuts alternately. Oriental Planes, than which none are hardier, none more umbrageous, none better suited to our Parks, with good management will grow much more than a foot a year in height, and endure for ever. These things are well known to all men.

Among less common species there is the *Acer eriocarpum*, commonly called Sir Charles Wager's Maple, one of the fastest growing of American trees, remarkable for its airy foliage, light green in spring, rich rose color in autumn. With it might alternate the *Acer macrophyllum* of Oregon, a specimen of which in even unfavorable ground has made nearly two feet in height annually, and has now, at the end of about 28 years, a girth of 6 feet. Nothing could be more striking than the massive deep green foliage of the latter associated with the lighter shade of the former.

Are Turkey Oaks to be passed by? They grow faster than the Lime, and owing to the thinness of their foliage are exceedingly graceful.

Then there are Tulip trees. Let any one look at the specimen on Ham Common, and say whether such magnificent vegetation is to be disregarded. A Tulip tree in land no better than that of the Cornwall Road grows as fast as any Lime.

Above all things we should regret to find the claims of Ailanthus and the American Black Walnut passed by. These trees are so much alike in general aspect that they may be spoken of together. Each will grow as fast as the fastest Horse Chestnut, has noble rich green pinnated leaves, and the first in good seasons is resplendent with crimson fruit. Surely they deserve to be thought of.

Were each of the three avenues now to be planted furnished with its own peculiar trees two sorts in each case planted alternately, an admirable effect might be obtained by some such arrangement as the following: Cornwall Road, Tulip trees, alternating with *Acer Eriocarpum*; Exhibition Road, Black Walnuts and *Acer macrophyllum*; Prince's Road, Turkey Oaks, or sessile-fruited Oaks and Spanish Chestnuts. If it should be said that such trees, of the requisite height, are not procurable in England, we have two answers. 1st. There are more nurseries than the English; the Continent and United States are within easy distance. 2d. Let the planting be deferred until trees of the requisite height can be raised in nurseries under a contract to supply them at a future time.

AMERICAN TREES AND TREE-PLANTERS.

There has always been a party in this country with views and feelings opposed to the destruction of our native forests. At first small and little heeded, this party has gradually increased, and it now numbers its thousands. Their fitting title would be that of Phila-borists or Free-lovers. Their doctrine is that trees have economic and æsthetic uses which entitle them to be respected in the forest, and largely planted in

orchards, avenues and parks. They claim that trees make generous returns for the room they occupy. The close relation of trees to the public prosperity, is seen in the present difficulty of finding sufficient water for the Erie Canal. The enlargement of the canal and its business requires more water than formerly, when, in fact, the supply is alarmingly deficient. There is one reason for this deficiency in the wasteful cutting down of forests on the hill-sides, whence flow numerous small streams that unite to fill the vast aorta of our inland commerce.

The destruction of trees not only diminishes the absolute quantity of rain, but prevents its accumulation in springs, shaded valleys, and swamps. A bare hill side will shed water like a roof. Let the trees remain as nature intended, and the same soil becomes a sponge, absorbing the rain as fast as it falls, and sending it down little by little to the thirsty lowlands.

In the early stages of our country's growth, little attention was paid to the culture of trees. The names of the pioneer Philharborists are few, and their chief encouragement seems to have come from across the Atlantic. There is a queer old house still standing on the banks of the Schuylkill, that might be called the Cradle of American Botany. It was built by John Bartram, who founded the first Botanic Garden in this country. Bartram was an honest Quaker, little noticed at home, but honored abroad, as a collector of rare trees and plants. He kept up an active correspondence with eminent savans in England. Dr. Darlington's recent publication of these letters created a pleasant effervescence in the literary circles of Europe and America. Andre Michaux, and his son Francis Andre Michaux, should be remembered. They were Frenchmen, and served the French Government. Yet most of their scientific labor was performed in this country. They were heartily attached to American institutions. They sent home about sixty thousand trees and plants, with many boxes of seeds, as the result of their searching in our nation's wilds. The younger Michaux lived to be eighty-five, and spent his last days in planting a group of American trees. His *North American Sylva*, recently edited by J Jay Smith, of Philadelphia, has no equal on the subject which it treats. He bequeathed \$22,000 to societies in Boston and Philadelphia, for special purpose connected with the propagation of useful trees.

