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THE

Canadian Agriculturist

AND

JOURNAL OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XV. TORONTO, FEBRUARY, 1863. No. 2.

THE SEASON.

It must be confessed that up to this period, the end of January,—the present winter has been distinguished by somewhat remarkable characteristics. With the exception of two periods, each consisting of only a few days, the thermometer has indicated both night and day, an unusually high temperature; so much so indeed at the commencement of the year fears began to be established that fruit buds would be brought into premature and dangerious activity. The Horse chestnut and the buds of some other trees actually began to swell in warm, sheltered situations. Since then the average temperature has been sufficiently low to prevent danger from this cause. Snow has fallen at different times, and in some districts to a moderate depth, enough to render the country roads practicable by sleighs for a few days only, when a rapid thaw would set in, and leave the ground almost bare, and the roads in the worse possible condition for travelling. Apart from this draw-back the season on the whole has been pleasant, with a number of dry and warm days, reminding one more of the first opening of spring than mid-winter. There has been however on the whole an absence of bright sun shine. Some people have begun to entertain fears for the safety and well-doing of fall wheat: but from the information that has reached us we incline to the belief that as yet no serious mischief has been done. In flat, wet land the plant has no doubt been subjected to injurious influences by the frequent melting of the snow and its congealing into ice, and in such situations, especially should the more advanced season prove unfavourable—the results may prove disastrous. On dry, warm and well farmed lands the wheat plant exhibited at the commencement of winter a strong and healthy growth; and where sown early, as was done by many last fall, the check which the plant has received must be regarded as beneficial. March and April are in general the most trying period for wheat in Canada; the alternate freezing by night and thawing by day, under the increasing power of warm sunshine, produces the "throwing out" of the plants, which no subsequent artifice can thoroughly correct. Rolling, however, has often been advantageously applied as soon as the state of the ground will admit of the operation. Upon the whole, we incline to the hope that up to the present our prospect for wheat has not been materially affected. Prices for this article continue low, although the last year's crop, except in some few isolated sections of country, was characterized neither by abundance of yield, nor goodness of quality, And although the English wheat crop was originally deficient, yet that being an open cash market, to which all countries can readily send their surplus produce, prices have ruled low, with little to

indicate any material advance for the future. Nor has the unhappy American civil war affected prices for agricultural produce; except, perhaps, barley, as was at one time anticipated. The state of exchange and other circumstances, have operated as serious checks to a large and profitable intercourse between these provinces and the United States. It is devoutly to be wished that the deplorable cause which has produced this state of things may be speedily removed.

The present remarkably mild and open season, although rendering intercourse difficult in the country, and in some places quite impracticable for want of sufficient snow, is attended by several solid and important advantages To the poor in cities it must be felt as a boon, in diminishing the amount of fuel required, an article high in price. The farmer, too, will reap a benefit in his cattle not needing so large a quantity of provender as they would in a more inclement season. This is fortunate, as the stock of hay, roots, &c., is in most parts of the country under an average. A severe and protracted winter must have caused the price of such articles to have risen to a disastrous pitch. As it is, the farmer by judiciously economising his scanty stock of cattle food, will be enabled to push through with comparative ease. His vigilance in this important matter should not relax, as in all probability the longest and severest portion of winter is yet to come. The advantages of feeding stock with a mixture of cut food, cannot be too often impressed on the minds of farmers: in this way the coarser and less valuable kinds are readily consumed. A regular, though small supply of turnips, carrots, mangels, &c., will astonishingly economise hay and keep animals in a healthy and thriving condition. Sheep, especially breeding ewes, will now require special attention, both as regards food and protection, and as the lambing season approaches, additional care should be bestowed. Sheep, although they require to be hept warm and dry, must have plenty of room for exercise, and unrestricted access to free and fresh air. No animal perhaps, so soon deteriorates from confinement as the sheep, and over pampering is almost as injurious as entire neglect. On the whole then there is reason to hope that with proper atte tion to the preparation and mixture of foo warmth, cleanliness and ventilation, wi *regular feeding*, although it may not be large in amount, nor so good in quality might be desired, the farmer will be able carry his stock through the winter in a mu better condition than was anticipated.

FLAX CULTIVATION.

EDITORS OF THE AGRICULTURIST,—Dear S —As it appears from all I read in the *Agric turist*, and hear from my German and North Ireland neighbors, that the culture of a cert portion of flax each year, would be more pro able to the farmers of Bruce than so mu wheat, the question arises, if we grow it w will we do with it? To take it sixty miles market in an undressed state certainly would pay. The next question is, if we could ind some person of enterprise and means to bu in a scutching mill, where could it be obtain and what would it cost? what power woul take to work it,? In short, what amoun capital would it take to set a flax-dressing es lishment in operation? And last, but not le how many acres of flax must we grow annu to make the mill a remunerative investme If you can suggest some plan upon which can make flax growing profitable I will use humble endeavors to get the farmers of Car and Brant at it.

I remain yours, &c.,

RICHARD RIVERS, JUN

Carrick, Jan. 14th, 1863.

[We answer the questions of our corresp ent with pleasure, so far as we are able. want of a ready market has certainly beer greatest obstacle in the way of the cultiva of flax. Parties who have grown small q tities have found themselves unable to dis of it at a remunerating price. There is reason to hope, however, that this difficulty very shortly be removed. From the high of flax at present in the British markets, is not the least doubt that buyers will a here to gather up what is grown in the coun they can only find a sufficient quantity to it worth their while. Every farmer ther should grow some flax with the view of to create the new trade. Besides it always to grow a small quantity for home use. seed is valuable for stock. and can alwa sold readily at a good price. Rowan & scutching machine, manufactured at B

Ireland, is, we believe, as good as any in the market. It costs in Ireland about £20 to £25 sterling, and could be imported to this country for about $150 to $180, including cost, freight and duty. There are several of these mills in the country already, and they have been found to work satisfactorily. If a considerable demand should arise for them they would doubtless be manufactured here, and would then become cheaper than if imported. A steam engine or driving power of a thrashing machine of two to four horse power is sufficient to work the machine. Steam or water power is better than horse power, being more easily regulated. The cost of the motive power, whether horse or steam, would be, say not over $300, to $400, and the entire capital required to establish such a machine in operation, would probably not exceed $500. It must be observed however, that the machine is portable, and can be taken from place to place, making use of the motive power already established for other purposes. If the machine was made stationary, of course a building would be required, in addition to the cost of the machine and motive power. One hundred acres of good flax would be sufficient to keep a single machine employed a great part of the year, but a much less quantity would pay for the introductian of a machine into a neighborhood.

As to making flax growing profitable, the principal point is to grow a good crop and dress it properly. It will then be sure to be profitable, when once a trade in the article is established. It will be even profitable as things stand at present on a small scale, for the seed and domestic use.

We have already given ample directions in this Journal for the cultivation of the crop and preparation of the fibre, and may probably refer to the subject again on some other occasion. We shall be glad to hear from our correspondent as to the success of his endeavors to promote the cultivation in his neighborhood.—Eds.]

WHEAT GROWN FROM OATS AND BARLEY.

Editor of the Agriculturist.—Dear Sir,—The subjoined, which I copy from the London (Eng.) *Times* of the 10th Dec., 1862, may be interesting to some of your readers.—Yours, &c.,

Wm. A. Cooley.

Ancaster, Jan. 7, 1863.

"The following letter, dated Wappenham, near Towcester, Northamptonshire, appears in the last number of the Berkshire Chronicle:—

'In answer to your letter, dated December 2nd, it is a positive fact that I grew both wheat and barley from oats. The wheat I continued to grow up to last year, but in consequence of the crop going off I was obliged to fill it up with spring wheat. The wheat I grew from the Dutch oat was a beautiful quality, small seed, weight 65 lbs. per bushel, light-coloured chaff, fine straw and blade. The wheat I grew for about 10 years, and sold lots of it to my neighbors for seed. Now I am growing a coarser wheat that a neighbour of mine grew from the Poland oat. That is a much stronger straw and larger ear, but is very apt to mildew the last few seasons. The way I adopted was to plant it thin, under a sheltered wall, the middle of June; it then will require to be cut off about one inch from the ground before coming into bell three times the first season; the following year it produced the wheat I speak of. Many people saw it when growing; it was a very thin berry the first year. The difficulty is in keeping the root to stand the winter. At the Towcester Union theirs produce barley, and mine has the same from a coarse oat. Black oats will produce rye the same way. You are quite at liberty to make use of my name.

"From yours truly,

"William Cowper."

"Mr. Chas. Simmons."

We insert the above as a curiosity, without endorsing the correctness of the conclusions. The transmutation of distinct species of the vegetable kingdom into one another involves a doctrine that has been almost universally rejected by the highest authorities in natural history. If such were the case it is difficult to conceive how the uniformity of nature, in her grand outlines, could be maintained. We think there is probably a mistake or fallacy somewhere. There are no doubt a number of facts which seem anomalous, and not easily explained in the present state of knowledge. We subjoin an interesting article on this subject, from a recent number of the *Mark Lane Express*:—

Transmutation of Oats into Rye.

A correspondent has written to us requesting information respecting the transmutation of oats into barley and rye, a statement on the subject having appeared in this journal some months since, in a letter from a correspondent. We will first repeat the fact stated in that letter, and then endeavor to explain, as well as we can, the *rationale* of the phonomenon, as deduced from the nature of the plant. It appears that a farmer in Huntingdonshire having heard of the transmutation of oats into rye, resolved to try an experiment of the kind. He accordingly planted some carefully selected grains of oats singly in his garden, in the month of June.

When they had shot up to about a foot or a foot and a half in height he cut them down. Fresh tillers sprung from the roots, and were *again* cut down when they had reached the same height. Other tillers again sprang up rapidly, and the cutting down was repeated a *third time;* after which, although a new set of tillers formed, it was too late in the season to be again cut, and they were allowed to take their chance for the winter. Some of the plants died, but enough of them survived to test the experiment. They shot up into ear at an early period; but to the surprise of the farmer, instead of rye, the produce was perfect barley—rather thin, but by no means of a bad type. This was sown the following spring, and yielded a good return, of a quality much better than the seed. So much indeed is the barley approved by both the farmers and the malsters, that the experimenter has been able to sell all he grows, for seed corn. We have now a sample of it before us, which we have shown to merchants and malsters in Mark lane, all of whom pronounce it to be an excellent malting kind. So much for the experiment, the truth of which the character of the gentleman concerned stands too high to admit of any doubt. We will now endeavor to explain the rationale of the case, and shall first show the cause of the oats remaining alive through the winter; and, secondly, *endeavor* to account for the change or transmutation it undergoes in such circumstances.

First, all the cereal grasses are what are called *annuals*—that is, they occupy an agricultural year only in arriving at perfection. But as it is the nature of all plants to strive, we may say, to accomplish their fructification, if they are prevented from doing so by being cut down, the stem that is thus cut *will die*, but the root will make a fresh effort, *by throwing out fresh tillers*, to accomplish its mission; and as often as the cutting down is repeated, the same process takes place, till it is too late for the plant to produce an ear, when its powers will lie dormant through the winter. Had the plants of oats sown in June by the experimenter in Huntingdonshire been allowed to ear the same year, which they would have done if not cut down, they would of course have died. But not being allowed to fulfil their mission in that season, they kept on making fresh efforts, by tillering, to do so until the winter stopped the process of vegetation. It ought to be stated that every tiller thrown out after the cutting down was a new plant, under similar conditions to those from a *fresh grain* of oats; and this was the case with those after the third cutting. If they had been taken off from the parent root and planted, they would equally have grown, and perhaps more vigorously than when still attached to it; but this is a conjecture drawn from analogy, having never been tried in the case of oats, that we are aware of.

Secondly, with regard to the transmutation of the oats into barley or rye, we have said we will *endeavor* to explain the cause, there being no certain data upon which to base an absolute theory. We are but little acquainted with the relationship of the cereal grasses to each other; we have reason to believe, from historical records, that both wheat, barley, and rye are original plants; that is, being able to trace the history of the two first at least nearly four thousand years backward, we may conclude that they were originally created in the form we see them, adapted at once to the wants of man. But of oats we have no such record in history and their origin is a complete mystery, nor have we any account of their first introduction into this country, or of their being first used as food either for man or beast in other lands. The transmutation referred to, however, seems to throw light upon the subject, and to point out the origin of oats to have been a sport from other grain; and there is a passage in old Gerard's "Herbal" on the subject, which seems to justify this supposition. It is to the following effect: "I think it a very fit thing to add in this place, a rare observation of the transmutation of one species into another in plants, yet none that I have read have observed it. *Several grains of oats did grow in one ear of white wheat*, the which I saw this year 1632, which was found by my very good friend Master John Goodyer, a man second to none in industry in searching of plants, nor in judgment and knowledge of them. This ear of wheat was as large and fair as most are, and about the middle thereof *grew three or four perfect oats*, in all respects, which being hard to be found, I held worthy of setting down for some reasons not to be insisted upon in this place."

The above is, we believe, the first instance of the kind recorded in any work of natural history, and it is rather remarkable that botanists and other naturalists have not noticed it. But the fact is, nearly all of them have not only thrown doubts upon the facts that are from time to time brought forward, but some of the most eminent men in natural history have positively denied the possibility of such transmutations, and have imputed the cases adduced to mistakes of the parties asserting them. It was this incredulity of the *savans* of France and Germany that induced the Royal Agricultural Society of Bavaria to institute a series of experiments in order to ascertain the truth, and the result was a collection of facts that forced conviction upon the minds of all who read them, not only of the possibility, but of the certainty of such transmutations. It is said that the change of oats into barley is a circumstance of frequent occurrence in Norway and Sweden. If such be the case, it would be right for our naturalists to ascertain the truth of it, and to study well the conditions under which they occur; while it is quite possible other principles might be elicited on the subject of the relationships existing between plants of the same *family*, that the learned with all their philosophy have never dreamed of.

RIEF NOTES ON THE HISTORY OF BRITISH AGRICULTURE.

(*Continued from Page* 17.)

In 1562 Thomas Tusser published his "Five ndred Points of Husbandry." This work s intended to embody all the rules of agri-lture in short rhymes, for easy remem-ance; and although it was written in a y quaint style and in doggerel verse, as a oof of its truthful descriptions and popular rit, it went through several editions. The thor mentions Carrots, Turnips, and Cab-ges, as having been recently introduced into rdens as "kitchen herbs." In subsequent itions were appended "The Points of usewiferie, united to the Comforts of Hus-ndry." This is a most amusing work, ounding in quaint verse, embodying the ncipal duties of housekeeping. The sub-ned extract will afford some idea of the aracter and style of the work, which was nted in black letter:—

tes, rie, or else barlee, and wheet that is gray,
ngs land out of comfort, and soone to decay;
e after another, no comfort betweene,
rop upon crop, as will quickly be seene.
l crop upon crop many farmers do take,
d reape little profit for greedinesse sake."

this way, with much quaintness, the rules husbandry were given, and few things n known omitted. The truth conveyed in above quotation, farmers in all countries, pecially such as have been recently settled, ada among the rest,) have been slow to gnise. The lesson conveyed, however, is the utmost importance, and essential to y improving system of husbandry.

usser was succeeded, after about 30 years, Barnaby Googe, who makes mention of y writers contemporary with Fitzherbert, se works have not descended to us. Great s was usually laid by the olden writers n the effects of the moon and wind upon germination and maturity of plants, as as upon the thrift and fecundity of ani-s. In Googe's "Book of Husbandry," lished in 1577, farmers are told that in uring the ground, it is necessary to "looke the wind be westerly, and the moon in wayne." This advice is repeated in "The ect Husbandman," 1657, and it is therein arked that "this observation (of the moon wind) helpeth greatly to the bettering of ground." From the same work we learn although there was a general agreement the influence of the moon upon vegeta-there were differences of opinion as to most favourable periods for securing that ence:

In sowing, some think you must have re-to the moone, and to sow and set in the increase, and not in the wane. Some again thinke it best from that she is four days old, till she be eighteen;—some after the third, others from the tenth to the twentieth; and best (as they all suppose,) the moone being aloft and not set."

The same author observes, with regard to the planting of trees, that "if the tree be planted in the increase of the moone, it groweth to be very great; but if in the wane, it will be smaller, yet a great deal more lasting."

In those days it was a common belief of the medical profession, that not only the moon, but also the stars (that is the planets) exercised a considerable influence over diseases, and such herbs as were fitted to effect their cure. Hence some plants were assigned to the moon, others to Jupiter, some to Saturn, Mars, &c., and it was believed that these plants should be gathered when their respective astral patrons were in a particular point of the heavens, as on or near this meridian, as their medicinal properties were then in the greatest perfection. We need not wonder, therefore that the farmer and gardener should have looked to similar observances and influences, in conducting their operations. In fact this belief has come down to periods co-incident with our own, and traces of it may yet be discovered among the older inhabitants of the more remote districts of the British Islands, and we dare say in other countries of Europe. We have known ourselves several individuals who observed the age of the moon in sowing seeds, especially in the garden, and likewise in killing pigs. To kill a pig during the wane of the moon, it was believed that the bacon would be interior, and that the fat or pork would be wasted in the art of boiling; that is it would possess properties similar to what we designate on this side the Atlantic beech-mast pork. It is probable that a strict attention to such matters, however fallacious, by our honest fore-fathers, paved the way in some degree for that more patient, varied, and enlarged sphere of observation, which led slowly to the discovery of agricultural principles, upon which alone can be based all sound agricultural practice. It was slowly learned that the chief influences affecting vegetation apart from the condition of the soil, was the warmth and moisture of the surrounding atmosphere; till at length those very useful instruments, the barometer and thermometer became the inmates of almost every farm house.

In the year 1594, Sir Hugh Platt contributed some works to the literature of husbandry. Sir Hugh is described as being the most ingenious husbandman of his age," and as having "held a correspondence with all lovers of agriculture throughout the kingdom." We, therefore, turn to his work, "The Jewell House of Art and Nature," with considerable interest. The motive of the

author for thus undertaking books of instruction upon husbandry, is thus stated :—

"[illegible] doth not pitty to see the great [illegible] mon mother the earth, which now is grown so aged and stricken in years, and so wounded at the hart with the ploughman's good, that she beginneth to shake off for the husbandman's hands, and groaneth for the decay of her natural balsam. For whose good health and recovery, and for the better comfort of several needy and simple farmers of this land, I have partly undertaken these strange labours, altogether abhorring from my profession, that they might know and practice some farther secrets in their husbandry, for the better manuring of their leane and barren groundes, with some new sorts of marle not yet knowne, or not sufficiently regarded by the best experienced men of our daies."

Sir Hugh afterwards published another work, entitled, "Divers New Sorts of Soyle not yet brought into any Public Use for manuring both of pasture and Arable Ground," in which many interesting particulars can be learnt respecting manuring substances then only imperfectly known to a few. The manures recommended in this work are more numerous than might be anticipated, including salt, street dirt, sullage of streets, clay, fuller's earth, moorish earth, hair, malt-dust, the offal of slaughter-houses, burnt vegetable matter, soap boilers' ashes, fish, some new kinds of marl, and other things; and these are said to have been "not yet brought into any public use," we cannot wonder that the land began "to faint under the husbandman's hand." Indeed there is much in this, as well as some other old authors, from which we in Canada might learn several needful practical lessons; as some of our old cultivated lands are getting into a similar state described by Platt, and manuring substances, although some of them lying close around our homesteads, are almost as much neglected!