Among the early Pomologists, William Coxe, of New Jersey, stands foremost. His work on the *Cultivation of Fruit-Trees* was prepared without much help from previous authors, and is still appealed to as reliable authority. Mr. Coxe sent scions of the *Seckel Pear* to the London Horticultural Society, of which he was soon after elected a member.

The name of Downing is dear to every lover of rural improvement. His *Treatise on the Theory and Practice of Landscape Gardening*, published in 1841, gave him a solid and brilliant reputation on either side the Atlantic. The book was thoroughly practical, yet tall alive with poetry and sparkling sentiment. It was read like a romance, and removed the scales from eyes previously blind to the beautiful in trees and landscapes. The youngest son of a gardener on the Hudson, Downing was so reserved in his habits, that few suspected the rare qualities of his mind, before his appearance as an author. He had grown up as a neglected seedling might have done in an out-of-the-way corner of his father's grounds, until its rich ripe fruit caught the gaze of passers-by, and pregnated the air with daintiest aroma. Downing was thought by some to be unsocial and haughty; yet there never lived a man more intensely American. It was a favorite idea with him that America was entitled to a style of Architecture distinctly its own, and suited to our climate, scenery and habits. The working out of this idea is clearly seen in his *Essays and drawings*. He was partial to American trees, and often exposed the folly of preferring such exotic impositions as the *Ailanthus* and the *Abel*, to the *Maple*, the *Elm*, and the *Liriodendron*. His whole life, genius and ambition were devoted to the elevation of his countrymen, to the improvement of their homes, and the multiplying of their ennobling pleasures. His premature death, in 1852, so painfully remembered with the burning of the *Henry Clay*, was an irreparable loss to American literature and art.

Living Philharborists are doing much, at this time, to promote the knowledge and culture of desirable trees. Never was there a period when so much of capital, enterprise and research was given to this most important branch of national industry. The peculiar and promising feature of the present enthusiasm in tree-culture, is that its friends are forming themselves into groups, for particular studies and experiments. In the cultivation of Pears, Marshall P. Wilder, of Dorchester, Mass., takes the lead.

He has rendered his countrymen an important service by testing, under his personal inspection, hundreds of important varieties, a large proportion of which were found to be unsuitable for this country.

Henry W. Sargent, of Fishkill, has honorably won the position of an oracle of Evergreens. Ornamental planters are waiting with impatience for the promised work that shall embody the results of his large experience with Evergreens imported from foreign nurseries—*Ex. from Prof. NORTON'S Address before N. Y. State Agricultural Society.*

THE PEACH IN ILLINOIS.—North of about 36° the peach tree is always more or less tender; and were it not for its habit of bearing while young, it would be folly for us of the North to plant it; and yet no fruit pays better when you get it; and up here we most always have fruit when there are flowers. So far the fruit buds have been winter-killed much oftener than the tree; though I have seen three large crops and some partial ones in this vicinity, and a few trees 12 to 15 years old, previous to 1856, when all were killed; and for that matter there was a pretty general winter-killing once before—about 1812. One good crop may be counted on even here, and that will pay for the trees and more too. Far south it is the most profitable fruit in general cultivation.

The peach likes a warm, light loam, deep and dry, not so stiff as good pear soil, but much like it otherwise. It will do well, however, on any well elevated grounds south; while here the highest, driest, and "poorest" prairie knolls or hazel and tree-sprinkled "barrens" should be selected, when practicable; and soil that is "poor" in nitrogenized matters always; for a large growth and a late growth of wood are to be avoided. On such soils the peach is perhaps better without underdrainage than any other fruit tree. Best plan on or quite near the surface, however, and raise the earth over the roots to support the tree in its place. Plant trees to make low heads, and never more than one year old, if you can well avoid it.

The nectarine, which is but a smooth skinned peach, comes in here. For varieties you can depend on the books and catalogues, always remembering that some good sorts for the South will not ripen here.—*J. A. KENNICOTT, in Prairie Farmer.*

STRAWBERRIES ON THE PRAIRIE.—This fruit will grow on any good deep soil, if not too wet; and yet it seems to like permanent moisture. Perhaps a deep, moderately rich, clayey loam, is best. Virgin prairie, broken up in May or June, trenchplowed in October or November, and set in vines the next March or April, has given large and cheap crops. Manure is seldom needed, and deep culture rarely fails to pay. *Necked Pine* and *Large Early Scarlet* are among the hardiest and easiest to cultivate on the prairie, but are scarcely so desirable as many of the larger sorts, hardy enough with a slight winter protection north, and mostly quite hardy south. For a choice of sorts, consult books and periodicals. *Hovey's Seedling*, *Burr's New Pine*, *McAvoy's Superior*, *Crimson Cone*, *Longworth's Prolific*, &c., have earned a good reputation West, and some of the newer sorts, like *Wilson's Albany*, &c., are very promising here.—*J. A. KENNICOTT, in Prairie Farmer.*

REMEDY FOR THE CURCULIO.—"To one pound whale oil soap add four ounces of sulphur. Mix thoroughly, and dissolve in twelve gallons of water.

To one half-peck of quicklime add four gallons of water, and stir well together. When fully settled, pour off the transparent lime water, and add to the soap and sulphur mixture.

Add to the same, also, say four gallons of tolerably strong tobacco water.

Apply this mixture, when thus incorporated, with a garden syringe, to your plum or other fruit trees, so that the foliage shall be well drenched. If no rains succeed for three weeks, one application will be sufficient. Should frequent rains occur, the mixture should be again applied until the stone of the fruit becomes hardened, when the season of the curculio's ravages is past."

The above, being highly recommended, is copied from the *N. Y. Observer*. A correspondent of that paper, having tried the preparation on part of his trees, secured a good crop of fine fruit, while on those to which it was not applied no fruit was matured. Will not fruit growers generally give it a faithful trial the coming season, and publish the result? I intend to test its efficacy, and will report accordingly.—*JOHN BRADFIELD, in Genesee Farmer.*

DOES IT PAY TO HIRE A GARDENER.—I am a farmer with 150 acres of cleared land, with orchards, &c., as good as my neighbors, but I was not quite satisfied with my garden. It was, to be sure as good as those of my neighbors, but I wished the garden better. The soil and situation were good, I had worked it, yet I was not suited. I hired a gardener in April, 1857, and in keeping a correct account of loss and gain found myself minus some \$17. In looking back, I thought I could see where I had missed it, and not to be discouraged at one failure, I made a second attempt in 1858. This year I find the debt and credit pages are quite different from the former. I now find myself the gainer to the amount of \$23 50 in 1858, besides the constant supply and use of many articles 'or the table, not taken in the estimate. Then the great enjoyment of the many delicacies my garden yields when a friend visits me, and occasionally to make a present of a dish of strawberries, gooseberries, or a few melons, as circumstances seem to justify, gives such a true relish to life, that I shall pay more attention to my garden in future.

I believe my brother farmers are the losers by neglecting the garden. I know that I have lost by such neglect, and by the well known rule, judge others by myself. The garden pays full as well as the field. At or near the close of 1856, you may hear from me further on this subject.—A CANADIAN FARMER, in *Genesee Farmer*.

RAISING EARLY PLANTS.—I notice in the March number of the *Farmer* a plan for raising early plants in the shells of turnips, and no doubt they would answer a very good purpose; but a much more complete way for raising early plants for transplanting in the garden, is to make small boxes of common siding, say seven inches wide. Plane one side of the board, which is to form the inside of the box, then make your boxes from six to eight inches across the top, so as to suit the size of the plants that you want to put in them, and about one inch larger across the bottom, so that the box will slip up from the hill without any difficulty. These boxes are to be made without any bottom, and should be placed upon a shingle or thin piece of board, with one end shaved thin, so that it can be drawn out from under the box without disturbing the dirt or the roots of the plant. I have used this kind of boxes for the last two years, and find that they answer the purpose to my entire satisfaction. The boxes when in use should be kept in the hot-bed or in the kitchen; and if kept in the latter place, they should be kept as near the top of the room as possible, upon a shelf fixed for the purpose, as the heat is always greater near the top of the room than in any other place, and also more regular.—THOS. C. HAGAMAN, Bronte, C.W., March 24, 1859.—*Genesee Farmer*.