In his very remarkable work on Soils, Sir Hugh indulges in some new and amusing speculations on the magical properties of what was considered a sort of *universal salt*, to whose universal, generative. and fructifying influences, both the animal, vegetable, and mineral kingdoms mainly owed the fertility. After much controversy it was conceded that our ordinary salt (chloride of sodium) was identical with this much sought-for and esteemed substance, which was declared to promote not only the growth of plants, but procreation in animals. "Plutarch (it is said) doth witnesse, that ships upon the sea are pestred and poisoned oftetimes, with exceeding store of mice. And some hold opinion, that the females, without any copulation with the males, doe conceive only by licking of salt. And this maketh the fishmongers' wives so wanton, and so beautifull!"

The following extract will afford a pretty full idea of the extraordinary influence attri- [illegible] virtues which lie hid in salt confirm the same. For salt whiteneth all things, it hardeneth all things, it preserveth all things. it giveth favour to all things, it is that mastycke which gleweth all things together, it gathereth and knitteth all minerall matters, and of manie thousande pieces it maketh one masse. This salt giveth sounde to all things, and without the sounde no metell will ring in his shirl voyce. Salt maketh man merrie, it whiteneth the flesh, and it giveth beautie to all reasonable creatures, it entertayneth that love and amitie which is betwixt the male and female, through the great vigour and stirring uppe which it provoketh in the engendering members, ; it helpeth to procreation, it giveth unto creatures their voice, as also unto metalles. * * * * * * * * * And it is salt that maketh all seedes to flourish and growe, and although the number of men is very small which can give any true reason why dungue should doe any goode to arable grounds, but are ledde thereto more from custome than any philosophical reason, nevertheless it is apparent that no dungue, which is layde upon barren groundes, could any way enrich the same, if it were not for the salt which the straw and hay left behind them by their putrefaction."

It is curious to observe how their old idea of the value of salt in agriculture has been revived in modern times. The late Samuel Parkes, author of the popular "Chemical catechism," published about thirty years ago an extended treatise on the use of salt to the agriculturist,—more particularly in reference to the renovation of worn-out soils. Great expectations were raised among the farmers, and when the excise duty was taken off salt and its price consequently much reduced, that article was extensively applied in different forms as a fertilizer; but, in general, with no very marked effect. Hence it soon again got into disuse. The impregnation of the atmosphere with saline matter in Great Britain, and islands generally, will no doubt account, to some degree, for the feeble influence of salt in agriculture, under such circumstances. But upon continents and places at a great distance from the sea, salt is known to exercise a beneficial influence not only on the soil, but on domesticated animals. It is also valuable as an ingredient in composts, a fact well known to the ancient Romans. In Canada and a large portion of the American continent it is difficult to conceive how pioneers could get on without it.

To be continued.

The winter meeting of the New York, S. Agricultural Society takes place at Albany the 11th instant.

INTERNATIONAL AGRICULTURAL EXHIBITION.

An International Agricultural Exhibition, with the co-operation of the German Agricultural Society, is appointed to be held at Hamburg, Germany, on the 14th to 20th July next. A large and highly influential Committee have been appointed to carry out the undertaking. Messrs. Austin Baldwin & Co., of 72 Broadway, New York, are the Agents of the Committee for this Continent. They are authorized to grant certificates and forms of entry to intending exhibiters. All the prizes are open to general competition. Entries must be made on or before 15th April next. Prizes are offered for Horses, Cattle, Sheep, Pigs, Poultry, Implements and Machinery, and Agricultural Produce of all kinds. The prizes are on a liberal scale ranging for stock from 490 thalers ($300) to about 20 thalers ($15). We subjoin the following extracts from the prospectus:

The Committee, in placing before the Public the following List of Prizes to be awarded at the International Agricultural Exhibition, to be held at Hamburg on the 14th, 15th, 16th, 17th, 18th, 19th and 20th of July next, and the Regulations, under which the Entries are to be made, feel a confident hope that their desire to see this Exhibition numerously attended by Exhibitors and others will be very generally responded to.

Hamburg may certainly be considered as the most convenient place on the European Continent for an International Exhibition.

The advantages of this City for the proposed Exhibition in regard to its situation, so accessible from other Agricultural Countries—England, France, Holland, Belgium, Denmark, Sweden, Russia—are obvious. The numerous commercial relations with these Countries and other parts of the Globe, the total exemption from Duty and all and every Customs Regulations have especially favored the Merchants of Hamburg in the interchange of Agricultural Produce and Machinery, and made this city a very important Market for Horses and Cattle.

The Exhibition will therefore be an inducement to Visitors to assemble from all Parts and afford them opportunities of comparing the Productions of various countries, enlarging their ideas and opening new channels for Trade.

The Committee are making exertions to induce all Steam Navigation and Railroad Companies to convey at reduced rates of freight Live Stock, Machinery, Agricultural Implements and Produce, that may be destined for the Exhibition. Their endeavours have not yet terminated, but, so far, every encouragement to this end has been held out to them and they will not fail to make generally known their arrangements, as early as possible, for the information of the Exhibitors.

The Judges to be chosen will be impartial Men, well acquainted with the matters submitted to them for decision, and taken from Gentlemen of all Countries

The Committee have secured the hearty co-operation of the German Agricultural Society, they are liberally supported by the Hamburg Authorities and other Governments; indeed so many Agricultural Societies in different Countries, especially the Royal Agricultural Society of Great Britain, have evinced such a warm interest in this the first undertaking of the kind in Germany, that the Committee are encouraged to use their most strenuous efforts to render the "Hamburg International Agricultural Meeting of 1863" memorable for its importance.

Hamburg, December, 1862.

IN-AND-IN BREEDING.

[We recommend to the earnest attention of our readers the following communication, which appeared in the *Mark Lane Express*, of Jan. 5th, from the able pen of Mr. Wm. Carr, of Stackhouse, England. It may be read with advantage in connection with an extended extract in our last on *Breeding in the Line*, from an excellent treatise by S. L. Goodale, Secretary of the State of Maine Agricultural Board.]

It is common to hear the in-and-in breeding of animals spoken of as a violation of the law of nature, which must necessarily result in deterioration and degeneracy of the breed. This assumption—which really argues as much ignorance of the definition of a "law of nature" as of the instinct of animal life—seems to be founded on a supposed analogy between the human race and the lower animals. It is argued that because, in the former, close alliances between blood relations are followed by evil consequences, indicating that in their case an organic law of nature has been infringed, that therefore the law must be extended to all organized beings. But we have really no evidence that any such analogy exists. That such a law has no primitive, inherent relation to animal life, derived from the nature of things, is evident from the fact that it was not originally imposed even on man himself, as appears (if we may still be allowed to quote the authority of the Pentateuch) from the records of patriarchal times, and the duration of life attained by the offspring of unions which are now held incestuous. It was instituted at a later period, for reasons manifestly connected with social expediency and domestic morality, the physical or rather mental penalty annexed to its refraction being the means by which, in

the moral government of the world, obedience to such laws is secured. But that no such principle of action has been impressed upon the lower animals may be inferred from the fact that there is not the same necessity for it; that no instinctive sense has been bestowed upon them to protect them from the injurious effects of its infringement (as it is reasonable to suppose would have been the case in any matter affecting the well-being and very existence of the race), and that hence in their natural condition they never conform to any such law. On the contrary, Nature, by whom "all instincts are bestowed on animals *only for their combination and preservation*," has implanted in them an original and still unchanged impulse to indiscriminate commerce between themselves, and not only so, but—with a view probably to the preservation of that harmony and correspondence of form and character so prized by our best breeders—actually dictates the expulsion or goring to death of any intruder, even in the same breed, from an alien herd; a fate which, we may add, also befals any sickly or weakly member of either sex in their own tribe.

Yet, while thus rejecting all external aid, Nature has not left to chance the selection, *from the bulls produced in the herd*, of the sires best fitted to maintain and perpetuate the tribe, but effects it by her own appointed means—wager of battle. Thus Virgil tells us how, even in the half-wild, half-domesticated cattle of his day, the doughtiest scions of the herd, impelled by female allurements, engage in furious contention for supremacy—

"While the fair heifer, balmy breathing, near,
Stands kindling up their rage;"

and how, when the fray is over, the vanquished combatant betakes himself to exile and disgrace, leaving his hated rival lord paramount of the herd. Such conflicts would naturally terminate in favour, not of the largest and most unwieldly animal, but of the one whose superior vigour and activity almost necessarily imply superior perfection of physical structure—some well-proportioned, moderate-sized, firmly-knit, potent-horned hero, whose prowess in the field is the best guarantee for his lustihood in the harem. The victorious usurper, thus installed as sultan of the seraglio, accomplishes his destiny, by becoming—in obedience to that instinct which doubtless has regard to the perfection of the species—the sire of a numerous and vigorous progeny, from cousins of all degrees, from his sisters, his dam, and in due time, perhaps from his own daughters; until, as his physical force declines, and he becomes less fitted for the efficient discharge of his duties, he is challenged by some younger and sturdier rival, and yields his honours to a better than himself, in many cases probably his own son. The same process of selection and rejection still goes on amongst the free denizens of the Pampas, themselves the descendants of domestic cattle introduced by the Spaniards. It may here be objected that there can be no security that any herd of wild cattle will be impregnated by the most robust and vigorous male, when there are other, perhaps immature or accidentally enfeebled, bulls in the herd; but it is well known that animals in a state of nature, do not couple precociously, and that even if the jealous vigilance of the predominant male were insufficient to guard his rights, amorous instinct teaches the female to prefer and seek out the male possessed of most vigour and beauty, while the males, in their turn, prefer the most vigorous females.

Thus, the analogy which natural animal life bears to the domesticated, affords ground for such strong presumption, as almost to amount to established proof that change of blood is not required so long as the herd can boast of robust and well-proportioned males, not *too* intimately allied; for we may, doubtless err in carrying the system beyond the extent to which it would be likely to occur in nature.

I am aware that the soundness of this analogical deduction has been objected to, on the ground of the difference in the external situation of wild cattle—in their natural food and habits—and in their freedom from restraint in wilds to which they are indigenous. This objection, whatever it may be worth, is at any rate tantamount to an admission of my argument, that the principle we have been considering is *not* a law of nature as regards the bovine race, unless it be contended that Nature has surrounded wild cattle with such external circumstances as will enable them to subvert her laws, or that her laws in relation to animal life are not fixed and invariable, but require, in some instances, the aid of domestication to render them operative! which is absurd.

Nor would the supposed analogy of the human race (even were we, in defiance of all sound reasoning, to admit it) appear, on due examination, to contain any positive force against the practice of the interbreeding of cattle; for the only things we are inquiring about, *form and constitution*, are not impaired by intermarriages within close degrees of consanguinity, provided the parents are corporeally sound, vigorous and well-developed. The Highlands of Scotland afford numerous proofs of this position. The deteriorating influence of alliances between lineal kindred is confined to the *mental* qualities of the children, unless either of the parents is imperfect in frame, rickety in constitution, or predisposed to scrofula, consumption or other physical infirmity, in which case it is only to be expected that similar conditions will manifest themselves in the offspring. Supposing, however, such defect or predisposition to exist in the parent in only a slight degree, it might probably lie dormant for generations, until, as the result of

a union between two direct descendants of the ancestor so predisposed, the objectionable tendency, thus acquiring twofold force, breaks out in the offspring; and herein, I apprehend, lies the true and only danger of the close interbreeding of cattle—not in its tendency to generate mischiefs where they have not previously existed, but to perpetuate them where they do.

It must be conceded that domesticated cattle, even of the *pure races*, from their subjection to artificial and otherwise injudicious treatment, are more liable to defect than the original stock. But this is not a *necessary* consequence of the dependence of cattle on man, especially as regards that compound animal, the shorthorn, whose distinctive excellence can only be maintained by liberal rejections and unremitting care. In the hands of the careful breeder, the improved shorthorn has acquired a vastly improved organization; that part, for instance, on which more especially depends the healthful discharge of all the vital functions, the chest, has acquired a capacity unknown amongst the original races from which the breed has sprung. The only prejudicial change that would *necessarily* take place in cattle from their connection with man would appear to be some diminution of hardihood and activity, owing to their housing and the absence of any demand for exertion. There are, I believe, no other necessary effects of this subjection that would render the conditions of the domesticated and the wild herbivorous animals so dissimilar as to throw a doubt on the validity of any fair reasoning founded upon the analogy between them.

If this be so, then, in the instinctive habits of wild oxen, prompted as they are by unerring wisdom, I venture to think that the proudest esteemer of his own sagacity may learn a lesson both as to the propagation of the breed, and as to the mode of management of his domestic cattle; for animals, to the extent of their instinct, are assuredly wiser in their generation than the children of men.

And first, as to the breeding. It seems a fair deduction, from the modes of action to which wild cattle have been directed, with a view to the propagation of their species, that we may maintain and perpetuate the vigour and uniformity of our herds by breeding from lineal descendants of animals possessing the specified form and character we prize, *provided they are robust and well formed;* though it is doubtless expedient to do so in as remote a degree as we can, *consistently with the selection of the best and most vigorous sires*, lest, by too close breeding, we should intensify and confirm any *unobserved* defects of form or constitution; that to fortify their system against any such acquired or hereditary failings or tendencies which may exist, we should endeavour to maintain them in health by invigorating agencies of exercise, external air, and sunshine; that we should inure our cattle by degrees to the vicissitudes of the seasons—allowing them, perhaps, open sheds in the pastures, to afford that shelter which wild cattle, in the heat of summer and the severity of winter, find in the woods and glens.

We further learn that it is not advisable, when it can be avoided, to use our bulls until they have attained to the maturity of their powers, nor our females until fully and healthily developed. *fortes fortibus creantur;* but feeble animals, or those whose organs are only in the progress of their growth, cannot communicate a perfect vitality, and their offspring must fall below the required standard of growth and strength. We should therefore rigorously reject from our herds as undesirable for breeding purposes, any weakly or delicate animal of either sex: or, if apparently too valuable in point of pedigree to sacrifice, *these* might be crossed with healthy animals of other blood, as it is more probable that by this means the defects of the individual, *if they should chance to have been inherited*, will be effaced or corrected by the soundness of the constitution of the other.

Nature further teaches us that the best mode of insuring the fecundation of our cows is to turn the bull to them in the pasture, more especially in the spring of the year. That this is the season most favourable to conception we may infer from the fact that there is then an effort to reproduction in the whole animal and vegetable world, the amorous impulse pervading every vein and nerve of the brute creation.

"Vere tument terræ, et genitalia semina poscunt;
Et venere certis repetant armenta diebus."

From the migratory habits of wild cattle we may learn that abundance of fresh pasture is important to the health and fecundity of our herds. It is in years of fertility that both human and brute kind increase and multiply, while in years of scarcity reproduction is deficient and the offspring degenerate. Again, nature dictates suckling by the dam, as the best both for her and the calf, especially when the calf can run with its mother, and obtain that exercise which is essential to the digestion of an unlimited supply of milk. When the dam is dried after calving, as is too often the practice in Shorthorn herds, to maintain her condition, the milk is often carried back into the system, causing swellings in the sides and legs, inflammation in the milk tubes, in the udder, and frequently in the substance of the uterus; so that if the animal breed again, it is very doubtful whether her offspring will be healthy.

These are but some amongst numerous lessons that every man may learn from the divine teachings of Nature; but these are sufficient to show us the expediency of adopting, as far as practicable, that method of treatment of our

cattle which is most in harmony with the laws of their constitution.

Under such treatment, we need not hesitate to adopt, for the maintainance of the distinctive type and qualities of our favourite tribe of Shorthorns, a system of in-and-in breeding; and that even from close relationships, where such unions appear otherwise desirable. Nature has no law against it.

It is not thus that the seeds of degeneracy are being sown broadcast in the live-stock of this country, but by a system which involves a violation of almost every law of Nature on which depends the health and well-being of the animal economy—that system of unnatural forcing, on artificial and stimulating food, which it is the apparent object of the Royal Agricultural Society of England and its sister-institutions to encourage. It is notorious that any animal which has been healthily and naturally developed by grazing has but slight chance of successful competition. Its muscular system is too firm and consolidated. The indispensable requisite is an unnatural, and in fact *morbid*, deposition of flabby fat, absurdly styled "quality," which can only be obtained by that derangement of the functions which results from confinement, and superabundant nutrition. That this functional derangement is almost invariably followed by organic disease is evident from the impaired fertility and early decay of these marvels of the showyard, which are rarely known to reproduce more than once or twice after exhibition. And it is well that it should be so; for it would be as reasonable to expect a healthy crop of potatoes from diseased tubers, as a sound and vigorous generation from animals whose vital organs have been thus ruinously impaired. But this is a subject to which, with your permission, I shall again advert on a future occasion.

SORGHUM OR CHINESE SUGAR CANE.

The cultivation of sorghum, a sugar yielding plant that was introduced into the higher latitudes of this continent only a few years since, appears to be extensively practised in several of the North-western States, and, it would appear, with satisfactory results. Indeed the reports which we have lately seen speak of its success in the most encouraging manner, and it becomes a question worth investigating and testing by experiment, whether it cannot be profitably introduced into the milder districts of Canada. An esteemed correspondent writes to us thus:—

"Some time ago I called attention to the importance of giving encouragement to the cultivation of sorghum or Chinese sugar-cane, and I may now remark that Ohio, which ordinarily imported 5,000,000 galls. of Syrup from the South, has this year produced 15,000,000 galls. from the Sorghum, thus leaving 10,000,000 for exportation. The article is now one of the staples of the West, and may soon become one of ours. I notice that it is being produced successfully in Nova Scotia, and will be in most of the British Provinces which can raise Indian Corn.

"One principal difficulty in the way of its production is the want of machinery to crush the cane, and simple apparatus to evaporate the sap or to make sugar. To obtain samples or models of these, of the most approved designs, would no doubt come within the range of the Provincial Association, and, if published or exhibited, would be made by our mechanics and induce many to engage in the production of their own syrup or sugar. Such models, I suppose, might be had best in Chicago."

We observe from some of our American exchanges, that a convention of the growers of the Chinese sugar-cane was recently held at Rockford, Illinois, and was numerously attended by the farmers and others of that State, with a number from Indiana, Iowa, and Wisconsin. Discussions were had in regard to the modes of cultivating the cane, the varieties to be preferred, the modes of manufacturing the syrup, sugar, &c. These discussions, as reported by the *Prairie Farmer*, are very interesting, and show that the production of syrup from the Chinese sugar-cane has already become a very important business in several of the Western States. According to the statements of numerous exhibitors of samples of syrup, it can be produced at a cost of from eight to fifteen cents per gallon.

It would appear that there are several varieties of Sorghum, differing considerably in character, habits, and productiveness. Some would evidently be too tender for our Northern climate, being injured for producing syrup capable of yielding sugar by a temperature at all approaching the freezing point. The convention agreed in recommending three kinds as adapted to Northern cultivation. The Chinese (sorghum) having black seeds, growing in prongs from two to seven inches long; the second or tufted variety, known as African (imphee); and the third, lately introduced, known as the Otaheitan, with long heads, from seven to twelve inches in length, and from one to two in thickness. The *Prairie Farmer* in the first number of the present

year has well executed illustrations of the common sorghum, and the Otaheitan. The latter, as its name denotes, originated in the Society Islands, and is cultivated extensively in the West Indies and South America. It was introduced into Louisiana about the year 1797, but even there it has been found too tender in some seasons, and therefore not to be depended on so far North as Canada.