MULCHING is one of the best means of preventing mildew on the gooseberry, and it is quite probable that sulphur scattered on the leaves will be as beneficial as it is in checking the mildew on grapes.

Miscellaneous.

AN EDUCATED WOMAN.

(From the *Farmer's Journal*, Utica.)

The following beautiful sketch from the pen of that earnest writer on agriculture, Henry Coleman, Esq., we take pleasure in presenting to our readers. It appears in his works, and serves to illustrate more forcibly one of the causes which has always served to advance European Agriculture. The women of England honor this science, and thousands of them follow the example of their illustrious Queen, by educating themselves in the science of the earth, and practically test its value by laboring to beautify home.

A PENCIL SKETCH.—I must claim the indulgence of my readers, if I give them an account of a visit in the country so instructive, so bright, so cheerful, that nothing but the absolute breaking up of the mind can ever obliterate its record, or dispel the bright vision from my imagination. I know my fair readers, for with some such I am assured my humble reports are kindly honored, will feel an interest in it, and if I have any unfair readers, I beg them at once to turn over the page. But mind, I shall utter no name and point to no place; and if I did not know that the example was not altogether

singular, and therefore would not be detected, I should not relate it. I know very well, as soon as I return to my native land, if heaven has that happiness yet in store for me, a dozen of my charming friends—God bless them!—with their bright eyes and gentle entreaties, will be pressing me for a disclosure; but I tell them beforehand, I am panned in a stern philosophy, and shall remain immovable.

I had no sooner entered the house where my visit had been expected, than I was met with an unaffected cordiality, which at once made me at home. In the midst of gilded halls, and hosts of liveried servants, of dazzling lamps and glittering mirrors, redoubling the highest triumphs of art and taste; in the midst of books and statues and pictures, and all the elegances and refinements of luxury; in the midst of titles and dignities and ranks, allied to regal grandeur—there was one object that transcended and eclipsed them all, and showed how much the nobility of character surpassed the nobility of rank, the beauty of refined and simple manners all the adornments of art, and the scintillations of the soul, beaming from the eyes, the purest gems that ever glittered in a princely diadem. In person, in education and improvement, in quickness of perception, in facility and elegance of expression, in accomplishments and taste, in a frankness and gentleness of manners tempered by a modesty which courted confidence and inspired a respect, and a high moral tone and sentiment, which, like a bright halo, seemed to encircle the whole person, I confess the fictions of poetry become substantial, and the beau ideal of my youthful imagination realised.

But who was the person I described? A mere statue to adorn a gallery of sculpture? a bird of paradise, to be kept in a glass case? a mere doll, with painted cheeks, to be dressed and undressed with childish fondness? a mere human toy, to languish over a romance, or to figure in a quadrille? Far otherwise; she was a woman in all the noble attributes which should dignify that name; a wife, a mother, a housekeeper, a farmer, a gardener, a dairy-woman, a kind neighbour, a benefactor to the poor, a christian woman, "full of good works and almsdeeds which she did."

In the morning I first met her at prayers; for, to the honor of England, there is scarcely a family among the hundreds whose hospitality I have shared, where the duties of the day are not preceded by the services of family worship; and the master and the servant, the parent and the child, the teacher and the taught, the friend and the stranger, come together to recognise and strengthen the sense of their common equality in the presence of their common Father, and to acknowledge their equal dependence upon His care and mercy. She was then kind enough to tell me, after her morning arrangements, she claimed me for the day. She first showed me her children whom, like the Roman mother, she deemed her brightest jewels, and arranged their studies and occupations for the day. She then took me two or three miles on foot to visit a sick neighbor, and while performing this act of kindness, left me to visit some of the cottages upon the estate, whose inmates I found loud in their praises of her kindness and benefactions. Our next excursion was to see some of the finest and largest, and most aged trees in the park, the size of which was truly magnificent; and I sympathised with the veneration which she expressed for them, which was like that with which one recalls the illustrious memory of a remote progenitor.

Our next visit was to the greenhouses and gardens; and she explained to me the mode adopted there of managing the most delicate plants, and of cultivating, in the most economical and successful manner, the fruits of a warmer region. From the garden we proceeded to the cultivated fields; and she informed me of the system of husbandry pursued on the estate, the rotation of crops, the management and application of manures, the amount of seed sown, the ordinary yield, and the appropriation of the produce, with a perspicuous detail of the expense and results. She then undertook to show me the yards and offices, the byres, the feeding-stalls, the plans for saving, and increasing, and managing the manure, the cattle for feeding, for breeding, for raising the milking stock, the piggery, the poultry yards, the stables, the harness rooms, the implement rooms, the dairy. She explained the process of making the different kinds of cheese, and the general management of the milk, and the mode of feeding the stock; and then conducting me into the bailiff's house, she exhibited to me the Farm Journal, and the whole systematic mode of keeping the accounts and making the returns, with which she seemed as familiar as if they were the accounts of her-own wardrobe.

This did not finish our grand tour; for, on my return, she admitted me into her boudoir, and showed me the secrets of her own admirable housewifery, in the exact accounts which she kept of everything connected with the dairy and market, the table, the drawing-room, and the servants hall. All this was done with a simplicity and

frankness which showed an absence of all consciousness of any extraordinary merit in her own department, and which evidently sprang solely from a kind desire to gratify curiosity on my part, which, I hope, under such circumstances was not unreasonable. A short hour after this brought us into another relation; for the dinner bell summoned us, and this same lady was found presiding over a brilliant circle of the highest rank and fashion, with an ease, elegance, wit, intelligence and good humor, with a kind attention to every one's wants, and an unaffected concern for every one's comfort, which would lead one to suppose that this was her only and her peculiar sphere. Now I will not say how many mud-puddles we had waded through, and how many dung-heaps we had crossed, and what places we explored, and how every farming topic was discussed; but I will say that she pursued her object without any of that fastidiousness and affected delicacy which pass with some persons for refinement, but which in many cases indicate a weak if not a corrupt mind. The mind which is occupied with concerns and subjects that are worthy to occupy it, thinks very little of accessories which are of no importance. I will say, to the credit of Englishwomen (I speak of course of the upper classes), that it seems impossible that there should exist a more delicate sense of propriety than is universally found among them; and yet you will perceive at once that their good sense teaches them that true delicacy is much more an element of the mind, in the person who speaks or observes, than an attribute of the subject which is spoken about or observed. A friend told me that Canova assured him that, in modelling the wonderful statue of the Three Graces, from real life, he was never at any time conscious of an improper emotion or thought; and if any man can look at this splendid production, this affecting embodiment of a genius almost creative and divine, with any other emotion than that of the most profound and respectful admiration, he may well tremble for the utter corruption within him of that moral nature which God designed should elevate him above the brute creation.

Now, I do not say that the lady to whom I have referred was herself the manager of the farm; that rested entirely with her husband; but I have intended simply to show how grateful and how gratifying to him must have been the lively interest and sympathy which she took in concerns which necessarily so much engaged his time and attention; and how the country could be divested of that dullness and *ennui*, so often complained of as inseparable from it, when a cordial and practical interest is taken in the concerns which necessarily belong to rural life. I meant also to show (as this and many other examples which have come under my observation emphatically do show), that an interest in and a familiarity with even the most humble operations of agricultural life, are not inconsistent with the highest refinements of taste, the most improved cultivation of the mind, the practice of the polite accomplishments, and a grace and elegance and dignity of manners, unsurpassed in the highest circles of society.

THE ANALYSIS OF SOILS.