Our readers will form a good idea of the cost and results of the manufacture from the report read before the Convention by Mr. J. E. Youngman, of Rockford, who appears to have had considerable experience in the business:—

"I put up and operated with during last fall, a Number 1 Sugar Mill and Evaporator, manufretured by the 'Eagle Works Manufacturing Company,' of Chicago, with the following result:

	Cr.	
By manufacturing 1870 gallons at 2?c		$43 10
	Dr.	
Cost of Mill and Evaporator	$74 66	
Cost of arch and setting mill	25 90	
Wages of two men 45 days, each at $	90 00	
Wages of boy and horse, 45 days, at $1	45 00	
Oil and lights	1 10	
Removing bagasse	4 40	
Wood	71 10	
		311 50
Net profit (after paying for mill and evaporator),		$115 00

The margin of profit could have been largely increased by using a mill and evaporator of twice the capacity, as it could have been operated with the same number of men by the addition of one horse and a slight additional expense for fuel. From my experience I am well pleased with both mill and evaporator.

The average daily amount made was 41½ gallons; largest amount anv one day, 54 gallons, at an expense of 3 4 5 cents per gallon. The process used was as follows: I filled the evaporator with juice, and just as it commenced boiling I removed the scum at one operation with a straight-edged board. I then boiled as rapidly as possible (removing all the scum that came to the surface), until it was reduced as low as possible without burning. I then passed it over to the finisher, and filled with fresh juice as before. By this process, and without using any defecating agents except rapid boiling and thorough skimming. I produced syrups of which the following are samples, viz:

No. 1. Mixed cane, sorghum, imphee and broom corn; soil flat and sandy; planted late with a Kuhn & Haines Wheat drill; cut when not fully ripe, carelessly stripped and laid on the ground three weeks before manufacturing, yield 85 gallons per acre.

No. 2. Imphee, not fully ripe, well stripped; soil light sand, well manured previous year; manufactured immediately after being cut; yield 117 gallons per acre.

No 3. Imphee, thoroughly ripe, well stripped and trimmed; soil light loam, well manured previous year; yield 110 gallons per acre.

No. 4. Sorghum, quite green and well stripped and trimmed, soil common prairie, dry and rolling; well manured last spring, cane frozen, but crushed as soon as thawed; yield 120 gallons per acre.

No. 5. Sorghum and Imphee, mixed; badly stripped and cut; soil flat clay; no manure for two years; yield 9 gallons per acre.

No. 6. Sorghum, ripe, well stripped; soil common prairie; no manure; yield 112 gallons per acre.

No. 7. Sorghum, ripe, well stripped, tops cut off down to second joint after being brought to the mill; soil loam, receiving wash from barn yard; yield 152 gallons per acre; weight of syrup from which the above samples were taken, 12 lbs. per gallon,

According to the information derived from my customers and my past season's experience in manufacturing, I would recommend a light sandy soil, free from surface water, well manured the previous year, plowed deeply in the fall, again stirred in the spring immediately before planting, and the seed drilled in with a wheat drill. I consider the Sorghum, if fully matured, as preferable to any other variety raised in this vicinity. Cane, to make good syrup, should be stripped when fully ripe; it should be cut above the second joint, and the top should be cut down to the second joint; it should lie upon the ground until wilted, then bind in bundles of convenient size for handling, and shock up in the same way as corn. If covered to protect from the rain and frost, it can be kept until winter, and will make as good, if not a better article of syrup than when freshly cut."

The committee appointed to examine syrup and sugar, made a report from which we take the following paragraph:—

"From the good samples they set aside twen y-seven as ranking first among those exhibited; as a matter of course there are among this lot, some of superior excellence and purity, but they are so numerous that your committee concluded to designate no one as worthy the claim of superior excellence. Certain it is that, judging from the samples, great advancements have been made within the past year in the manufacture of syrups; and with the necessary care and attention to the subject of manufacture, as brought before the convention, will enable almost any one to manufacture a very palatable article. How far it will be practicable to manufacture for sale and export, every one should be his own judge."

The committee make favorable mention of several samples of sugar that were exhibited.

The committee on seed say:—"In the selection of seed, special regard should be had to the question of its purity or freedom from amalgamation with other plants [especially with broom-corn] which tend to its deterioration. The production from the Yellow imphee, or African cane, has more frequently resulted in crystalization than any other. This variety is also greatly desired on account of its habit of early maturing. Of the different kinds of Chinese cane known in this country, the committee infer from all the information before them, that neither the smallest, earliest varieties, nor yet the largest and later sorts, but a medium between these two extremes, is most desirable."

How far this plant is suited to Canada remains to be seen. The success which is said to have attended its cultivation in Wisconsin and Iowa, is, to say the least, hopeful. That it will produce with us abundance of syrup, when properly managed, the very few small experiments that have come to our knowledge seem to indicate. But whether a sufficient amount of granulated syrup can be obtained to compete successfully with the imported article from the sugar-cane remains to be shown. As an article of fodder, whether in a green or dried state, the Sorghum must be valuable, and to extend the range of our crops by the introduction of new varieties cannot be otherwise than beneficial. We trust, therefore, that the Board of Agriculture will give this matter consideration, and we shall be happy to hear of the results that have been obtained by the labours and experience of individuals.

THE WHEAT MIDGE.

In that excellent little manual,—the *Annual Register of Rural Affairs for* 1863, which should be in the hands of every inquiring and progressive farmer, we take the following from a valuable paper on insects, by Dr. Fitch, the well-known Entomologist of the New York Agricultural Society:

The Wheat Midge (*Cecidomyia tritici*, Kirby,) the insect which in this country is commonly but most improperly termed the "weevil," is by far the most important depredator upon our grain. It has been known in Great Britain for more than a hundred years, and has occasionally quite injurious to the wheat crops of that country. Within a few years past it has also attracted observation in the north of France, in consequence of the damage it was occasioning to the wheat crops there. In these its native haunts, wherever it appears, it is accompanied by vast numbers of minute black flies, resembling small ants, which are its parasitic destroyers. One of these parasites deposits its eggs in the larvæ, another in the eggs of the midge causing them to perish, and hereby this insect is constantly repressed and restrained from multiplying, and is speedily quelled whenever it chances to become numerous.

It was introduced upon this continent, probably, in unthrashed wheat brought to the port of Quebec, and begun to attract public notice from its extreme destructiveness to the wheat crop in the northwestern part of Vermont, in the year 1828. From thence it has spread and fell over all the free States and Canada, as far west as into Michigan and Indiana, everywhere laying the wheat under contribution for its support, and rendering this crop so uncertain that in all the older parts of the country it has ceased to be a staple product.

This insect is a very small two-winged fly, about a third the size of a musketo, which it resembles in appearance. It is of a bright lemon yellow color, with clear glassy wings. * * These flies come out from the ground each year in the fields where wheat was grown the year before. The sexes pair immediately, and the females then fly away by night in search of the new wheat fields, in which they all soon become gathered. It is a little before the middle of June that they begin to appear, and the females continue more than a month, occupied in placing their eggs between the chaffs of the wheat ears. They are most active in a moist atmosphere, and cannot endure a dry one. Hence they are only seen at their work on the wheat ears in the night time, when the dews are falling, and on cloudy days. And if the last half of June be wet and showery, this insect is most numerous and destructive: but if it be remarkable dry, the wheat that year escapes from injury, the insects withdrawing from it, probably to the grass of the moist lowland meadows and the margins of streams, in which to rear its young to return, as they do, into the wheat of the next year.

The eggs hatch minute footless worms or maggots, which soon acquire a bright orange yellow color. These place themselves upon the soft young grains. They abstract the milky juice from the grains, whereby the latter become shrunken and dwarfish. The worms get their growth in three or four weeks, when they are slightly less than a tenth of an inch long. * * * *

It is when the straw is wet with rain that these worms, having got their growth, leave the wheat heads and crawl down to the ground, where, slightly under they surface, they inclose themselves in minute cocoons, scarcely the size of

mustard seeds, in which they remain through the autumn and winter, and till ready to change into flies the following June. A portion of the worms, however, are still remaining in the wheat heads at the time of harvest. These are carried into the barn, where, as no moisture gets to them to quicken them into activity, they lie dormant until the grain is thrashed and cleaned, when they drop with other foul matters into the box which gathers the screenings of the fanning mill.

With respect to the remedies for this insect, every farmer knows that by late sowing he can prevent his wheat from being headed and in bloom till the season for the midge to deposit its eggs therein has nearly or quite passed by; yet, in thus attempting to raise wheat in any other except the best period of the year for its growth, he is liable to obtain only an inferior crop. It is in our power to do much towards diminishing the numbers of this insect. Whenever the screenings of the fanning mill abound with the yellow larvæ of the midge, they should be burned, or fed under cover to the poultry or swine: they should never be emptied out doors to mature, as they there will, into a swarm of flies, to live at the expense of the wheat the following summer. And those larvæ which leave the wheat heads before harvest, and remain in the fields, tightly wound up and fettered in their cocoons, slightly under the ground, may be destroyed, it is altogether probable, by turning the wheat stubble under with the plough, thus burying them to such a depth that in their efforts to work their way up to the surface, when they break out from their cocoons the following June, they will become exhausted and perish. Thus every man may destroy all these insects which are generated in his own wheat, and hereby materially lessen their ravages on his lands. But unfortunately they breed also in grass, or at least in some situation other than in the wheat, from whence their ranks will always be liable to be replenished.

In America we have now had thirty years' experience with this insect. We have become well acquainted with its history, its transformations and habits. The best remedies for it which we are able to advise and practice, are but partly efficious. It continues to be as numerous and destructive now as it has been at any previous period. By diminishing the yield of wheat crops, it is occasioning a loss, to the State of New York alone, of some millions of dollars annually. And this loss will continue until by the hand of man, the parasite destroyers of this insect become introduced into this country, when it will disappear, in the same manner that its predecessor and compeer in destructiveness, the Hessian fly, has disappeared, and almost ceased to be felt as an evil.

Cattle require liberal feeding and good shelter this month.

NATIVE CATTLE.

[We take the following interesting article from the *New York Argus*, a weekly leading paper in the Democratic interest, ably edited and very extensively circulated. Its agricultural department has often original articles of great interest. The present one is from the pen of the Hon. Winslow C. Watson, of the State of New York.—Eds.]

A persistent and often somewhat animated discussion has long prevailed in reference to the comparative merits of the various breeds of imported Blood Cattle. These controversies, while they seem only to result in concessions, that each class possesses peculiar and distinctive excellencies, which in that particular renders it superior to all others, tend to divert attention from another family of animals worthy of more consideration than they receive. It is not our present purpose to trace the characteristics of the Thorough-breeds, but to suggest some views in connection with the history and qualities of the class we have referred to, which is designated by the general description of "Native Stock."

Our remarks will be stimulated by no feeling of hostility towards the imported breeds, for our farmer's eye always delights in viewing the beautiful Devon, the symmetrical Short-horn, or the stately Hereford. We rejoice to see them introduced and impressing their beauties or fine proportions upon our common stock. We have no desire to depreciate, but will accord to these magnificent animals all the preeminence their advocates may justly claim for them.

The observation of years has confirmed an early impression, that our common American cattle possess properties not excelled by any foreign stock for all practical dairy purposes. These qualities, in real utility, are more important and desirable than mere comeliness of figure and appearance or majestic proportions. A glance at the origin of the Neat Cattle which predominate in this country, and constitute our "Native Stock," will, we think, disclose ample reasons for their possessing this superiority, and from the opinion that they form a basis, by judicious breeding, for immense progress in the improvement of their excellent qualities.

In judging of the merits of these cattle, and comparing them with imported stock, we should regard the facts that they have for generations been subjected to the hard usage and scanty fare which has too generally marked the management of the American farmer, while their foreign rivals of every name have been pampered by the highest care, and very essentially formed by appliances.

The term "Native Cattle," in the popular language of this country, is exceedingly indefinite and very broad. They necessarily have had their origin from animals imported since the first settlement of the continent, from nearly every European stock. In the commo

acceptation, and in that connection we use the term, "Natives" are referred to, in contradistinction to the modern thorough breeds.—Sprung from such diversified sources, and continued by no regard to systematic breeding, it is obvious that our common cattle could have received no distinguishing marks of color or form. The good as well as bad qualities of the original stock, by this system of promiscuous breeding, would undoubtedly accumulate in the descendants, but without impressing on them any marked or predominating quality or aspect.

We need not argue the obvious assumption, that the immigrants who introduced the earliest stock, would have selected for the purpose animals of the choicest properties. The sagacity of these men, for which they were so remarkable, must have suggested the expediency of selecting the most valuable animals for transportation. The expense of conveying an animal across the Atlantic was very great, and could only be remunerated by the choice of stock for the purpose of the greatest excellence. These importations formed the foundation of our native cattle, and gathered as we shall see, from various lands, they undoubtedly combined the most desirable qualities of the cattle of every country of Europe.

The first importation of neat cattle into New England was made by Edward Winslow, who introduced several head into the Plymouth colony in the year 1623. The other cattle introduced into Massachusetts for a series of years were brought from England. The beautiful dark red, which formerly was such a characteristic trait with the prevalent breeds of New England indicates that the stock which formed the original basis of these "Natives" imparted to them a high infusion of Devon blood. The Devons were an ancient and original family of British cattle, and were widely diffused in England, when the Short Horns had not been created as a distinct breed. This fact enhances the probability that the Devon stripe formed a large foundation of the original stock of New England.

In 1631 cattle were introduced from Denmark into the colony of New Hampshire These cattle were distinguished by a peculiar yellow color. They existed as late as 1820, in some sections of that state, and it was believed in nearly an original purity of blood. A breed of yellow cattle, which probably originated from this source, remarkable for their valuable qualities, and particularly active and vigorous under the yoke, were widely spread in New England in the first quarter of the present century, but have now, it is presumed, become extinct

The French at a more remote period had introduced neat stock from France into their colonial possessions. The Swedes at about the same time with the importation into New England, imported cattle into Delaware from Sweden, and the Dutch into New York from Holland A breed of hornless cattle, marked with all the peculiar traits of the Galloway and highly esteemed for their milking properties, was very recently prevalent in New England. These unquestionably were descended from individual importations of that valuable family of milkers. Stock was largely imported into the Southern States at an early epoch, from France, England and Spain. Choice cows were habitually procured in Europe to supply our ships with milk on their voyages, and were exchanged for others on their arrival in this country It is perfectly authenticated that these animals were important acquisitions to the milking qualities of our stock.

These various and dissimilar breeds have been preserved in certain districts with considerable distinctiveness, but in the lapse of two centuries, by the intercourse of business and the mingling of the population, they have become gradually combined, and in the amalgamation form the constituents of our native stock The mixture by indiscriminate breeding of such diversified blood for a series of generations, has from necessity produced a stock without affinity to any distinct breed now existing in Europe.

If the origin and history of our native animals, which we have thus sketched, be correct, it can require neither much argument or illustration to prove that stock springing from materials such as originated our native animals must possess elements of the highest excellence. We may advert to another circumstance as affording evidence of the natural superiority of this stock in a special department, but which is in truth the primary requirement for the dairy. We have designed to present this subject in reference to the capacity of the various breeds for yielding milk and not as to their adaptation to the shamble or yoke. The cows originally imported were selected to supply milk as an article of food for famishing colonies, and animals valuable for their milking properties would naturally have been preferred. To some of all these circumstances of origin combined, we may ascribe the extraordinary productiveness of individual native cows in their yield of milk, and the value with appropriate care and feed, of the native stock generally for the purposes of the dairy We think the position will not be questioned that a herd of native cows, receiving the same treatment which imported animals usually enjoy, are equal, if not superior, in the clear remuneration to the keeper they afford, to any foreign stock.

Experience and facts, the most reliable tests in practical agricultural problems, vindicate by actual results the correctness of this theory. Numerous cases of individual, native stock such as the Oakes cow of Massachusetts, have exhibited unequalled capacity as milkers.—Many of our largest and most productive dairies are composed exclusively of native stock. The experiment of Col. Pratt of this State, so eminently successful as to be cited in the synopsis of the census returns of 1860, in which he used in his vast dairy an entire herd of native cows proves that his singular practical judgment did not err, in giving our native stock the preference. We refer to these instances, not the

they are isolated, but for their illustration of a clearly established proposition.

We have no purpose by the suggestions we have presented to impede the introduction, or to discredit the utility of superior exotic animals, but on the contrary we concede that they may be beneficially used to supply by the influence of some specific quality of size, contour, beauty, or other distinctive property, prevailing defects in individuals or families of native stock.

We have attempted to impress on the mind of the American breeder a conviction of the important truth, that our country embraces a stock which may now be termed indigenous, equal to any foreign breeds for all the objects of the dairy. No land contains the basis for a race of animals better adapted to improvement and upon which the application of care in treatment and skill, and science in breeding, will be attended by more favorable or remunerative results.

Why should not the American farmer emulate the triumphs of European science, and by perseverence, attention, and skill, elevate the standard of our native stock, until it may challenge, in the estimation of the world, competition with the choicest thorough breeds of England?

VALUE OF PEDIGREES.

Analyses of pedigrees are necessarily imperfect. We deal with numbers, not with power. The numerical proportion of crosses can be accurately ascertained; the potential proportion in each cross, and the variation of power in each, eludes observation. We can discover how much of this blood and how much of that a pedigree contains, but all attempts to detect the comparative influence of the several ingredients are successfully baffled. Conjecture supplies no determinate information; indeed, it supplies no information at all; and conjecture will ascribe superiority of potency to one sort of blood or another, according to the bias of individual taste. We can only, perhaps, be quite certain about a predominance of power when we are quite certain of a very decided predominance of any one element. A mere equality of numbers by no means denotes an equality of power, as in the case either of a short-horn bull put to a Highland cow, or a Highland Bull crossed with a short horn cow. In both these cases the numerical portion is half and half, though the potential proportion is in a different ratio. But calculations, because they fall short of deciding the relative momentum of every constituent part, are not therefore of no value. They are of very great importance notwithstanding: for they bring a man acquainted with the general composition of an animal, and at least afford him an opportunity of seeing how *much* there is of the blood he likes, of the blood he hates, and of the blood about which he is indifferent. The grand vital truth of pedigrees lies, like all truth, *underneath*—as the ancients told us, at the bottom of the well; and if we want it, we must *go down* for it. Impressions projected from the *surface* are usually delusive, for they are faithful only in part. The incompetency of the exterior of a pedigree to disclose the real character of a pedigree, in all the fulness of its wealth, seems to be admitted in the practice so much resorted to at present in private catalogues, of appending copious explanatory notes to the various crosses which compose the formula. In these notes something is told which the top lair does not reveal. How complicated a piece of complexity does a pedigree look to one who has descended beneath the superficial appearances, penetrated deeply the substrata and pursued his course of investigation on every side. To such a man a good deal more than eight or ten lines and a few bracketed references to a book of record is presented. He sees what others cannot see; for he knows what others do not know. Let us suppose a pedigree of 20 crosses. The four most recent crosses, we will assume, are Bates crosses; the other sixteen consist of miscellaneous blood. The animal to which this imaginary pedigree belongs possesses fifteen-sixteenths of Bates blood, through the four crosses alluded to, whilst the remaining sixteen crosses make only one-sixteenth. Are these sixteen crosses, then, influential, or, if influential, in what degree are they so? They are influential, because they have contributed to form the animal before us. Without any one of these crosses, or any portion of them, the animal would not have been what she is; could not, by any possibility, have been the same animal: but what precise degree or quantity of power is to be referred to each individual cross of these sixteen crosses is, of course, utterly beyond discovery. All the sixteen crosses have been necessary antecedents of the animal which stands before us, of which we say, and say with truth, that by virtue of the four most recent crosses she has fifteen-sixteenths of Bates blood in her. It would, however, seem as if the earlier or remote ingredients in a pedigree often did more than exercise a general effect, and were not without positive present and practical influence —something resembling that which the costly experiments of Sir Joshua Reynolds in his decomposition of some of the works of the old masters, discovered to belong to the initial and hidden coats or lairs of colouring applied by them. It would seem as if the power of certain crosses of ancient data came up and through the others, making themselves felt even after years of abeyance. But how long the earlier elements signified in a pedigree continue their influence, and to what extent they are influential; or whether they cease to be influential, so far as individual characteristics are concerned, and at what particular point they cease; are questions not only quite incapable of satisfactory solution, but of little consequence, so long as the animals resulting from them exhibit the unequivocal marks of high and careful breeding.

This must be evident, that every animal contains within it the whole of its antecedents; nor is it less manifest that certain combinations and intercommunions of blood have the effect of very speedily overpowering the original parentage, unless belonging to some distinct and incongruous species. In the case of animals bred by one who has uniformly adhered to a favourite strain of blood there is great peculiarity. Even without exhibiting incestuous alliances, the pedigrees of such animals, if carefully searched, would show so many *repetitions* of early sires, so much and such intricate complications of affinities, that very express personal resemblances to remote ancestors, so far from exciting surprise, might be confidently expressed. The face of a pedigree, as we have frequently observed, affords no adequate notion of what the pedigree really is—presents, in fact, a very imperfect idea of the frequency of the recurrence of certain ingredients, whether valuable or worthless. Let us give an instance. It shall be the Herd Book pedigree of one of the noblest short-horn sires of the day :—

Mr. Raine's Earl of Derby (12,810).
Got by Gay Lad (12,922),
dam by The Colonel (5428),
gd by Guardian (3947),
ggd by Magnum Bonum (2243).
gggd by Young Rockingham (2547),
ggggd by North Star (466),
gggggd by Denton (198),
ggggggd by Ladrone (353),
gggggggd by Henry (301).

The reader who is but a novice in herd book lore can hardly fail to perceive the pedigree of this magnificent bull to be a pedigree of great value; but not many, probably of more advanced students are exactly aware of the amount of Magnum Bonum blood, for instance, which it sets forth, if minutely examined. Let us see. The name of Magnum Bonum occurs once, and only once, in the direct line of Earl of Derby's pedigree, his granddam having been a daughter of that bull. Only one-sixteenth of Earl of Derby is due, through the direct line, to Magnum Bonum. But Earl of Derby's sire, Gay Lad, was a grandson of Magnum Bonum His dam's sire, The Colonel, was a son of Magnum Bonum. His grand-dam's sire, Guardian, was a son of Magnum Bonum. Earl of Derby is therefore four times descended from Magnum Bonum; and the proportion of Magnum Bonum in the blood of Earl of Derby is three-eighths, or one-eighth short of a half. We are reminded of a still more apposite illustration. The following is the pedigree of Filbert, a young heifer bred by the writer of these lines, and now the property of a gentleman in Staffordshire:

Got by Royal Windsor (18,784),
dam by Lord Belleville (14,804),
gd by Magistrate (10,487),
ggd by The Colonel (5428),
gggd by Paganini (2405),
ggggd by Rob Roy (557).
gggggd by Wellington (678), &c.

Rob Roy (the sixth bull mentioned here) by Wright's Remus, and out of Lady Jane by Comet was the grandsire of Magnum Bonum, and his name occurs *once* on the face of Filbert's pedigree. But Filbert's sire is three times descended from Rob Roy; and Filbert's dam (bred by Mr. Joseph Dent, of Neasham) ten times; so that Filbert has Rob Roy thirteen times in her genealogy. We might multiply illustrations of this sort, for they are very numerous; in the most carefully conducted herds, very numerous. Many of the Warlaby pedigrees, if thoughtfully scrutinized with respect to the present subject will repay the inquisitive student for the time and attention he may bestow upon them. They abound in repetitions, in no sense objectionable of the finest old blood; and disclose, when questioned thus, a richness and wealth of contents but little suspected by the generality of readers. Let us take, for instance, and almost at random the pedigree of Royal Bride (H.B.. xiv. 684); and let us take it in reference chiefly to the blood of Pilot (496).

Got by Crown Prince (10,087),
dam Bride Elect by Vanguard (10,994,
gd Bianca by Leonard (4210),
ggd Bagatelle by Buckingham (3239),
gggd by Raspberry (4875),
ggggd by Young Matchem (4422),
gggggd by Young Alexander (2977),
ggggggd by Pilot (496),
gggggggd by The Lame Bull (359),
ggggggggd by Easby (232),
gggggggggd by Suwarrow (636).

The history of Royal Bride's pedigree reveals no close in-breeding; and whilst it shows Mr. Booth to have pursued the principle of general adherence to one strain, it also discovers several instances of the introduction of fresh blood into the Warlaby herd. Yet it is a curious fact, that although the name of Pilot occurs but *once* in the direct line of this pedigree, Royal Bride is *forty one* times descended from that bull; twenty-one times through her sire Crown Prince, and twenty times through her dam Bride Elect. The reader can see, from the foregoing examples, without having recourse to the hypothesis of accidental coincidences, how animals bred in this way may be expected to reproduce the personal characteristics of their ancestors.—*Bell's Messenger.*

GROOMING AND FEEDING HORSES.

A few words now about grooming and management. Every horse should be thoroughly cleaned each day. The bedding instead of being thrown under the manger to fill his food, eyes, and lungs with ammonia, should be thrown behind him or out of doors to air. His manger should be kept clean, and once a week washed with salt and water and salt left in it. One night in each week, he should have a warm bran mash—eight quarts—generally given on Satur-

day night, as it is somewhat loosening and weakening, and the horse is presumed to be idle on Sunday. Oats are by far the best food, and ground oats, wet with water, is better than the whole dry grain. Cut hay is a great saving, and moistened and sprinkled with ground oats, forms *the best of food.* The hull of the oats is hard and often unmasticated, and passes undigested throgh the system, thus taking away instead of imparting strength and nutrition. For medium sized horses, with moderate work, nine to twelve quarts of oats per day and 14 lbs. of hay are ample. For large draft horses, 18 quarts oats and 16 lbs. hay. Food consisting of one-third corn ground with two-thirds oats, forms strong, hearty *winter* food for work or coach horses. But corn is unfit for road or fast horses—it is too heating. Good beds and good grooming are as important as good feeding. Horses, like men, want good, dry, warm, clean beds. In grooming, tie your horse so he can't bite his manger and thus learn to crib bite; and if you find your groom currying and tormenting the poor animal when he is tied, so he is uneasy and restless, use your stable broom over the groom's back—it is an excellent instructor to teach him to be very gentle. Let the currycomb be very moderately used on the body to loosen up the scurf and dirt, but never permit one near the mane and tail. *Rely mainly on the brush* and rough cloth for cleaning. Banish combs from your stable. They tear out more hair in a day than will grow in a month, and they ruin all the mains and tails that are ruined. The tail should be washed with castile soap and water once every week, and *brushed with a wet brush every day in the year,* holding up the bone of the tail and brushing the hair from you. Half an hour is enough for a groom, to one horse, but one hour time at the outside, ample to be very complete. City horses on dry floors should have cow manure put into their feet once a week, to draw out fever and keep hoofs growing. It should be put in over night and allowed to wear out itself To conclude, always be gentle about your horses's body, especialy his head—"more haste less speed" is peculiarly applicable to grooming and breaking. Use whips as little as possible—use your reason and exercise patience and kindness, and instil by precept and example the same useful lessons in those untutored creatures denominated grooms—and if you cannot inculcate wholesome truths into their heads, you can ameliorate the condition of that much abused animal, the horse, by occasionally exemplifying the power of their own treatment on themselves. —H. L S. *in Country Gentleman.*

KEEPING HORSES IN WINTER.

The first thing of importance is a good stable, which should be warm, light, dry and well ventilated. Each of these conditions must be observed to insure the health and comfort of the horse. The cold winds must not be permitted to blow upon him, nor damp, foul air fill the stable. Let a plentiful supply of pure air and light be admitted through windows or blinds. The stalls should be 14 feet long and 5½ wide; mangers for hay are preferable to racks, as the horses are less liable to waste their hay by getting it under their feet. The manger should be about 3½ feet high next to the stall, and 6 inches higher in front; about 20 inches wide at the top 14 at the bottom, and extend to within 16 inches of the floor, which will leave room beneath for the bedding. The top piece on both sides of the manger should be 2 inches thick, of hard wood, to prevent the horse from gnawing. The feed box should be in the right hand end of the manger, and made of two-inch hardwood plank; 10 inches square is a good size. The partitions between the stalls should be about 8 feet long, and it is best to have them so high in front that the horses cannot get their heads together.

When the horse is idle, two quarts of oats given morning and evening, with plenty of good hay, will keep him in good condition. If corn is fed on the ear, two or three common-sized ears will answer the same purpose, or three quarts of corn and cob meal per day. If at light or medium work, four quarts of oats, six ears of corn, or three quarts of corn and cob meal, should be given three times a day, with all the hay he will eat. If at hard labor, six quarts of oats, ten ears of corn or four quarts of corn and cob meal, will be required. Whole corn is not economical food for horses, as much of it will pass through undigested; but as it is used by many farmers, I give directions for feeding it. In feeding new corn, care must be taken not to give too much at first, as it is very liable to give horses the colic. Many, perhaps the majority of farm horses, in our part of the country, are kept upon much less grain than this, but they do not look as we desire our horses should —fat, sleek and comfortable, and always ready for service. Carrots are very good for horses, and instead of feeding grain alone, an equal quantity of carrots may be substituted once a day with great benefit. Roots have a tendency to keep the bowels loose, and a horse will thrive better if carrots can form a portion of his food. An occasional "bran smash" is very good for the same purpose. To make it, scald four to six quarts of shorts, add a little salt, and feed after it has cooled sufficiently. Horses should be watered regularly, at least three times per day; our rule is, water after eating in the morning, before eating at noon, and before eating at night.

The above useful remarks are taken from the *American Agriculturist.* In reference to the important question of ventilation it has been said, that the great mortality occurring amongst the horses of the French cavalry have been diminished more than one-half by increasing the amount of air supplied to the stables, no other change in the management having occurred.

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At the end of the Italian war, 10,000 cavalry were left with no stabling but mere temporary sheds, but the mortality was quite insignificant, and not a single case of glanders occurred. The French Government are now trying some experiments with respect to the results of the exposure of horses to even currents of air, some of the results having proved of a most favorable kind. As might be expected, the effects of the improved ventilation of stables have been still more fully exhibited with respect to sick and wounded horses.

Prof. Simonds, the distinguished veterinarian, in a report to the Royal Agricultural Society on the "Rinderpest," and other epidemics affecting the cattle of Europe, states that he found pleuro pneumenia very prevalent in some localities, and he was not surprised at this when he saw the condition in which the stock were kept, particularly in the vicinity of Rotterdam, in Holland.

He adds, "The cattle are often crowded into stables so thick, that to pass between them is almost impossible. The form and size of the buildings will frequently only allow of a passage along the centre where the heads of the animals nearly meet over their feeding troughs, while the height of the stable is insufficient to allow a person to stand upright therein.

In many of the sheds or stables there are no windows for the admission of light or air. The heat is almost suffocating, and the stench abominable. In such unwholesome, pest-breeding-places as these are cattle kept, to the number of forty or fifty, together, and fed on the waste of distilleries."

CUTTING FODDER FOR STOCK.

Pinching winter is now upon us, and the stock of hay in most parts of the country is but scanty. Roots too in many localities are anything but abundant. The farmer will therefore have to use his utmost ingenuity in making the most of what provender he has got in order to carry his stock through the winter in a healthy and thriving state. Now the cutting and mixing of hay, straw, corn stalks, &c., long experience has shown to be economical, more so by far than those who have not practised it generally imagine. It facilitates mastication and digestion: and as the different materials are reduced and mixed, the less nutritive are taken by the animal with the more valuable, and waste is thereby prevented. Hard worked horses are particularly benefitted by using cut food. The following remarks on the subject from the *N. E. Farmer*, are well deserving notice:—

We are decidedly in favor of it; not from any precise and accurate experiments by weight and measure, but from a close and interested observation of the spending of cut and uncut fodder, and from its effects upon the stock that consumed it, through a period of several years. The difference in feeding out a certain quantity of hay, cut and mixed with a given amount of grain, and feeding out the same amount of hay whole, with the same amount of grain, has been too great with us, to admit of a single doubt of the profitableness of cutting the fodder. Especially is this the case with corn fodder. Fed whole, the cattle will select the husks and leaves, and reject the stems, wherever the crop is a stout one—but when cut, mixed with a small quantity of grain, moistened, and allowed to stand twelve hours, cattle will eat every particle of it, excepting, perhaps, some of the rank and hard points of the stems.

In most hay fed to cattle some portion of it will be less attractive than the rest, and when cattle are well fed, they will leave the poorest which is quite apt to get under them as litter, or to be at once thrown through the scuttle to the manure heap, or at best, scattered over the yard to be pitched over again or trodden under foot. This is the case with much hay that is too valuable to go to such purposes. When hay is cut this loss is entirely prevented, and it is rare to find anything left but bits of stick or the stem of rank weeds, if such were on the hay.

That the cutting adds anything to the amount of nutriment contained in the fodder, we do not argue—nor does it to the potato we eat, and yet we find it vastly more convenient in a smaller form. It may be urged that cattle are provided with the means of cutting long fodder, and therefore do not need it in a comminuted form—but the buffalo, in his native ranges eats no tall grasses and rank herbage if he can avoid it, but traverses over vast plains to graze upon the short, tender grass, thereby showing a decided preference for his food in smaller dimensions than is afforded in corn fodder, or in hay that affords two or three tons to the acre.

We have cut the fodder for a stock of fifteen to twenty head of cattle, watching the effect with interest, and come to the conclusion that the process is an economical one—but tested by actual weight and measurement, this apparent advantage might not be sustained, after all.

THE HORSE CLIPPING MACHINE.

Among the many ingenious contrivances to be seen at the Smithfield Cattle Show, in the New Agricultural Hall, will be a novel piece of mechanism invented by two French gentlemen, Messrs. DeBanat, which bids fair to outstrip even the sensation cow-milking machine, so much wondered at in the Great Exhibition at Kensington. This is another instance of the great labour-saving principle which seems to tax the brains of all inventors now-a-days realised in one of its happiest and most successful applications.

The instrument itself is as nearly akin to a lawn mower as anything can be. It is precisely the same cutting by a revolving cylinder, upon which are fixed seven spiral knives, acting against a fixed blade, and thus forming a scissor. A steel comb is placed underneath, to protect the skin of the animal, and ensure an even clipping of the hair. The operator holds this instrument with both hands, and moves across-grain over the whole surface, like a smoothing iron. The legs only, together with the lower part of the chest and the head, must still be clipped with scissors; but this may be done by hand whilst the other parts are being operated upon by the machine. The inventors affirm that two horses may thus be completed in five hours, requiring only the labour of three men—the operator with the machine, the clipper with the scissors, and a labourer to work the machine.

Thus far, the principle of this new instrument can easily be understood by all who are acquainted with lawn mowers; and although this novel and, at the same time, most useful application of the principle of rotary cutting may not be very strikingly new, the transmission of the rotary motion is in itself a most wonderful effort of mechanical skill, and we believe is quite a new discovery in mechanics. The motive power is nearly the same as in a sewing machine. A man holds the handle of the wheel in his hand, and moves it with his foot. The motion is transmitted through a flexible chain as pliant as a rope, formed of articulated links and steel thread, so that the operator can vary his movements as he lists, without being hindered by the least rigidity in the transmission medium. The motive power and its transmission through the chain are so perfect that the cutting cylinder gives 5,000 revolutions in a minute.

Hitherto in England clipping has been practised, so far as we know only upon horses. In France it appears that experiments have been made by a celebrated grazier, with a view of testing the effects of clipping upon feeding oxen. Twelve oxen were selected, six of which were clipped. The clipped lot weighed at the commencement of the experiment 52 cwt.; the unclipped lot weighed 56 cwt. 10 lbs. The two lots were fed alike, and at the end of two months the clipped lot weighed 65 cwts. 10 lbs.; the unclipped lot only 61 cwts. 1 qr. Thus the increase per head, in the first lot, had been upwards of 2 cwts., and for the second only about 96 lbs. We quote this report from a paper on the subject published in a French periodical belonging to the Society for the protection of Animals; but we cannot reproduce at length their respective experiments, which extended over a period of six months, from the glaring and most unaccountable inaccuracies in the figures given, scarcely one of which proves correct. The idea, however, is worth noticing, as it is quite consonant with the teachings of physiology on the action exercised by the skin on the digestive organs, and especially on the combustion of the carbonaceous and fat producing elements of food in the lungs, to suppose that fat will more readily accumulate in the tissues of an animal where insensible perspiration is not impeded by a thick fur, than in one whose skin is profusely covered with hair. Long hair in winter is a provision of nature to protect animals living in the wild state from the injurious effects of cold; but in the domestic life, and especially within warm and comfortable feeding boxes, this winter garment is useless, and evidently pernicious.—*Mark Lane Express.*

DOGS VS. SHEEP.

Tha depredations committed by dogs among sheep are unhappily too well-known everywhere. The losses both in the States and in Canada from this cause are in the aggregate appallingly great. Mr. Dyer, a Veterinary Surgeon at Waterford, in Ireland, recommends that dogs should be emasculated, as a means of preventing or at least greatly mitigating the evil. In writing to the *Mail*, he observes:

I dare say some of your readers will smile at the idea of subjecting dogs to this supposed-to-be-painful operation, and will, doubtless, insinuate that it would not prove effectual. If we consider for a moment the natural history of the dog, we shall find he is one of those animals fond of rambling about in search of a mate, and particularly after dusk. When in search of another of his species it is more than probably, should he be in the farm, he will make his way amongst sheep; and if so, he is certain to have a run after them—at first it is mere play, but it soon becomes vice; and once the flavor of mutton crosses his incissors, he is never a welcome visitor upon a farm. My argument was thus—that to prevent a dog from leaving his home is the only effective way to prevent his worrying sheep. By operating as I have hinted you will most certainly gain that point. I have, during the many years of professional experience, had occasion to perform the operation alluded to many times, and in every instance the animal so treated has remained faithful to his post and to his master, never at any time showing the least inclination to follow other dogs, but the reverse; they seem to have an antipathy to all strange dogs. This, I can assure you, is not an imaginary remedy. The two dogs I possess are not entire, having undergone the operation when puppies. Owners of pet dogs would gain another advantage, especially where there are children, I need only refer to their habits. Some persons, doubtless, will urge the costliness of such remedy, the risk, the pain, and all the rest of it. I would mention for their information—there is no risk in the first place; seconly there is but trifling pain; thirdly, I would be happy to operate upon as many animals gratuitously as may

be brought to me for the purpose. This will, I think, meet the case in point. If the powers that be would take this into consideration and pass a bye law so as to cause owners of dogs to either keep them properly secured both by day and night or have them emasculated, they would confer a great boon upon agriculturists, and particularly to sheep owners.

APPLICATION OF CHEMISTRY TO AGRICULTURE.

Translated for the Mark Lane Express.

FROM A LECTURE BY BARON JUSTUS VON LIEBIG, AS DELIVERED AT A PUBLIC MEETING OF THE ROYAL ACADEMY OF SCIENCES, IN MUNICH, NOV. 23, 1861.