A few years since very high expectations were raised of the great practical benefits to agriculture from chemical analysis of soils. The earlier analyses were little to be depended upon, but of late they have been conducted with much greater care and scientific exactness. The most minute ingredients of soils have been strictly determined by measure and weight. Yet with all this exactness and deep scientific research, it would be difficult to point out a single instance in which this mere chemical analysis of the soil, has been of much direct benefit to practical agriculture. Some light has no doubt been thrown thereby upon the hidden processes of vegetable nutrition, and the composition and requirements of plants; but the chemist has been hitherto unable by his most refined analysis, to give the farmer such precise instructions as to the preparation of the soil for special crops, as to ensure in all cases a successful result. The fact is, pure science can do but little for agriculture, unaccompanied by *experience*. We would not underrate the service which chemistry has already done to agriculture, particularly in relation to the nature and composition of manures, and in her onward progress great triumphs are no doubt in store. But it should always be borne in mind that the mechanical condition and preparation of the soil, as well as its chemical composition, together with the state of the weather and other conditions, have a great influence on the

amount and quality of the crop. The following remarks of a writer in the *North British Agriculturist* are worth consideration:—

“To analyse a soil, and determine from the results the degree of its fertility and its adaptation to particular crops, was one of the first problems placed before the agricultural chemist, and from its solution the greatest advantages to agriculture were anticipated. As yet these expectations have not been realized, nor can this be considered as a matter of surprise. The progress of our knowledge, in place of simplifying, has complicated the question, and has shown that the fertility and infertility of a soil is dependent upon a variety of circumstances, of which its chemical composition is only one. Instances exist in which the barrenness of a soil can be distinctly traced to the deficiency of some one or other of the necessary elements of plant life; but in other cases, a barren and a fertile soil may present an almost perfect similarity in composition, and contain all the elements required by plants in proportion known to be amply sufficient for their healthy growth. The difficulty of explaining these facts has been increased, just in proportion as soil analyses have become more minute, for their tendency has been to show that the instances in which infertility is due to the absence of any of the essential constituents of the plants are comparatively rare, and that quantities which we are apt to overlook as totally unimportant, may be amply sufficient for all that is required. One-tenth of a per cent of potash, soda, or phosphoric acid, may be a quantity so small that the chemist might be justified in neglecting it, and yet a soil containing these quantities is capable of affording an abundant supply of these elements to many generations of plants; and notwithstanding this there are soils containing a much larger quantity of these substances, which, if not absolutely barren, are only capable of supporting a very scanty vegetation. These facts have rendered it obvious that it is not merely the presence, but the accessibility, so to speak, of the constituents of a soil that must be determined; and when the chemist, in addition to the exact proportions of these minute quantities, is required to ascertain the various forms of combination in which they exist, it is natural that he should show little disposition to enter upon a branch of investigation of such complexity, and which in the present state of our knowledge is likely to give only negative results.

The difficulties of this investigation have been so fully recognized by Liebig, that he has pronounced it impossible to arrive at a satisfactory knowledge of the composition of the soil and its suitableness for particular crops, by analysis alone.”

SHOEING OF THE HORSE.

The observation, “we often transpose the order of our labors,” reminds me of a mode adopted in the shoeing of the horse, which I once witnessed, and which is, I believe, of importance sufficient to deserve notice in the pages of your valuable and very interesting work. It occurred at the town of Croydon, near London, which is known as the centre of the Stag-hunt, so well attended by the whole country around, and especially by the high-bred bloods of London; and where may be seen a field of the best horses in the whole world.—many of them worth their five or seven thousand dollars.