This day, when Bavaria celebrates the anniversary of the birth of its king, the Academy of Sciences meets to express its wishes for the well-being of the monarch. To the sentiments of joy, fidelity, and devotion which burst from the whole population of Bavaria, are added from our Academy those of a profound and respectful recognition for the protection accorded by the king to science. True, all classes do not comprehend what analogy exists between their well-being and the protection given to science. It will not, therefore, be out of place to take a glance at the developement of the agricultural profession, showing how powerful is its influence, and how far it has extended.

No profession has felt less than agriculture the influence of the progress of the age; in none had the old routine been more firmly rooted, or the obstacles to amelioration been more powerful. If we picture to ourselves the task that agriculture had to accomplish, if we examine the state in which it was 33 years ago, it seems that the accomplishment of that task was altogether impossible without a radical change in its mode of operation. The task it had to fulfil was the production of meat and bread, necessary for a population ever growing; and we can easily comprehend the extent of it. In the States of the Union of German Customs, Hanover and Oldenburg excepted, the population has increased since 1818 little more than 1 per cent.; while there were in these States, in 1858, nearly two millions of men more than in 1848. Taking it at the lowest estimate, and allowing for the sustenance of each man 1 kilogramme of rye, or its equivalent, per day, we have per head and per year 365 kilogrammes of rye. Therefore, in 1858, the population of the Union of Customs consumed 7,250,000 metrical quintals more than in 1848, and 29,000,000 more than in 1818; and if the population continues increasing in the same proportion, the consumption of rye in 1871 will be nearly 25,000,000 metrical quintals more than in 1851. When we consider that the cultivable surface of the earth cannot be much enlarged, the satisfying of such an enormous excess of wants, increasing daily, seems to be an exigence which it is almost impossible to provide for.

Let us suppose that in the last ten years of the past century the population of Europe had increased at the same rate that it has done since 1818, we should have seen in the course of two generations a state of things equal in horror to those which existed in the middle ages. For agriculture such as it was then, and indeed has been till within the last few years, was entirely without the means of furnishing food equal in proportion to the increase of a population always growing. As it is with certain kinds of beasts, when the want of nourishment is felt, the strongest attack their more feeble neighbours, and fight till they have devoured them, so it is with us; but only amongst people the most savage does one devour another, whilst in more civilized nations hunger creates a cruel thirst for blood, which seeks to satisfy itself by domestic revolutions or foreign war; and the great battles at the end of the last century and the beginning of this appeared then as natural phenomena destined to re-establish the equilibrium between the production and consumption of alimentary substances.

In the last twenty-five years of the past century, agriculturists had no idea of the true causes of fertility in the soil, and of the exhausting of it by culture. Besides the sun, dew, and rain, the cultivator knew comparatively nothing of the conditions of development in a plant. Many thought that the earth merely served to furnish the plant with a solid spot in which it could vegetate. It had been known for many centuries that by carefully cultivating the surface of the soil the produce would be increased, and still more by using the excrements of animals. They thought that the action of stable dung was produced in some incomprehensible way which art cannot imitate, just as the food acts that passes through the body of man. They thought that on every farm, with sufficient cattle, they could produce by means of a certain succession of crops, a mass of manure so great that there would be no end to its production; that the raising of the produce of the earth depended upon the labour and ability of the man in the culture of his fields and the suitable choice of the crops he put in them. One fact that might often be observed was that one man would ruin himself on a farm, whilst another would make money by it; that the produce of the farm increased or diminished according to the man that cultivated it; and thus was formed the belief that increased produce depended upon the will of man, and that he could, if he only knew the art of doing it; transform into fertile meadows sandy plains apparently sterile.

Towards the end of the last century, a man of superior mind succeeded in laying down some rules for the culture of the earth, until then without laws, and in making it a profession. From some rules discovered by himself in the culture of his farm, he could calculate in figures what was the productive faculty of the soil, how much it exhausted itself by the culture of cereals and commercial crops, how he should manage it—whether he could enrich it by the culture of roots or fodder crops, and what quantity of dung was necessary to repair the loss. Thaer thought that what the cultivator carried off from his fields under the form of grain or food he could return to them by regulating the quantity of the force of the soil. What the force of the soil was he could not tell, and the idea he formed was that it was connected with things which operated in the earth like the phlogiston from oxygen.

In the doctrine of Thaer, and his ideas of the equilibrium between the productive force of the soil, the consumption created, and the necessary means of repairing its loss, there was a germ of truth capable of complete development; but in the hands of his ignorant successors, who were strangers to science, as if under the influence of an evil genius, they had made no use of the progress effected in natural sciences since Thaer, consequently his doctrine degenerated into a system void of sense. The faculty of *power or practice* was, according to them, the principal thing; but to know in what consisted the *power* they imagined was quite unnecessary. We should, according to them, attach ourselves to experience; "With a theory," said they, "we shall never manure the fields."

We who have seen the end of this system of culture can comprehend the result. What they called experience was not the true experience of those who have proved it. They held then, as an incontestable truth, that the diminution or increase of the produce of land was in proportion to the quantity of humus that it contained, or with the diminution or increase in the land of certain combustible principles, which the cultivator should use all his efforts to increase. There was truth in the doctrine, that upon fertile soil more plants will grow than upon an infertile one; and that in a rich soil more organic debris will be amassed than in a poor one. They had confounded the *effect* with the *cause*, and had taken the effect for the cause itself. A poor field, thought they, would give much larger crops if the cultivator knew how to make more humus; and that principle would be incontestable, if they could produce humus in land which does not contain the necessary condition for the growth of plants.

One can get an idea of the means they employed in keeping up the production of land by calling to mind that Thaer, in 1806, attached little value to phosphate of bones, and attributed its effects to the quantity of gelatine they contained. Again, in 1830, Sprengel taught that bones as manure were of no use in Germany. They knew, for a fact, that in England, pulverized bones were used as an indispensable means of increasing the produce of English fields already very fertile, but such was the blindness produced by their false doctrine, that the German cultivators saw with perfect indifference the exportation to England of several million quintals of bones. How their doctrine supported itself in their experience, and how false they discovered it to be, we may judge by the fact, that now there is not a single cultivator in Germany of any intelligence who believes it possible to keep up or augment the fertility of the soil without the use of bones.

The ground upon which their doctrine supported itself was, that in the lands of Moeglin powdered bones produced little or no effect; as is the case still. They produce no effect upon some fields, not because the bones themselves are useless, but because they do not know the right method of rendering them active.

They believed, in fact—and that was the basis of Thaer's system—that the whole land of Germany was the same in nature; and, as they did not know how and to what purpose manure acted, they thought they could try upon any land whatever the effect of every manure. Upon Thaer's fields bone-dust had no effect, and they therefore concluded that it would be the same all over Germany; and, consequently, it was useless trying it.

The production and increase of humus, which in the time of Thaer was considered as the most important feature for agriculture, has now ceased to be the cultivator's efforts; and all that is indispensable for keeping up and increasing the produce of land, in the shape of grain or meat —all that was then, in blind ignorance, left to waste, through believing imaginary rules and experiences—all *that*, the cultivator now brings, at a great expense, from America, Australia, and Africa. As the productive force of the soil, such as they imagined it, did not exist, it was evident that the agricultural equilibrium built upon that force of soil could never accord with the results of culture; and that the state of the land, such as it should have been, according to their accounts, was in perpetual contradiction to the truth. Where a field, after a rotation of crops, should have gained 25 per cent. in the force of soil, it had in reality lost, because they gave it nothing to replace the conditions of fertility that they had taken from it; and when they thought to have doubled the force of the soil, there was nothing left of its primitive strength.

Nevertheless, the practitioner had no doubt of the truth of his doctrine. He explained in this manner the contradiction which existed between his doctrine and practice: he thought that the talent of putting his doctrine into prac-

tice had failed—that, by certain peculiar circumstances, the doctrine was not altogether applicable to his land, and that, though certain principles were tried with advantage in England, they were of no use in Germany. Thus, all the supporters of that extraordinary system of culture held this strange position; they recognized the principles which had been taught them, as true in theory, though inapplicable in practice. And, what was worse, the effect produced upon those who could not distinguish true doctrine from false theory was an utter horror of scientific instruction.

The idea of perfection that man attaches to mathematical operations, and to all that resolves itself into figures and measures, caused the name *rational* to be given to a culture based upon of agricultural statistics. From that time there were *rational* and *non rational* cultivators, and the one knew as little as the other of the reason or motives of their manner of acting. In fact, the reason was none other than the number of pieces of money with which the method of culture was measured and compared.

The cultivator who abandoned the triennial distribution for the alternate sowing, and found his revenue increase, regarded the new method as the rational one, and threw behind him a glance of pity on his old way of culture. None saw that the change to alternate distribution was in itself an indication of the improvement of his fields, because in the countries where the triennial cultivator saw his labours remunerated by heavy crops of grain, no one thought of being able to get any advantage from the alternate course. If nature had not so abundantly supplied the cultivable soil with all that is necessary for the existence of men and animals, and if the changes which the earth undergoes from one harvest to another were visible, the practical cultivator would soon become convinced that his rational culture did not rest on a golden soil, but that what he mi took for gold was only a gilt surface. Several generations must have succeeded before it was known that his was a false route. The dazzled eyes of the practitioner saw only false and disfigured images. It astonished him that, after having for thirty years well-tilled and manured his fields, their fertility was not the least in the world increased He remembered that his father with less manure gathered more grain and less straw, and that in the time of his grandfather the hectolitre of barley had weighed from 10 to 15 kilogrammes more than now. "But," thought he, "I need not seek the cause in the land, for it looks the same as it did formerly; nor can it be my fault, for I have cultivated it with much more care," &c.; but the evil was that, peas, clover, and fodder plants in general would no longer succeed. If he could only find means of getting more frequent crops of these plants, then his trouble would be at an end. With more fodder he would have more manure, and with plenty of dung he could obtain large grain harvests. If he only had enough fodder the grain crops would come of themselves. His system of culture was based on the production of manure, and that on the production of fodder. It had taught the cultivator that he should transform his fodder into stable-dung, and that manure was the matter that his art transformed into meat and bread But it had not taught him what he should do to procure the manure when fodder would not grow in the land: it had only taught him that cereals and certain commercial crops exhaust the soil, whilst fodder spares it, besides improving and enriching it.

If cereals cultivated successively on the same field, did not produce the second or third year satisfactory crops, they said the land was sick For the same phenomenon they had two different causes. In the first case they supposed the cause of non-success to be the failure of certain principles; and, in the second case, want of activity or strength. For the exhaustion of the land the cultivator found a remedy in manure for fodder, he sought a medicine, or, as for a lazy horse, a whip. "What will be the end of agriculture," cried these practitioners, "if we must manure fodder plants as we do cereals The farmers can scarcely produce enough manure for the cereals, and where would he get for other crops?" The practical cultivator had neglected to get intelligence in his practice; he had worked as a shoe maker exercises his trade but he had not seen what the shoe-maker did see—that his quantity of leather is constantly exhausting. He had treated his fields as a piece of leather without end, which if one cuts at one end it sprouts at the other. The manure was to him only the means of lengthening out and softening the leather, so as to make it cut more easily. He treated it as if God had worked a miracle for him—not for the preservation of the human species, but to save the cultivator the trouble of thinking of the source from whence flow the blessings of the Creator. In the school of agriculture they had taught him that the true talent of the cultivator consisted in cutting from the immense quantity of leather, which the land supplied, the greatest possible number of shoes in the shortest time, and at the least expense and that the best masters appeared to be those who carried to the farthest that art.

There was no lack of voices that raised themselves in defence of that doctrine, and one of the greatest evils that it caused subsequently was that the cultivators were quite content with occasionally obtaining from their land heavy crops, which sustained itself, and which even increased as well as enriched them, and gave colour to the belief that they owed to their intelligence and ability what was only traceable to their land, which gave them, without trouble what others could not obtain from theirs with the greatest efforts.

To the evident fact that the harvests diminished upon an infinite number of lands, these empty cultivators opposed their own local ex-

ce to prove that the doctrine of agricultural uilibrium was correct, and pretended that if e others would only decide upon following the me mode of culture which had been so success- l with them, there would be an end to all their fficulties; that all lands were of the same com- sation as theirs spoke for itself, and therefore, nformable to their experience, the conditions fertility should be with them inexhaustible. was in reality conformable to true experience, at the fields of these happy cultivators still ve some large crops; but how many times ore they would give them, was a question which one was prepared to answer. The trades- an, or as they say in agriculture the practical an, did not trouble himself with such questions; t, nevertheless, he would perhaps have been ser, had he taken them into consideration. hat was most opposed to his thoughts was the ctrine itself; it had become an article of faith at the soil is inexhaustible; for if it had been haustible, the system of culture had had no ore foundation, and to doubt its exactitude uld have appeared a wilful refusal of truth.

After some years, difficulties of every kind ultiplied in culture, and still farther was felt e want of manure. Some by exerting all eir powers could not succeed with the means their disposal in increasing their produce of ain and meat. Others, in many places, ap- ared scarcely to avoid diminishing their pro- ce. It is evident in this embarrassed state riculture could not satisfy the wants of a grow- g population.

During that time, amongst the natural scien- s chemistry had made sufficient progress in r own reconstruction to enable her to take rt in the development of other sciences; and hile chemists laboured to search out the pheno- enon of life in plants and animals, they found emselves in connexion with agriculture.

The chemist had began to study plants in all eir parts—he examined the leaves, stems, anches, the roots and fruits; he pursued the enomenon of the nutrition of animals; he ught to discover what the aliments became in eir bodies; in short he analized the lands of most every country in the world. He recog- sed that plants absorbed certain parts of earth, ich aided the formation of their bodies, and at it returned under the form of ashes after e combustion of the plants, and that these hes are for the nourishment of other plants. t as bread and meet are of man, and fodder r cattle; that a fertile soil contains much, and infertile soil very little of these nutritive nciples—that if they are increased, the poo il will become fertile; that good soil would edily become infertile when by the produc- n of plants, and gathering them from the lds where they had vegetated, the provisions the land had become lessened: and in orde at the soil may remain fertile he must com- tely restore what was taken from it; if the restitution was not complete, he could not reck on upon the return of the same harvest; and it was only by giving to the soil more than he took from it that the produce could be increased. The chemist showed further (to serve as a comparison), that the aliments of men and animals operated in their bodies as in a furnace where they are burnt. The urine and solid excrements are the ashes of nourishment, mixed with s ot and the produce of imperfect combustion, and the good effects that they produce upon fields are easily explained, because they supply to the land what was taken from the crops grown there but with stable dung, produced on the farm, he cannot cultivate for many years together, because it returns nothing to the land, of all its produce, which had been transported into the towns. The farmer should then endeavour to draw from other sources the fertilizing principle which are wanting in dung, and it is only by using artificial manures that he can render fertile the exhausted land. The task of the cultivator does not consist in producing, at the expense of his land, large crops of what impoverishes the soil; but he should, on the contrary, try to produce good harvests without diminishing, but rather increasing its fertility from year to year.

(Concluded in next number.)

Agricultural Intelligence.

ROTATION IN CROPPING.

EDITORS OF THE CANADIAN AGRICULTURIST:—*Sir*:—I beg to inform you that we have at last organized a Farmers' Club in our Village. They have made me President. We have had only two meetings; have some twenty-five names on our list, and expect a large increase. I am most anxious it may prosper; it is much wanted in this county. I have not met a man in the County of Kent who has the slightest notion of farming, or has any idea of rotationary cropping They are ruining the splendid land of this country, and keeping themselves in beggary.

The subject for discussion on last night of meeting, 24th inst, was the best mode of farming 100 acres, 60 cleared, 40 in woods. I made a poor attempt to lay before them some plan of rotationary cropping; you will find it, with all its faults, subjoined. I think if you would let us have a plan of a well-worked farm, something in the form I submit, it would be most valuable. You see I go back for seven years; I attempt to show the crops raised in each field for that period; then, at a glance across my seven fields, you see the crops I raised each year on my farm By glancing across the diagram, from North to South, you see opposite

EAST.

NORTH.

SOUTH.

WOODS, FORTY ACRES

SUCCESSION OF CROPS IN EACH FIELD	Field No. 1, 8 Acres	Field No. 2, 8 Acres.	Field No. 3, 8 Acres.	Field No. 4, 8 acres	Field No. 5, 8 acres	Field No 6, 8 acres	Field No. 7, 8 acres
1st year,..1857	Wheat.	Pasture, Fallow.	Pasture.	Meadow.	Spring crops.	Manured, green crops.	Spring crops.
2nd year,..1858	Spring crops, oats, barley, flax, peas, &c.	Wheat.	Pasture, fallow.	Pasture.	Meadow.	Spring crops.	Manured, green crops.
3rd year,..1859	Manured, green crops, corn, potatoes &c.	Spring crops.	Wheat.	Pasture, Fallow	Pasture.	Meadow.	Spring crops.
4th year,..1860	Spring crops, wheat, barley, &c., laid down.	Manured, green crops.	Spring crops.	Wheat.	Pasture, Fallow	Pasture.	Meadow.
5th year,..1861	Meadow.	Spring crops.	Manured, green crops.	Spring crops.	Wheat.	Pasture, Fallow	Pasture.
6th year,..1863	Pasture.	Meadow.	Spring crops.	Manured, green crops.	Spring crops.	Wheat.	Pasture, Fallow
7th year,..1863	Pasture, fallow.	Pasture.	Meadow.	Spring crops.	Manured, green crops.	Spring crops.	Wheat.

Hospital. Calf Park. Sheep quar'r. Orchard. Garden. Hog pen. Hog yard. Roots. Cow houses, &c. Barn. Stable. Work shop. Wood house.

PUBLIC ROAD.

WEST.

* Octagon Forts, or Clumps, Shelter for Cattle.

the year the crops which will be in any particular field for the year; and by looking downwards, from East to West, you see the succession of crops which will take place in each individual field during the seven years. This is the seven year shift, and I think would answer this country. I did not follow any at home, in old Ireland. My plan of cropping was as follows: 1st year—Ploughed the pasture in the fall, then oats. 2nd year—Ploughed deeply in the fall, then flax. 3rd year—I ploughed deeply in the fall, then green crops. 4th year—Wheat, spring crops, &c, laid down. 5th year—Meadow. 6th year—Meadow or pasture. 7th year—Pasture ploughed in the fall. By this plan I broke up the seventh of my farm each year. I manured each field once in seven years, laid down once in seven years, and my flax crop came no closer than every seven years, as it should do. I won't trespass longer on your valuable space; let us have your opinion on the system. I enclose you 50c. subscription for your *Canadian Agriculturist*, and I must when we get rightly to work to get a good club up for you.

Please send us a list of books you would recommend us. Yours, &c.,

EDWARD M'COLLUM.

Orford, Co., Kent, Jan. 26, 1863.

REMARKS.—The rotation proposed by our correspondent is a very good one for good loamy clay soils, although it is somewhat more symmetrical in the division of the fields than could be always carried out in actual practice, owing to natural features of the land, occasional failures of crops, &c. The occurrence of two grain crops in succession is also somewhat objectionable if it could be avoided; but a good strong soil might bear it, and the field would be in pretty good condition after being three years in meadow, pasture, and fallow. The field would be also resuscitated twice during the period of the rotation, at pretty nearly equal intervals of time, first by the manuring for the green crops, and next by the pasturing and fallow, so that there would not be any long succession of exhausting crops under the system. Altogether our correspondent, or others, would do very well by following such a system of rotation, or as near an approximation to it as circumstances would permit, on suitable soils. In practice, it is not usual to leave the fields in so long and narrow a strip on one side of a farm, but if standing on the side most exposed to the prevailing severe winds and storms, this plan might have advantages. As requested by our correspondent we suggest a brief list of books which may be recommended either for private reading, or for the library of a Club, with the prices at which they are sold, about, viz:—Stephens' Farmers' Guide, 2 vols., $5; Johnston's Lectures on Agricultural Chemistry and Geology, $1 25; The Farmer's Encyclopedia, $3; Gooda'e's Principles of Breeding, $1; Flint on Grasses, $1 25; Boussingault's Rural Economy, $1 25; Morton's Encyclopedia of Agriculture, (English) 2 vols, $12; Youatt & Martin on Cattle, $1 25; Dana's Muck Manual, $1; French on Farm Drainage, $1; &c, &c.—EDS.]

THE LATE HON. ADAM FERGUSSON.

CROWLAND, Jan. 23rd, 1863.

EDITOR OF THE AGRICULTURIST:—*Dear Sir:*—I send you the following Resolution for publication in your Journal, as passed at the annual meeting of the County Welland Agricultural Society for 1863, viz:

"Moved by T. C. Street, Esq., M. P. P., and *Resolved*:—That this meeting fully concur in the sentiments of respect expressed in regard to the late Hon. A. Fergusson. Whether as a man, a Christian, or the services rendered to his adopted country as an agriculturist, and that the same be recorded in the journal of this Society and a copy of the same sent to be published in the *Agriculturist*."

Yours truly,

A. RIFD, *Sec.*, C. W. A. S.

SMITHFIELD FAT CATTLE SHOW.

The Annual Exhibition of this long established Society took place at the usual time, about a fortnight before Christmas, in the new Agricultural Hall at Islington, a densely populous suburb in the north of London. The accommodation in Baker Street, where these exhibitions have been for many years held, having become too small, and not well admitting of more extension, the Society commenced a new building on the joint stock principle, composed largely of iron and glass, on an extensive scale, and while specially adapted to the purposes of its shows and similar objects, it possesses a distinct architectural character and is decidedly a pleasing object to behold, whether from the interior or exterior. It cost about £40,000 sterling, and such has been the successful issue of its opening, contrary to the prophecies of a number of people who felt interested in its objects, there is good reason to believe that, in addition to the Society having the most ample accommodation for its Exhibitions, the stockholders will receive a handsome return for their outlay. The Show was kept open five days, during which about 150,000 people entered; a large number paying five shillings each the first day; one shilling being the entrance for the four days following.

From the reports that have reached us the

exhibition does not appear in itself superior, except, perhaps in number or magnitude, to some of the best of its predecessors. "After Baker St.," one observes, "it takes some time before the eye can do full justice to cattle in their new Christmas home, as the magnitude of the place sadly dwarfs them." The Devons lost strength by the absence of the wonted Holkham entries; the Herefords were not specially strong in oxen and steers, lacked beauty, and a few more good looking females; while eight or nine of the latter rather atoned for the paucity and second-rate stamp of the shorthorns. The sheep were numerous and generally excellent, the Southdowns carrying off the palm. The pigs too were quite up to the high standard usually looked for on these occasions. The extensive ranges of galleries were filled to repletion by implements and machines of all descriptions, having an application to agriculture. In looking more minutely into the reports which have only just reached us, if they contain anything novel or that would be particularly interesting to our readers, we shall again refer to this exhibition in the next number.

THE BIRMINGHAM AND MIDLAND COUNTIES CATTLE SHOW.

The Exhibition which came off the beginning of this December, may now be considered as firmly established, and will form no mean rival of the celebrated and long established Metropolitan fat Cattle Show generally known as the Smithfield. The Birmingham show this year, judging from the several reports we have seen, appears to have been superior to most, if not all, of its predecessors.

The sheep were more numerous than on any former occasion, and the quality is stated as superior, particularly the Downs and Shropshires. Cotswolds were also excellent, but the Leicesters, from some cause or other, did not appear to their usual advantage. The *Mark Lane Express* speaks of the two classes of fat wethers of the Shropshire breed, as the finest ever seen together." It further observes; "Great and grand in their appearance, the Shropshires only require more uniformity of expression," to tell more in public; while the individual excellencies of almost every trio were amply sufficient to give them some standard of their own."

The Herefords, as was to be expected, mustered in large numbers, and as a breed were remarkable for their characteristic points, and uniform rate of fatness. The Shorthorns formed an excellent show both as to number and quality. Mr. Eastwood's superb cow, which we had the gratification of seeing two years ago at the Royal English Show at Canterbury has at last been well prepared for the butcher. She is described as being a beautiful, compact, hardy, and silky touching animal, 8 feet 9 inches in girth, and which before she was tied up in order to fit her for the tender mercies of the butcher, had given birth to three calves." The Devons were not numerous, and as a class, were inferior to others. The best animal in the yard was bred and owned in Scotland, and was a *cross*. The *Express* remarks:—

"But there is nothing like the force of a good example, and the best beast in Bingley Hall was again declared to be from over the Border. This ox, the property of Mr. James Stewart, of Aberdeen, is not even pure bred, but another illustration of that favourite cross —about the best out—between the Shorthorn and Aberdeen polled. He is a bullock more remarkable for extraordinary size than handsome appearance or completeness of points. At the first glance, indeed, there is nothing very taking about him, but he has fed well, and his great girth of 9 feet 9 inches will afford some index of his immense growth and development. Nevertheless the beast appears to stand rather high on the leg, and is by no means as even as some of those brought out at the last against him. At now nearly five years old, his owner candidly admits that amongst other condiments *treacle* has been an item in his very varied bill of fare. However, although no such special favourite of our own, the Aberdeen cross triumph is a very signal one, as one of the steers brought out against him for the Gold Medal was the Birmingham and Smithfield Club Gold Medal steer of last year, on the occasion the best of the aged Shorthorn Ox Class. This beast, now the property of Mr. Swinnerton, won the All England premium at Rugby, on Thursday, and a few months since was the best of all the fat stock at Leicester, where we spoke of him as terribly gone off. In the interim he has freshened up wonderfully, and showed almost as well as ever again in his old quarters, though doomed to suffer a double or treble defeat on his last year's performance, as he was not even the best Shorthorn.

Our readers will form an idea of the magnitude of this exhibition from the fact that the awards, including cups, amounted to £1825. The display of Poultry was very fine and extensive, and the "Dog Show," a separate institution however, but held at the same time, attracted a vast crowd of spectators.

CANADA AT THE GREAT EXHIBITION

From the Canadian News, Jan. 1.

We have been favoured with a sight of the report of the Jurors of the late International Exhibition as it is now passing through the press, and we are pleased to notice the very laudatory terms in which the labours of Sir Wm. Logan, Mr. Chamberlin, and Dr. Hurlbut have been mentioned, the Canadian Department being characterized "as one of the most complete illustrations of the resources of a colony

er exhibited." Speaking of Class IV., Sec. 1, being on the vegetable substances used in manufacture, the report says:

"At no previous exhibition in this or any other country has so splendid and valuable a display of the products of forests and plantations been exhibited, not only when we consider the magnitude of the various collections sent from almost every country, but also in regard to the admirable care which, in almost all cases, has been shown in the preparation of the specimens of which they were composed. Science and commercial enterprise have gone hand in hand, and we have no longer to regret that absence of correct information respecting the producing plants and other important particulars, which rendered so much that was sent to the exhibition of 1851 comparatively useless. Most of the collections now exhibited are labelled correctly, and not only do we find the scientific names of the trees attached, but in many cases valuable information respecting the qualities and quantities of the timber are given.

"In point of size of specimens, excellent selection, and information given, the Upper Canada collection of woods is undoubtedly the finest in the Exhibition building. It is contributed by sixteen individuals, and consists of plank logs, squared logs, transverse sections, polished specimens, veneers, and very extensive series of scientifically collected and named leaves, flowers, shoots, &c., &c.

"This collection further derives much of its exactness and scientific value from the exertions of Dr. Hurlburt, who appears to have both systematically named and arranged the collections and contributed to their completion in various ways."

A fifth volume of the Hereford Herd Book is about to be issued by Mr. Duckham. It will be illustrated with a dozen beautifully-executed lithographs of choice specimens of the breed, including all the first prize animals at Battersea, from sketches by Mr. Gancie. Among the entries are several from America, Canada, and Ireland, and a valuable addition has been effected by affixing to each animal a record of his show-yard triumphs. An equally convincing proof of the steady advance of "the rent payers" is to be found in the greatly enlarged list of subscribers.—*English Paper.*

Flax Production.—The Guelph *Mercury* says: "Mr. John McCrea bought in Guelph market last week a load of dressed flax from Mr. Hennyberry of Elora for $242 50. The load weighed 20 hundred, and was the produce of six acres. In addition, the seed derived from this crop is worth $120, and the tow from $100 to 100 to $150, making in all $462 50—a return which few of our farmers have realized in this county off the same number of acres from any other crop. Mr. Hennyberry erected a flax mill at Elora last summer, and mainly through his exertions upwards of 70 acres of flax were grown last year in the district. There is little doubt the quantity grown next year will be much larger. A ready sale for flax can always be had in Guelph, as Mr. McCrea will buy it up. Surely our farmers, who have of late been complaining so much of scant and uncertain crops, will see that it is their interest to try the experiment of growing flax. With a ready sale, good prices, and a sure crop, they would realize more than they now do, and would besides encourage those who are anxious to see it cultivated to build mills for cleaning the raw material, and for its manufacture."

The Dairy.

FACTS ABOUT MILKING.

As a general rule, cows should be milked twice a day.

The times of milking cows should be invariable all the year round, at six in the morning and six in the evening.

If in the early state of milk, after calving, it shou'd be found that a cow's bag becomes too full, it may be desirable to reduce the bag in the middle of the day, in which case eight o'clock in the evening will be early enough for the last milking.

The great eagerness to relieve the overpressed bag of the cow may have an injurious effect by weakening its power of retention.

It is the custom in Yorkshire to give cows something to eat during the milking, to keep them pleased and quiet under the process.

In milking the hands should be dry and clean, as wet hands crack the teats in cold weather, and dirt injures the skin.

In milking, take care that all the last of the milk is drawn off, as the last pint is richer for the production of butter than two quarts at the commencement of milking.

Imperfect or slovenly milking will dry off cows prematurely.

Annoying or disquieting cows while milking has a tendency to diminish the quantity of milk.

Milk as quickly as possible, and never leave the cow during the process.

An active milker may milk five cows in an hour.

Six weeks before the cow is to calve commence to dry the cow by milking once a day for three or four days, which will diminish the quality; then cease milking three days which will diminish the quantity.

All milking of cows ought to cease at least one month before the time of calving.

In finally drying up a cow's milk care must be taken not to leave a quantity in the bag to be absorbed, as it may produce disease.

Let the milker keep his temper and treat young cows kindly, for young animals never forget ill treatment, and a recurrence of similar circumstances will remind the cow of former punishment.—*Farmington Chronicle.*

GOOD BUTTER IN WINTER.

For the benefit of my lady friends, I will give my experience of twenty-five years, in making as good butter in winter as in summer. In the first place we suppose the cows to have been fed on good feed. After the milk has been strained, put on the stove to heat, either in the pans or in any other way thought proper. Do not make it too hot, or the cream will not rise; it may then be placed in a clean cellar, free from vegetables or anything that will give the cream an unnatural taste, or in a cupboard with a canvass door, in a moderately warm room; if in the latter place, it should not be put in until the steam has passed off, otherwise the shelves will be liable to mould. The milk should not stand longer in winter than in summer, or the butter will be bitter. In 36 or 48 hours it should be skimmed, if in a cool place, sooner if in a warm one. If the milk is thought to be too rich to give to the pigs, let it stand longer, and use the cream that rises on it for shortening or in some other way than for butter.

If the milk has been kept in a cool place, take the cream to a warm room a day or two before churning. If you wish the butter to look and taste like grass butter, grate orange carrots, put some hot water or milk to the pulp, strain and add it to the cream, which should be a little above 60 degrees when you commence churning. A common sized teacupful will color six pounds of butter. After churning, draw off the buttermilk, put cold water in the churn, and churn a few minutes, and if managed right, you will never fail of having good butter. I rejoice that the prejudice against washing butter with cold water is slowly passed away. Heating the milk I believe is an English method, and ought to be more generally practised, then there would not be so much poor butter in the market.—Bucks Co. Farmers' Wife in *American Agriculturist.*

The Poultry Yard.

ON GENERAL TREATMENT OF FOWLS.

The best guide is Nature, and we should always follow her as closely as possible in the treatment of our stock. Fowls are always grazing animals, and pick up grass, or any green food in quantities. If therefore you cannot give them complete liberty (and this is impossible where large numbers and varieties are kept), you should, at all events, allow them a daily run in a grass park. One hour's liberty is sufficient to keep them in health, and their enjoyment of this boon is so great that, even were there no other reason, that should be sufficient inducement for you to give them their bit of happiness, even at the expense of trouble to yourself.

It is astonishing how soon fowls accommodate themselves to the regulations of the establishment. A day or two suffices to make them quiesce in all our wishes, and enable them to recognise without apparent difficulty their respective yards. Fowls seem to understand the value of their hour's play, and lose no time (their door once opened) in availing themselves of it; they rush to the grass, and never cease picking until driven home. Great care must be taken that one set is put in before the other is out: this demands hourly attention, as by a moment's carelessness in allowing breeds to cross hopes, for a whole season may be destroyed. If there are several yards of the same breed, they to save time, may be allowed to enjoy each other's society during their run, as a *faux pas* in their case, though not advisable, need not be fatal; but never let out different varieties together. One single *mesalliance* will ruin the purity of the breed. At no season of the year should hens be allowed to associate with a male bird of a different variety, and if superexcellence is desired, not even with an inferior one of the same.

While the fowls are enjoying their grass run their yards may be dug over; twice a week is not too often for this operation. Occasionally a little of the soil pared off, and fresh sand strewed in its place. At all times perfect cleanliness in yards and houses, should greet the eye of the lady visitor—it is the grand requisite. At the risk of appearing didactic, I must insist upon this *sine qua non* in a poultry establishment, great or small, be it that of the "laird," or that of his "tenant." I do not say with some writers "If the floor of the house can be cleansed every morning, so much the better;" but I say, "it must be done," and scrupulously so, too. If the floor is as hard as it ought to be, a birch broom is the best implement that can be used for the purpose.

The supply of water must be copious, and of the purest description, and the dust-bath always provided with ashes for the use of the fowls. They love to roll themselves in this, scattering the contents over their feathers, to the effectual discomfort and dislodgement of all parasites. A box of lime rubbish or old mortar should be placed in a corner of each yard—poultry are fond of it, and it is conducive to their health. Once a year the interior of the houses should be lime-washed, and the floor saturated with the same mixture; this keeps all perfectly pure and free from taint.

It is good, during warm weather, occasionally to sprinkle water over the perch, and in its vicinity, scattering a little sulphur over the wet parts. This ought to, and in a great measure does, prevent the appearance of any obnoxious animalculæ, which, too often, in even well-regulated establishments, make their way good, to the torment of the occupants and their attendants. Depend upon it, the more we attend to our domestic animals the more they will repay our care.

To realise excellence demands the most unflagging zeal and energy on the part of the

tress and her servants. Every day must have its apportioned work carried out systematically, with honest vigor, in cold or heat, in rain or sunshine. Poultry must not be capriciously dealt with—a feast one day, a famine the next. Superiority cannot thus be attained. Where a hearty good will is shown by those appointed to tend your flock and a kind interest is taken by them in its welfare, you have the surest foundation for success. There may sometimes be a little difficulty in effecting reforms in management. Old prejudices and opinions, too deeply rooted to be eradicated, may be encountered; but, if the lady fancier devotes some part of her leisure time to general supervision and direction, she will soon find that her presence acts like a charm upon even the most obdurate and old-fashioned bigot, who must, perforce, acknowledge the superiority of the new over the *ancien regime*, as proved by the higher condition, greater weight, and increased beauty of the birds.

In cold or damp weather give nourishing food, and plenty of it; while in moult, the birds can scarcely be too highly fed. Amateurs, who themselves look after the wants of their stock, can best judge of their requirements, and will prefer making their own arrangements regarding a dietary table.

Never feed in haste, but watch the peculiarities of taste in your flock, and minister to them.—One fowl may starve while the others revel in luxury. As with children, their likes and dislikes must be studied. And no one kind of food forced upon them, to their disgust, and consequent loss of condition and beauty.

Where young stock, for early market or summer exhibition, is desired, the breeding yards should be made up not later than November.

If fowls are properly fed and attended to, eggs for setting will be plentiful in December.

Avoid breeding from fowls related to each other. It is a baneful system, and results in small, delicate offspring, which easily fall a prey to roup, leg-weakness, and the ills that chickenhood is heir to.

The cost of poultry keep may be considerably lessened by the proceeds of an annual sale by auction, early in the year, before the breeding season.

If the owner is known as a prize winner, the fowls will probably average £1 a-piece, and are, consequently, too valuable for the stock-can, which, otherwise, must be the destination of all that have passed chickenhood, and yet are unlikely to prove prize-takers, or desirable to breed from.

Aspic de volluile, and even cock's combs, when judiciously combined with oysters, truffles, &c., are charming additions to the *cuisine*, but it is not every hen-wife, who, like Cleopatra, can afford to dissolve jewels.

Large sums have probably been required for the purchase of the parent birds, and we value their descendants accordingly. A good foundation was laid, regardless of cost, and the progeny must not be sacrificed.

You may reduce your expenses by selling eggs for setting, at a remunerative price. No one should be ashamed to own what he is not ashamed to do; therefore boldly announce your superfluous eggs for sale, at such a price as you think the public will pay for them.

Beware of sending such eggs to market.—Every one would be set, and you might find yourself beaten by your own stock, very likely in your own local show, and at small cost to the exhibitor.

Early chickens may be hatched and sold to Edinburgh and London dealers, who will gladly give £2 per dozen, aye, and more, for well-grown, straight-breasted, white-legged chickens, moderately fat. Poultry rearers must not suppose such sums are given for any but early, well-grown, fat chickens.

Leadenhall prices are said to be exaggerated, but residents in the metropolis, during the season, know to their cost what they are, and I can verify them by my own books.

Deem not, however, that all birds sold as spring chickens are so in reality. Many are the produce of the previous autumn, stunted in growth by the hardships of winter. These the verdant housekeeper buys, and her master's guests eat them, asking no questions.

The chickens which realize such high prices are hatched early in January, and reared with the greatest care and attention to feeding.

Poultry keeping (though essentially a home pleasure) need not be limited to home. Indeed, it becomes a necessity to dispose, in one way or other, of your superfluous stock. If you breed for exhibition, you cannot too strictly limit your numbers. Out of 100 chickens, you may not be able to match more than two pens for Birmingham, and must therefore leave yourself ample room for choice. This will give an abundance to your establishment, and for the poulterer.—Chickens and eggs should be plentiful all the year round; where poultry are kept on a large scale, and the purchase of either should be unknown. By keeping those breeds that lay early, you command a supply of eggs for daily use all winter, and often have an overplus for market at its dearest season. I shall elsewhere detail the method I have found most effectual for preserving eggs for kitchen use during the scarce season; in summer they are plentiful and cheap, and as I said before, too good for market.