As I once passed through this town, one of my horse's shoes became loose, and I went to the shop of a smith, named Lovelace, to get it fastened; the shoe was nearly new, and had become loose in consequence of the nails having drawn out of the hoof, although they had been clinched in the manner universally practised. The smith remarked that all the other shoes were loose, and would soon drop off, when I requested him to take them off and replace them, and then did I perceive the different mode which he adopted for fixing them, which I will here detail. As fast as he drove the nails, he merely bent the points down to the hoof, without, as is customary, twisting them with the pincers; these he then *drove home*, clinching them against a heavy pair of pincers, which were not made very sharp; and after this had been very carefully done, he twisted off each nail as close as possible to the hoof; the pincers being dull, the nail would hold, so as to get a perfect *twist round* before it separated. These twists were then beaten close into the hoof, and filed smooth, but not deep, or with the view to rasp off the twist of the nail. “Oh ho!” said I, “I have learnt a lesson in horse-shoeing.” “Yes,” said he, “and a valuable one; if I were ever to lose a sin-

gle shoe in a long day's hunt, I should have to shut up my shop; my business is to shoe horses belonging to the hunt, and the loss of a shoe would be the probable ruin of a horse worth, perhaps a thousand pounds; but I am never fearful of such an accident.' "Simply because you drive home and clinch the nails before you twist them off," said I. "Yes," replied he, "by which I secure a *rivet*, as well as a *clinch*."—The thing was as clear as the light of day, and I have several times endeavored to make our shoeing-smiths understand it, but they cannot see the advantage it would be to themselves, and gue-s, therefore, *it would never do in these parts*; but if my brother farmers cannot see how it works with half an eye, and have not the resolution to get it put into practice, they ought to see the shoes drop from the feet of their horses daily, as I was once accustomed to do. Now, let any one take up an old horse shoe at any of the smiths' shop on the road, and examine the clinch of the nails which have been drawn out of the hoof, and he will soon perceive how the thing operates.—In short, if the nails are driven home before twisting off, and the *rivet*, formed by the *twist*, be not afterwards removed by the rasp, I should be glad to be told how the shoe is to come off at all, unless by first cutting out the twist.—*London Field*.

WONDERFUL POWER OF FUEL.—It is well known to modern engineers, (remarks an English journal,) that there is virtue in a bushel of coal properly consumed, to raise seventy millions of pounds weight a foot high. This is actually the average effect of an engine working in Huel Town, Cornwall, England. Let us pause a moment and consider what this is equivalent to in matters of practice. The ascent of Mount Blanc from the valley of Chamouni is considered, and with justice, as the most toilsome feat that a strong man can execute in two days. The combustion of two pounds of coal would place him on the summit. The Menai bridge, one of the most stupendous works of art that has been raised by man in the modern ages, consists of a mass of iron not less than four millions of pounds in weight, suspended at a medium height of about 120 feet above the level of the sea. The consumption of seven bushels of coal would suffice to raise it to the place where it hangs. The great pyramid of Egypt is composed of granite. It is seven hundred feet, in the side of its base, and five hundred in perpendicular height, and stands on eleven acres of land. Its weight is therefore 12,700 millions of pounds, at a medium height of 125 feet; consequently, it would be raised by the effort of about 630 chaldrons of coal, a quantity consumed in some foundries in a week. The animal consumption of coal in London is estimated at 1,500,000 chaldrons. The effort of this quantity would suffice to raise a cubical block of marble, 2,200 feet in the side, through a space equal to its own height, or to pile one mountain on another. The Monte Nuovo, near Pozzuoli, which was erupted in a single night by volcanic fire, might have been raised by such an effort from a depth of 40,000 feet, or about eight miles. It will be seen that in the above statement, the inherent power of fuel is, of necessity, greatly underrated. It is not pretended by engineers that the economy of fuel is yet pushed to its utmost limit, or that the whole effective power is obtained in any application of fire yet devised; so that were we to say 100 millions, instead of 70, we should probably be nearer the truth.—*Mvine Farmer*.

THE SEASONS.—How beautiful is Spring! Every one hails it with joy, as it comes decked with lovely flowers, and with green robes for all the vegetable world. All Nature, animate and inanimate, is subject to its influence. Birds return from Southern climes to enliven the scene with their cheerful melody. The various animal tribes express their delight, each in its own peculiar manner. Man, too, partakes of this universal joyousness. The young are jubilant, the old are electrified, and in a measure rejuvenated, and a grand chorus of admiration ascends from every valley and every hill-top. This is the season of PROMISE.