I think I have now given all necessary instructions for the treatment of poultry kept on a somewhat extended scale. Amateurs, who have limited accommodation, should keep only a few first-rate fowls, say a Dorking cock and two hens, two Cochin and two Brahma Pootra hens. These latter lay all winter, sit soon, and bring out Dorking chickens much earlier than the Dorking hens themselves, which are tardy sitters.

The Cochin and Brahma eggs, being dark in colour are easily distinguished from those of the Dorkings. I would advise the Cochin eggs to be used in the household, and a few of the Brahmas

to be set. A cross between it and the Dorking makes an excellent bird for the table.

The pure Dorking chickens can be sold, at good prices to other fanciers. To the breeder they are useless, and are perhaps too valuable to be killed. The original stock will last two years, at the end of which I would recommend that the male bird be replaced by a younger one, of a different strain, and then your own pullets will come into use. A few choice birds can be kept in this way at a very small cost; only one house is required, and that of moderate dimensions.—If the fowls are confined during any part of the day, they must have a yard similar to that described. If they have absolute freedom they find many means of sustenance for themselves in open fields or surrounding shrubberies, and will be in a great measure, independent of the provision commissariat. It is impossible to lay down exact rules as to feeding; experience is the safest guide.

Poultry, if penned up, with only an occasional run, live in complete dependence on the food given, which must always be regulated by circumstances. It must be borne in mind that high feeding is conducive to laying, and the eggs will always pay for the grain consumed, if the yearly average price is taken.

I have thus attempted to show that it is possible to keep poultry, even as an amusement, without loss. It pays best either on a very large or a very small scale. In the latter case it must be viewed only as a "fancy," and if the expense can be covered by the sale of extra stock, it is all that can be expected or desired. On a larger scale, the pursuit resolves itself into a system. The market must be studied for the purchase of grain, and for the sale of your produce. To show a good balance sheet, your household must be supplied during the dearest as well as the cheapest seasons of the year. Your spring chickens must come from your own yards; your eggs, at two shillings a dozen, from your own laying houses. Thus you live in plenty—nay, in extravagance, had you to purchase all you supply yourself with—and you enjoy the blessing of independence.—*The Henwife, by Mrs. F. Blair.*

The Apiary.

WINTERING BEES.

[As the keeping of Bees is on the increase in Canada, the following observations of a practical aparian, taken from a recent number of the *Maine Farmer*, will not be devoid of interest to several of our readers. We recommend the subject of Bee-culture as well deserving the attention of farmers and others living in the country.—Eds.]

To winter bees successfully in our cold northern climate, is a question of great moment with the apiculturist. There seem to be almost as many ways recommended as there are bee-keepers. Having had several years experience in this business in Northern Vermont, I have arrived at this conclusion, that bees should have for their welfare in winter, a *dark, cool, dry,* situation, where the temperature is even as possible and about five degrees above the freezing point, or 35 degrees Farenheit. In this temperature the bees will remain very still and quiet, and will require but little honey to what they would if kept in a warmer place.

In the first of my experience, I was advised to put my bees into a tight dark room in the house. I did so, and the consequence was. I lost many of my bees before spring. During the warm days in the winter, the bees would become very lively and crawled out of the hives upon the floor, and if their was a ray of light, they were sure to find it, and would there perish; if shut into the hive they would create such a heat in trying to get out that they would melt their comb and become drowned in their own sweets. This I found was owing principally to the outside temperature being so changeable and the want of proper ventilation.

Wintering bees out of doors, as practiced by a large proportion of amateur bee-keepers, is always attended with bad results, as nearly one half the stocks are frequently lost, and those that are not, are so reduced in number, that they will not swarm the coming season, there not being bees enough to permit it, consequently are worth but little to their owners. When bees stand out of doors, every warm day during the winter they are inclined to fly from the hive, and thousands of them get chilled and are lost, and where there was a peck of bees in the hive in the fall, by spring there may be but a handful left. In the Middle or Southern States, bees can be allowed to stand out of doors with safety. In my more recent observations and experiments, especially in the Northern States, I have found no place to winter bees in, equal to a dark and dry cellar.

If the hives are rightly arranged, and the cellar ventilated by opening either a door or window the night time, occasionally, there will be no loss of bees only what die of old age, and the comb will look nearly as white as in the fall previous. Bees when kept in a cellar of this kind will not make a discharge to soil the comb during the whole winter, and will consume but very few pounds of honey—say about a pound to a thousand bees; for ordinary swarms would require from ten to twenty pounds of honey. At this low temperature, the bees remain very quiet and still, and if the cellar kept perfectly dark, they will remain so during the whole winter, and will hardly know when spring approaches, which will not be the case when kept in a room above ground or out of doors. Bees frequently receive more injury

being confined in the hive on the approach of spring, than they will if allowed to fly out.

The time to put bees into winter quarters depends somewhat upon the severity of the weather, usually the last of November or the first of December: if the weather is not too cold, they may safely remain out until near January. They generally suffer more in the latter part than in the beginning of winter.

Position of the hives when placed in the cellar.—If straw or the old fashioned board hives they should be turned bottom-side up with the bottom boards removed. Their animal heat will then drive all the dampness and mould out of the hive. The only disadvantage in turning the hive bottom-side up, is, all the dead bees and particles of comb will drop among the combs in the bottom of the hive. But if there is honey enough, their will be no trouble resulting from it when the hive is carried out of doors, and placed right side up, the bees will readily clear them out. If moveable comb hives are used, the honey boxes, &c., should be removed and the hive allowed to remain right side up, with the entrance closed.

The time to remove bees from the cellar depends in a great measure upon the forwardness of the spring, and care should be taken that the weather is warm enough that the bees can safely fly from the hive and return again, always observing to never set but a part of the hives out the same day, and always place them as near as practicable on the same stand that they occupied the year previous, to avoid confusion and injury.

After the bees have all made their excursion, which they always will do on the first day, and disperse themselves, thousands of bees might then be saved by setting them back into the cellar again for three or four weeks and at the same time supply each hive with substitute for the meal which is rye meal (or common flour will answer) as bee bread or pollen is the first thing the bees will visit the fields for, in early spring. By supplying them with this useful article the loss of a large number of bees will be saved which, if allowed to stand out, would be lost.

B. P. KIDDER,
Practical Agriculturist.

BURLINGTON, VT., Dec. 1862.

QUEEN BEES' AGE OF FERTILITY.

I believe that the time which intervene between the birth of a queen and the laying of her first egg, varies very considerably, according to age, and the influences of weather and temperature.

Having raised a large number of artificial queens during the last two seasons, I have been able to notice a great difference in the egg-laying of the queens, even in cases subjected to the same influences. Three boxes were started with queen cells just sealed up, and cut out from another stock on the same day. Two of them possessed newly-deposited eggs in about seventeen days, but in the third after the lapse of a month, no eggs were visible. As, after a searching investigation on two separate days, no queen could be discovered, I determined to unite the hive to another, but when on the point of lifting out the frames for the purpose, I caught a sight of her. The frames were returned to their box, and the intention of breaking up the stock relinquished. In a few days subsequently, the first batch of eggs was deposited, so that five weeks must have elapsed, in this instance, from the time the cells were placed in the hives until the queen commenced egg-laying.

Again in another hive, earlier in the season, the weather being warmer, I do not think ten days had elapsed before a young queen, given to me the day after its birth by Mr. Woodbury, had filled a large space of comb with eggs.

But the most singular instance of an opposite character to the last, occurred in a stock which lost its queen on the 20th of September, 1861. Royal cells were immediately commenced, and a young queen hatched out some time about the 1st of October. I had not a single drone in my apiary; therefore the hive was sent out to a garden in the close vicinity of Mr. Woodbury's bees he having still a few left. Although the hive was closely examined between that date and February of the following year, yet never could I discover a single egg, and expected nothing more than to find the bees dwindle away, or the queen take to laying the eggs of drones only. It suggested itself as possible that impregnation might have taken place in autumn, late as it was, and that the queen had the power of withholding any eggs until the spring: but I must confess it hardly appeared probable that such should be the actual state of the case, and I was very agreeably surprised to find on a subsequent inspection, that she had not only been duly impregnated, but was in reality a very prolific breeder, for in March there was an immense quantity of brood in all stages of development.
—*S. Bevan Fox, in Cot. Gardener.*

Horticulture.

FRUIT GROWERS' ASSOCIATION OF UPPER CANADA.

We have as yet seen no published notice of a meeting, held about a fortnight since, of this Association, in the city of Hamilton. We are glad to hear, from a private source, that the meeting was well attended; that a very useful discussion took place on some of the most important topics connected with Canadian horticulture, and that much interest was excited

thereby. Specimens of fruit,—more particularly apples—were sent in from all sections of the Province; some of the fruit being exceedingly fine, indicating clearly that we are progressing in this attractive and valuable department of rural economy. This newly formed Association is rapidly gaining a popular and useful position, and richly deserves encouragement. We understand that an elaborate report of its late proceedings in Hamilton will be published in pamphlet form, to which we hope hereafter to have the pleasure of calling the attention of our readers.

[P. S.—Since the above was written the Secretary has obligingly furnished us with a written report of the proceedings, which shall appear in our next.

TORONTO HORTICULTURAL SOCIETY.

This Society continues to pursue a steady course of usefulness, amidst much that is discouraging. Horticulture, even in its higher branches, is doubtless making considerable improvement among us, as the increasing number of conservatories and greenhouses, in and around Toronto, Hamilton, and most of the Canadian towns, clearly attests. We counsel all true friends of this refining, useful, and delightful art not to relax their efforts, but to persevere by united action, in the belief that what is true, elevating, and beautiful, must, in the nature of things, ultimately prevail. The Report of the Toronto Society for 1862 expresses some disappointment that the citizens generally afford it so little countenance and aid, that the burthen has to be borne by so few; particularly when the munificent donation of ground that has been given by the President, G. W. Allan, Esq., for the garden, is taken into consideration. We willingly make room for the following extract from the Report, as its spirit is encouraging:—

We do not, however, wish to speak as if nothing had been done. By the liberality and energy of a few, a great change has been effected in the aspect of the Gardens, and many an eye has been refreshed by their pleasing aspect in summer. But to gratify the eye is not the only object which our Directors have in view. The Gardens should be truly Botanical, where every tree and flower which can survive our winter frosts, or endure the summer's heat, can find its proper place, and where by judicious classification and correct nomenclature the willing student may acquire some knowledge of the wondrous works of God in the examination of the infi variety of nature's products.

For the production of such a result, towa which a good commencement was made this year, under the able direction, most willin given, of the Rev. and Prof. Hincks.

The past year was marked by the three ne exhibitions of fruit, vegetables and flowers. T May exhibition is to be noticed for several r and beautiful foliage and specimen plants t graced the tables.

If any decided improvement was noticeable was in the fruit department; the cherries, plu pears and grapes being very fine. Seve beautiful specimens of orchard house tre such as peaches, nectarines and pears, la with their tempting fruit, and displayed at July exhibition, were deserving of the high praise, as reflecting the greatest credit upon th respective growers.

It is pleasing to notice the increase in t number of grape exhibitors, amateurs and oth fast discovering that at but a trifling expe the best European varieties of the grape can this climate be brought to the greatest perf tion.

Your Society, we think, may take full cre to itself for having stimulated many to the c tivation of this most delicious fruit.

TORONTO GARDENERS' IMPROVE MENT SOCIETY.

The first meeting for discussion of this So ety took place on the 19th inst., at the Board Agricultural rooms. Members present—Mess Jas. Fleming, (Chairman); Geo. Vair, C You T. Tillman, E Townsend, Robert McNish, Laughton, James Forsyth, Secretary.

The subjects discussed were the cultivati of the Chinese Azalea, and the best mode forcing the Strawberry.

Mr. Young in introducing the first subj spoke of the importance of the Azalea as a d orative plant, which may be propagated fr cuttings of half ripe wood in a slight heat, ea in the season, or in a cold frame during summer months, and brought into bloom in months from the cutting. He observed t suitable soil is an important matter. He wo recommend two-thirds peat and one-third sa

Mr. Vair thought many of the shyer growi sorts of the Azalea might be much impro by being wrought upon stocks of a differ variety, and that its value, as he considered i first class greenhouse plant, would repay t cultivator for all the trouble necessary to bri it to a state of maturity. It requires some tention during the growing season and summ treatment, to be in an open airy situation wh the wood may be well ripened.

There was some difference of opinion as whether the plants should be entirely shad from the sun, but all seemed to agree that i important to have the roots well shaded a kept moderately moist.

Mr. Townsend corroborated what had been said, adding that with proper soil any one might grow the Azalea, but without that few would succeed, giving an instance of his experience with some plants potted in such soil as he could obtain about Toronto, and which he was only able to keep alive until he had good peat imported

Mr Tillman recommended a small mixture of fresh loam, as he thought peat of itself too poor to produce good plants.

BEST MODE OF FORCING THE STRAWBERRY.

Mr. Young opened the subject by stating the usual method of obtaining good plants, which ought to be chosen from the early runners and transplanted into a nursery bed, where they may be kept clean, the young runners removed as they appear, and every encouragement given to induce them to root freely. By the end of August they may be potted in a rich loamy soil, and allowed the full influence of the atmosphere up to the approach of severe weather. When brought into the forcing house, the temperature ought not to exceed forty degrees, but may gradually increase to fifty or fifty-five degrees by the time they come into bloom, at which period they must have all the air and light that the weather will allow. They must also have plenty of water. Manure water will do much to produce large fruit, but if used too freely the flavour may be inferior He would recommend Keen's Seedling as a good variety for forcing.

Mr. Vair thought that the British Queen would also be found a good variety for forcing, and spoke of the importance of light and air, without which it would be difficult to get the fruit to set well.

Mr. Laughton recommended Wilson's Albany as a very prolific variety, stating that he had been successful in obtaining an average crop from it where the pots were plunged in the border of a grapery, and where but little extra care was bestowed upon them

There was some farther discussion, principally conversational, in which all agreed that forcing the Strawberry were deferred until after the first of March it would be attended with more success, as from that time more heat and air can be admitted than is practicable in earlier season.

Mr. Vair proposed as one of the subjects for discussion at next meeting the cultivation of the Camellia, which was agreed to.

On motion of Mr. Young, it was agreed that the cultivation of the Mushroom be also discussed.

After which the meeting adjourned until next monthly meeting, the third Monday of Febru-

HORTICULTURAL NOTES,

Made during a Tour in the British Islands and France, during the Summer of 1862.

Continued from page 27.

Leaving Sydenham and London with all their attractions, I proceeded to Sheffield intending to visit Chatsworth, the magnificent seat of the Duke of Devonshire. The weather was delightfully fine; a pleasant ride of about twelve miles over the Moors of Derbyshire brings you to the park gates of the noble domain. Passing onwards through the magnificent park of ten or eleven miles in circumference, studded over with fine old specimens of the English oak, chestnut, and other trees, crossing on the way the fine three-arched bridge which spans the Derwent beneath, from this point the road rapidly ascends to some distance, the views from thence are very fine. The expanded water with its crystal surface, the fine grounds clothed with a verdure of the most beautiful green, and covered with groups of deer and cattle, gave a peculiar charm to the scene. The house and gardens are open to the public, free of charge: you wait at the gate for a short time until a party is formed, who conduct you through the principal rooms and fine picture galleries, and landed in the flower garden, another guide conducts you through that charming department and the large Conservatory. The grounds and flower beds are kept in fine order and indicate much taste and skill both in design and execution. Passing onwards through immense masses of artificial and highly picturesque rocks, and fountains sending out their silvery spray, sparkling like brilliants in the sun beams, the noble conservatory 277 feet long, 123 ft. wide and 67 feet high is reached. It is a truly magnificent structure, the immense span and ridge and furrow of the exterior producing the most pleasing effect. The interior of the house is magnificent in the highest degree; the collection of plants can hardly be surpassed, and the broad carriage drive in the centre, the fine specimens of *Cavindish musas*, fruiting freely; many of the large *Palms* reaching to the top of the house. Ascending the stone staircase covered with Ferns and mosses, you pass round the gallery, where a fine view of the plants is obtained, such as one will not readily forget. The kitchen garden is situated some distance from the house of about twelve acres in extent. It contains extensive ranges of forcing houses, also detached houses for the cultivation of particular varieties. *Mr. Stewart*, the head gardener, was very obliging and showed me through all the houses.

There are three ranges of vineries 246 feet each, in some of the houses there were fine crops of beautifully colored grapes: and a large range of peach houses bearing good crops of *Royal George Kensington* and other approved varieties. Pine Apples are also grown here in great quantities; I saw some very fine ripe fruit. Orchidaceous plants are grown to great perfection in span-roofed houses of considerable length. The house where the *victoria regia* is grown is a beautiful structure, 68 feet in length, 48 feet wide, the roof being on the ridge and furrow principle, in the centre is the large tank, 34 feet in diameter, in which the Victoria Lily was producing its enormous leaves and flowers in great

profusion. There are also four other tanks in the angles of the house, in which various kinds of water plants are growing. Near the gardens is the beatiful villa residence of Sir Joseph Paxton, a large well-proportioned building in the Anglo Italian style of architecture, with its fine green house and conservatory on either side.

What a lesson does a visit to this Ducal residence impart! Here is a collection on a gigantic scale of the choicest productions of plants, fruits and flowers from all parts of the world, arranged in buildings equalled in beauty only by their extent, adjacent to a mansion of noble aspect and proportions, abounding in works of rarest art, and all got together and sustained at the expense of one individual, a nobleman whom Horticulturists will not fail to honor to the latest posterity. It was here that Paxton entered as a poor boy to work in the gardens, and by the force of skill and character rose to the level of the Duke's companion, and has been invested by his sovereign with the order of knighthood, and made by the public a member of the British House of Commons! True, but few individuals can reach such extraordinary distinction, but let every young gardener, however humble his lot, bear the principle in mind that talent and perseverance, when backed by good character, will always lead to promotion

Returning to Sheffield, I paid a visit to the nurseries of Messrs. Fisher, Holmes, & Co., at Hansworth about four miles from the town, just far enough in the country to grow plants free of the Sheffield smoke. I think this is one of the best provincial nurseries in England. They have large ranges of houses and grow an extensive assortment of stove and green house plants; they also grow all the new and fancy florists' flowers, and are very particular to keep the names correct. They flower all new plants before offering them for sale to prove their correctness of color and name. I purchased from them a very fine collection of Pelargoniums, Fuchsias, new scarlet or zonale geraniums, Dahlias, and other plants which I hope to flower the ensuing season. The out-door department embraces every variety of nursery *stuff* grown in England; their prices are very moderate and they are well acquainted with packing plants for the American market.

Before leaving England I had an opportunity of visiting the Botanic Garden of Liverpool, which is very attractive. The present head gardener has displayed great taste in laying out the flower beds, and arranging color to give effect. The show of flowers in the different departments was really beautiful. There is also an excellent range of houses, all filled with fine specimens of new and rare plants. Amongst the orchideous plants I noticed a very fine specimen of the Stanhopea Aurea, in full flower; several varieties of oncidium, full of bloom, Mantisia Saltatoria, called opera girls, from the curious resemblance the flowers bear to ballat dancers. Another remarkable plant, the American Fly Trap, appendages at the points of the broad stalks of the leaves, resembling a common trap, which effects the purpose of catching flies or other insects that may alight on th The collections of Camellias, Azalias, hot green house plants, are very extensive well attended to. The botanic departm (proper) of the garden contains a very l collection of plants, the different natural ders are contained in separate beds for on the grass with their names respecti placed at the end of each bed. The gar are open to the public free of charge. large ornamented park outside of the gar affords a pleasant place of recreation to public.

Birkenhead Park opposite Liverpool signed by Sir Joseph Paxton, and formed der his inspection by Mr. Kemp, is a deli ful retreat from the smoke and bustle of city. The grounds are capacious, and manner in which they are arranged in rela to water, drives, &c., renders them peculi intricate, affording an endless variety of fe every few yards pesenting fresh scenery the delighted eye to contemplate and adm

Mr. Kemp is the author of the best me work on landscape gardening, and is e sively employed as a professional. He is the agriculturist of Birkenhead Park, and management certainly reflects on him g credit. The parks and public promenades so common in most of the principal cities towns of Britain are among the princip tractions of that delightful land.

JAMES FLEMIN

(To be continued.)

Veterinary Department.

ON HORSE SHOEING.

On Thursday, 22nd ult., MR. ANDREW S. Veterinary Surgeon to the Board of Agric of Upper Canada, delivered the inaugural le to the course on Agriculture and Veterinar now in course of delivery to a special cl Agricultural Hall, in this city. The atten was numerous and respectable. Col. F Thomson, President of the Board, intro Mr. Smith, and made a few observations e atory of the nature and objects of the lec Mr. Smith commenced by giving a famili position of the anatomy and physiology

horse's foot, from prepared specimens of the different parts, and proceeded as follows:—

Having thus briefly given an outline of this most beautiful and complicated organ, you will now be able to understand how such a delicate structure as the sensitive foot is preserved, and [illegible] sustain the weight which is constantly [illegible] weight upon it, in galloping, leaping, pawing. When man takes the horse and subjects him [illegible] changes incident to domestication, when [illegible]ized roads and causeways are substituted [illegible] soft lawns and pastures, we find that the [illegible] itself must have some artificial protection, to prevent it being worn down, as well as to enable the animal to perform the work required of him.

Accordingly we find, that, from a very early period, a covering in the shape of a shoe was provided for the hoof, so as to protect it from the tear and wear to which it is necessarily exposed in travelling.

Archæologists have paid but little attention to the history of horse shoeing, consequently we find it difficult to determine the precise time when horse shoeing was first practised.

The Romans, we are told, used a covering, probably woven of hemp or rushes, which enclosed the whole foot, and was tied by a cord round the fetlock—this however must have been inconvenient and troublesome, as they would require to be removed repeatedly in the course of a journey; something more durable had to be substituted, so we find that mention next made of iron shoes. Writers are not agreed as to the exact manner in which the Romans attached these iron shoes to the horse's foot; some suppose that they were fastened by means of a leather sock, which was bound round the foot by a thong of the same material. Others again suppose that they were acquainted with our modern methods of attaching them, and this last opinion is in some measure confirmed by the discovery of old horse shoes in some of the Roman remains in England, having the nail holes perfect and of a square shape.

It is evident that the Britons had some sort of protection for the foot of the horse, either at the Roman invasion or soon after, from their having a name to it;—they called it *Pedol*, from the Celtic *Ped*, a foot.

Some suppose that horse shoeing in Britain dates from the Norman conquest. This idea very probably arose from the great importance which William the Conquerer attached to Farriery. It is not so much my intention to enter into the history of the art as practised by the ancients, as it is to bring before you the most modern improvements, and point out the plans which I consider the best.

In applying a shoe to the foot it should be made not only so as to protect the foot against wear and wear, but likewise so as not to injure the foot itself by bruising the sole. A great deal has been written and much more said, as to which is the best method of accomplishing this object. It would be useless for me to describe the many different plans which have been invented, as almost every country has its own plan. But that which is now become most general, and which is found to answer all purposes best, is the *common seated shoe*, which was first proposed and made by Mr. Osmer, and somewhat improved by Morecroft. It is made of the same breadth all round, presenting a flat surface to the ground, except the fullering for the nail holes around the margin,—the upper surface, or that on which the foot rests, is made flat round the outer margin for the crust to rest upon—this flat part, (the seat) being broader at the heels to support the heel of the crust. The inside of the web is well bevelled out, and made concave, so as to allow space for the descent of the sole; it is generally secured by from seven to nine nails; that is when nine, 4 in the inside and 5 on the out; and when seven, 4 outside and 3 inside.

Since the time of Osmer and Morecroft, a great many have written on the subject and proposed different forms of shoes, each possessing their own advantages, but none I think surpassing the seated shoe for general purposes. This is the shoe recommended and used by Professor Dick of Edinburgh, who has bestowed a great amount of attention to the shoeing of horses. In his manual of Veterinary Science he says:—After a personal experience of nearly fifty years in the service of the profession, commencing with the practical art at the anvil, and pursuing a long course of anatomical study, and being brought into daily contact with the horse, through practice, and clinical inspection, and otherwise, both in a sound and unsound state. I have come to the conclusion that the whole art of shoeing consists in applying a shoe so that it will serve as a defence to the shoe without injuring it—this is best done by what is called a seated shoe. Among those who have written on this subject, besides the above named, may be mentioned: St. Bel, Coleman, Bracy Clarke, Goodwin, J. Clarke, of Edinburgh, James Turner, and more recently Mr. Miles, Stewart and Col. Fitzwygram. We will touch on some of their plans when we come to speak of shoes for special purposes.

I have here what I consider a fair specimen of the seated shoe. The fullering should be made coarse, that is, not too near the margin, else the nails will have to be driven obliquely inwards and upwards, so as to get them high enough. This is apt to lead to pricking, (that is penetrating the quick with the nails,) or the sensitive parts are readier bruised by the shoulder of the nail. This is an error into which horse shoers are very apt to fall; in fact, in many cases they are driven to it, as gentlemen who do not understand the principles of horse shoeing, sometimes find fault with the fullering being coarse,—thinking that the shoe is badly made. When pinched coarse they are easier driven.

We now come to a part of our subject which has been largely discussed, viz., the number of nails required to hold the shoe on the foot.—I believe myself, the fewer the better; that, no no one can doubt, but I think no number can be specified. For it is evident that the great heavy shoe of the waggon horse must require more nails to hold it on than the light made shoe of the lady's pony.

Every one who has any experience among horses, know sthat some feet will hold the shoe firmly on much longer than others; one horse will retain his shoes from two to three months, while, perhaps, his mate requires his shoes fastened every fortnight—you must be guided by circumstances, by the foot you have to shoe, the kind of shoe you have to apply, and the work the animal is to be engaged in.

About forty years ago when contraction of the foot was thought to be the cause of the lameness known as "navicular lameness," almost every veterinary surgeon experimented to discover the cause of contraction. Bracy Clark came to the conclusion that it arose from the fixed condition of the foot produced by the nails, to obviate which he endeavored to dispense with the nails altogether. He introduced a Russian shoe, which is made with a band of iron clenched on, and made so as to encircle the foot, and is fixed by a catch in front to prevent it slipping off. This, as well as some other experiments of the same nature, proved quite unsuited to our roads. Mr. Miles, in his work on shoeing, gives a number of experiments which he made on the subject of nailing. He came to the conclusion that for all horses five nails are sufficient. Lieut. Col. Fitzwygram says that five nails are sufficient; three on the outside and two on the inside. I think that for heavy horses eight nails are needed to hold the shoe firmly on; that is four on each side,—for light horses seven and ponies six.

The nails on the inside should be placed well towards the toe, and those on the outside placed the toe nails opposite the second nail on the inside, and the remaining three divided evenly towards the heel; but of course when the foot is broken, they must be placed where they can be best got in.

For horses used for heavy draught, the heels should be turned down or what is termed calkins raised on the heels, which gives the horse a firmer catch of the ground and prevents slipping. The power of the animal is much increased by having a toe, that is a piece of square iron welded across the toe of the shoe. Many eminent men denounce calkins altogether because "they interfere with the fair and level bearing of the foot on the ground," because they remove the frog from that degree of pressure which is necessary to preserve it in a healthy state, and enable it to perform its functions." Some also suppose that they increase the tendency to sprains and spavins. Shoeing at the best is an evil, but it is a necessary one, and calkins may also be an evil, but we find it advantageous to use them, because we can increase the animal's power greatly by their use. In fact we find that these objections are more theoretical than practical; for we have horses with as good feet and as sound limbs that have been shod with calkins as those which have been shod without. For saddle horses and horses used only for light work, calkins are unnecessary. For light horses I would advise the shoe to be made plain, of the same thickness all round, and the heels nicely rounded off; it will be found advantageous to turn up the toe of the fore shoe, which will lesson the leverage on the back tendons, and consequently the liability to strains, and it will break the concussion and prevent tripping or stumbling.

We come now to a most important part of our subject, viz: the preparation of the foot for shoeing.

There is no part of the art of horse-shoeing which is so easy to understand as how the foot should be prepared for the shoe, and there is none more important. Yet it is in preparing the foot that the greatest errors are committed and the most mischief done.

Great diversity of opinion exists as to whether the sole should be pared or not. One high authority directs "the crust to be levelled with the rasp, so as to present a level bearing for the shoe. The sole to be moderately thinned so as to preserve the elasticity and natural action of the parts; the rags or loose parts of the frog only to be cut away." Another authority says, "to thin the sole till it yields to pressure from the thumb." Whilst another equally good authority says of the sole; "It is the natural protection of the delicate internal parts, is infinitely superior to the leathers and pads substituted for it; and if left in its natural integrity will protect the animal from many a bruised sole, and his owner from many a break down."

I concur with the last writer in saying that the sole ought not to be touched in the *healthy foot*. For instance take a colt that has never been shod, and I say never let a knife touch his sole, if you want to keep his foot strong and sound; nature has provided that sole to protect the delicate internal structure.

The horse was intended to run, not on macadamize roads but on the soft grassy plains If such protection is necessary in his native wilds, how much more is it necessary on our hard stony roads?

It is often advanced against the non-paring of the sole that it becomes thick and destroys the elasticity of the sole, and acts as a foreign body, bruises the sensitive sole, and so produces lameness. Such undoubtedly is often the case; but why is it so? Is it not because the foot has been pared and pared at every shoeing, thined so as to yield to the pressure from the thumb. What else can be expected than that the sole will become tender from being thus exposed? If it yields to the pre-

of the hand, how much more will it yield
the pressure of a stone, when the whole
ght of the horse is thrown upon it? Now
must be constantly occurring when the
ral protection is removed, and frequent
es must in the end render the sole so ten-
that even its natural thickness will cause
and lameness, and consequently necessit-
its regular removal by paring, and the sub-
tion of leather and stuffing.

hus it is that paring has become necessary
me cases:—but why render it necessary
beginning at all? Why not allow the ani-
the protection for his foot which nature has
him?—Some will say,—How is the sup-
s horn to be removed, if not by the
? Nature has arranged the fibres of
ole in transverse layers, which exfoliate
les, or flakes, in due time;—the under
pushing off the upper; which till thrown
ts as a covering to the under layer, and
rves its moisture, so that although the
layer may appear hard, the under layers
ill soft and elastic.

e frog must never be touched except, per-
to cut away the loose rags, and even that
be unnecessary. The crust should be
down level, the old stubbs carefully re-
d, and the toe shortened; the heals
d be left strong and the bars must not be
ed with a knife.

e foot being thus prepared, the shoe is
o be fitted. It must never be applied
hot. However a little heat is generally
sary for the shoe to get a level bearing.
st the closely on to the crust at every part,
t at the heels, which may be slightly
g.

good feet the nails must not be driven too
the hold of the nails should be solid and
and as even as possible. The rasp
l not be used to the clench, except to
n it, if too long, but it must never be
ned. The hoof should not be furrowed
y the clench in, but the clench turned
full strength, and well hammered down,
can always be done if the crust is not
l by rasping. The use of the rasp to
the outer wall of the roof must be inter-
as it leaves the crust weak, porous and
by removing the external unctuous
ng of the crust, and consequently pre-
es to sand crack, &c. In cases where
es have been kept on too long, it is fre-
y necessary to use the rasp to remove
perfluous hoof, so as not to allow it to
beyond the shoe, but in no case allow
e used above the clenches. To preserve
t in good condition the shoes must be
ed every three weeks or a month. It is
able to have new shoes at every shoeing,
are generally more comfortable. When
e is worn for a great length of time,
l holes become wide and the seating
ollowed by the friction of the crust.

Having this hurriedly glanced at the principles of shoeing in general, I will now make a few remarks on shoes for special purposes.

1st. To prevent slipping on the ice. For this there are a great many plans in use—the most common is to sharp the calkins and tips on the toes;—the outside heel should be sharpened transversely, and the inside one longitudinally, so as to prevent cutting the other foot, and also prevent lateral slipping.

2nd. To prevent interfering, cutting, or brushing. The shoe must be kept fine on the inside, and the margin rounded off; this will prevent it in slight cases, but in bad cases the nails must be placed around the toe and outside, so that the inside might be kept fine, and there will be no clenches, which frequently are the cause of the cutting, by being raised. The crust may be allowed to overlap the shoe a little, the inside heel should be raised by being thickened, and the outside heel kept low—in this way the fetlock is thrown more out of the way of the other foot.

I have here a shoe for the hind foot which is found effectual, even in the worst cases, when properly fitted. It is made you will observe similar to the common feather-heeled shoe, except the nails are round the toe, and and the feather rises from the inner margin of the heel. By the use of this shoe, when properly made and fitted, the boot may, in most cases, be dispensed with.

In shoeing to prevent interfering, it is necessary that the farrier should know what part of the shoe cuts—this may be known by binding a piece of cloth round the fetlock, and rubbing it over with pipe clay; then by trotting out the horse, the mark will be seen on the shoe at the place where it touches, which must of course be kept closer. For speedy cut the same principle should be observed.

For tripping or stumbling—the toe must be shortened, and the turned up toe shoe applied. This is a system of shoeing which Mr. Hallen, V.S. to the Inniskillen Dragoons, has practiced in the army for about twenty six years. It certainly has many advantages besides preventing stumbling. It removes a great amount of leverage from the tendon, consequently, in a great measure, it prevents strain of the tendon; it also breaks the concussion which the foot has to sustain with the ordinary flat shoe. Lieut. Col. Fitzwygram, directs it to be made thus:—Let the shoe be made with a narrow web (three-fourths of an inch) of even width, except at the heels, flat towards the sole, concave towards the ground.

Turn up the toe of the shoe, (nearly from quarter to quarter) on the horn of the anvil. The degree to which the toe is to be turned up is to be regulated by what you find necessary in each horse to make the wear of the shoe (nearly) even all over. A simple method, and one which in some cases answer very well, is to champher the toe of the common shoe over

the heel of the anvil; but the most effectual plan is the turned up toe.

Clicking and forging, are the names given to a habit common to young horses, of striking the toe of the hind foot against the ground surface of the fore shoe, which produces a disagreeable clicking noise. It is caused by a quicker action of the hind than the fore leg, in general the noise is all the harm it does, but in some cases accidents happen by the toe of the hind shoes catching the inner margin of the toe of the fore one. This can seldom be wholly got rid of, but may always be palliated by proper shoeing.

The fore shoe should be made concave, so as to prevent the hind shoe catching in it; the hind shoe should be kept well back and instead of one clip immediately in front, it will, in this case, be better to have two, one on each side of the toe. By this means the shoe can be kept further back and the toe can be left to project over the shoe.

Shoeing for corns. The bar shoe—or three-quarter bar is the best. Every person is familiar with the bar shoe, but many horse shoers misunderstand its use. From mistaken notions about the frog they seldom give it the pressure which it is intended to receive by the bar shoe, the bar must rest on the frog so as to remove the pressure from the heels.

Scours in Sheep.—In case of their being thus attacked, a small dose of castor oil should be given to remove any offending matter from the bowels, after which four grains of opium and one oz. of chalk, and then put them upon dry food.

To Cure a Founder in a Horse.—The secret of curing founder is to commence at an early stage of the disease. A writer in the *S. W. Farmer* recommends bleeding first thing, then make your horse swallow about a pint of salt, and bathe his feet in spirits of turpentine; and it is asserted he *will be well in one hour.*

Recipe for the Hoven in Cattle.—The Hadleigh Farmer's Club, recommends the following recipe for blown or hoven cattle: 1 lb. glauber salts, ¾ lb. of treacle, and 1 oz. of ginger, mixed with one pint and a half of warm water. Powerful stimulants, such as ammonia, are also recommended.

Editorial Notices, &c.

Blackwood's Magazine, for December; *Leonard Scott & Co., New York.*—We regret to learn that the destruction of the establishment of these enterprising publishers by fire has been the occasion of the delay of the appearance of the concluding number of *Blackwood* for the past year. The friends of cheap and wholesome literature will, however, be glad to learn that the re-printing of the leading British Reviews will be continued as heretofore, and will be characterised by the promptness and accuracy which have for many years characterised Messrs. Scott's establishment. The current number of *Blackw* is full of interest and attraction; the art on "British North America" should be carefully read by all, at this juncture especia who feel an interest in the safety and p perity of these important Provinces. Thi a good time for subscribers to commence ing these cheap and valuable publicati *Blackwood*, $3 a year; the same for *Review.* But all four Reviews, with *Bl wood's Magazine*, are offered at the mar ously low price of $10!

The Horticulturist and Journal of ral Art: *Edited by Peter B. Mead G. E. Woodward*, 37 *Park Row*, *York.*

The Gardener's Monthly and Horti tural Adviser: *Edited by Tho Meehan, and published by W. G. Brinckloe*, 23 *North Sixth Street*, *Philadelphia.*

We have received the January numb these two excellent periodicals, both of w continue to maintain the high position have won, notwithstanding the unh troubles which still afflict our Ame neighbours. The *Horticulturist* is an servant in the, we were going to say, fiel rather garden; though the mere farmer learn much that is valuable from its well pages. It was commenced in 1846, an many years conducted by the celeb Downing, and is still as fresh and instr as ever. *The Gardener's Monthly* has entered on its fifth year, and has kept with the progressive advances of the Hor tural art. From its pages the practical cannot fail to gather a valuable mass of mation. Its price is $1 50 per annum; of the *Horticulturist* being $2. A cons ble deduction is made from the price of by clubbing. We can conscientiously mend either of these periodicals as fully the science and practice of the day, an any one interested in the subjects of they treat, would find it greatly to his tage to take *both.*

TORONTO MARKET PRICES.

TORONTO, JANUARY 31, 1863.

Fall Wheat, per bushel	$0 92	to	$0 95
Spring Wheat, "	82	"	85
Barley, "	90	"	1 00
Peas, "	54	"	56
Oats, "	40	"	42
Rye, "	56	"	
Pork, per 100 lbs., ...	3 60	"	4 12½
Beef, "	4 00	"	5 00
Mutton, "	3 00	"	4 00
Potatos, per bushel, ...	55	"	65
Apples, per barrel, ...	80	"	1 25
Turnips, per bushel, ...	18	"	20
Onions, "	1 25	"	1 50
Fresh Butter, per lb., ...	15	"	17
Tub Butter, "	12½	"	14
Eggs, per doz., packed 15c, fresh, 20c.			
Turkeys, each	55	"	75
Geese, each, ...	40	"	50
Ducks, per pair	40	"	60
Chickens, "	30	"	40
Hay, per ton, ...	10 00	"	20 00
Straw, "	8 00	"	12 00
Hides, per 100 lbs.	4 50	"	5 25
Calfskins, per lb.	9	"	
Sheep-skins, each	1 40	"	1 50
Wool, per lb.	30	"	32

THE CANADIAN AGRICULTURIST

AND JOURNAL OF THE

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Aug. 30th, 1862. 6-mos.

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Further particulars may be known by applying either personally or by letter to Professor Buckland, University College.

Contents of this Number.