Summer succeeds. The seed has been committed to the earth, the tender blade is shooting forth, and careful culture and training are needed to insure a crop. Anxiety oft takes possession of the mind, producing a salutary effect by inducing a greater degree of watchfulness. Occurrences beyond our control may sometimes blight our prospects, yet upon our own exertions, mainly, depends a remunerating harvest. A little neglect is often highly detrimental. This is the season of HOPE.

Autumn follows, when the promise of Spring, and the hopes of Summer, are to be realized. If we have sown in good soil, and have cultivated the tender plants with proper care, imploring, the while, with grateful and prayerful hearts, the blessing of benignant Heaven, we shall now receive an abundant harvest. This is the season of FRUITION.

Winter, the season for CONTEMPLATION, soon arrives, with its icy blasts and howling storms; but he who has acted well his part in the preceding seasons, will be prepared for this. Plenty has crowned his labors; his garner is full, and he may sit quietly and comfortably by his own fireside, undisturbed by wind or storm, and unscathed by the pinching hand of want. He reflects upon the past, anticipates the future, cultivates his intellect, and, with the eye of one who has done his duty,

"Looks through Nature up to Nature's God."

In contemplating the vicissitudes of the seasons, he can exclaim with the poet of Nature,

"These, as they change, Almighty Father, these
Are but the varied God. The rolling year
Is full of Thee."

—*New England Farmer.*

L. VARNEY, Bloomfield, C. W.

Editorial Notices, &c.

The New Sugar Canes. Hamilton, C.W.: Brown & Greig. 1859.

This pamphlet comprises an enquiry into the nature, uses and economic value of the Chinese and African sugar plants, with special reference to Western Canada, read before the HAMILTON ASSOCIATION, April 15th, 1859, by Charles Robb, C.E. and published by request. It contains much interesting and suggestive information relative to the culture, growth and qualities of the cane, with the most approved method of extracting the syrup, sugar, &c. The Sorgho, we believe, may be advantageously cultivated in Canada as a forage plant,—all kinds of stock living and thriving upon it. Boiling it down into syrup may also be successful, but we very much doubt whether it can be made, so far north, a profitable source from which to obtain sugar, unless the price of cane-sugar should become much higher than it is at present. Persons interested in the subject will find much to enlighten them and to satisfy their curiosity in Mr. Robb's methodical and well written essay.

NOTICES OF THE PRESS.

"*Canadian Agriculturist and Journal and Transactions of the Board of Agriculture of Upper Canada*, for April, 1859.

This is one of the most valuable publications emanating from the Canadian press.—The farmer that is without this, or some other agricultural periodical of equal note, is not deserving the name. It is impossible to farm successfully without an intimate acquaintance with the agricultural literature of the day. The exceedingly low price at which it is sold, being only \$1 per annum for a single copy, and 50 cents only for a club of ten subscribers, makes it accessible to every farmer, who should not fail to subscribe for it immediately."—*Newburgh Index.*

"*The Canadian Agriculturist*, for April, 1859. \$1 a-year.

Since this magazine has been managed and published by the Board of Agriculture, it has slowly but surely improved, and the present No. is a very fair sample of a very cheap and useful periodical, that should be found in every farmer's house. What is a dollar a-year compared with the variety of useful knowledge contained in every number?"—*Kingston Whig.*

[We have to return our best thanks to the *Index*, the *Whig*, and numerous other exchanges, who have favored us with repeated friendly notices, similar to the above; and in doing so, we beg to observe that although the price of the *Agriculturist* to single subscribers is a dollar,—and it may fairly be considered to be cheap at that rate, looking at the amount of paper and reading matter,—yet, practically, the price is only half-a-dollar, or even less, as it is furnished to clubs or societies taking ten copies, at that rate, with a bonus of ten per cent, when fifty copies or upwards are taken. The object of the Board is to offer a large inducement to Societies to take the publication, and also to induce individuals to subscribe through the Societies; therefore, the price is placed much lower to the latter, than to persons taking only a single copy.]—ED.