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THE CANADIAN AGRICULTURIST,

AND Transactions

OF THE
BOARD OF AGRICULTURE OF UPPER CANADA.

VOL. V.

TORONTO, SEPTEMBER, 1853.

NO. 9.

EXHIBITION OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The Annual Show of this important Society was held at Gloucester, on the 13th, 14th, and 15th of July, and, upon the whole, it has been pronounced by several competent authorities as equal to most of its predecessors: in Implements it was superior to any of them. As there are several particulars belonging to this great national gathering that will interest many of our readers, we propose laying before them as detailed an account as our limited space will permit, for which we are principally indebted to the elaborate and carefully prepared Report of the *Mark Lane Express*.

After considering the relative advantages and disadvantages of the site chosen for the show, and the satisfactory results which were found to obtain, the *Express* observes:

"Still the Gloucester Meeting was not without some little difficulty or so to contend against; and the worst of these came in the way of a prejudice. It had been announced some time since that the Society was at last going to act up to its original intentions, and that a show of breeding stock would become what it professed to be. Pigs that could not stand, and sheep that found a difficulty in respiration, were no longer to be considered as in the height of condition. An animal, it was judged, should have something of a constitution as well as a character; and that when he was purchased for the express purpose of improving a breed, he might be really found capable of doing so. Nothing has brought the Agricultural Society into so much ridicule, nothing has tended so much to retard that common feeling of esteem and respect it is now coming to be held in, as the systematic manner in which the procreative powers of prize animals were thus abused. The Council or Directors of the Society, though of course fully cognizant of the evil, were

long before they could gather courage sufficient to grapple with it. To the late Lord Ducie, indeed, the credit is almost entirely due of having in his official capacity unhesitatingly denounced the practice. He followed this up, too, by taking the several opinions of those practical men who had acted as judges of stock at the different meetings. These were found so far to agree with him, that a plan was submitted for disqualifying any over-fed beast from coming into competition for the prizes offered by the Society.

It is only right to say, that however well the world at large might be inclined to welcome this, the breeders themselves have thus far taken it by no means so kindly. As one gentleman stated in the *Mark Lane Express* of last week it has been looked on by many as the only "death-warrant" of the Society. We hear that very many animals were kept at home, with the fear of this wholesome regulation before the eyes of their owners; although we believe their apprehensions must have extended the limit of the prohibition far beyond where it was actually taken. In the yard, still, there was very gratifying evidence of what this mere announcement, of itself, had effected. You came upon lively pigs; active, healthy-looking sheep; shorthorns with something of an outline; and Devons whose beautiful symmetry was allowed to develop itself fairly and honestly to the eye of the spectator. It would be wrong, however, to record the effect of this prologue as altogether general in its action. There were many old offenders yet at their old tricks of pampering; and many that, we must add, again escaped unpunished. One of the first "sights" that attracted the visitor, on entering at the bottom of the yard, was a white breeding sow, with a litter of pigs at her side, in such a hopeless state of obesity that the jury at once rejected her. With her, in the same condemned list, were associated a couple of rams, which, like the Romans of old, preferred taking their meals in a reclining position, and could by no means be induced to get upon their legs. These, though, were very rare exceptions: in fact, as we have heard, there was considerable difficulty in persuading the juries to disqualify anything; and any improvement which was observable—and there was a considerable advance in this respect—was far more attributable

to a dread of what these gentlemen *would* do than what they *did* do. Unless such duties be a little more strictly performed, the abuse will soon regain its former height, and the Royal show in July and the Smithfield show in December come again very much to the same thing—a least in appearance.

We are well aware there is some difficulty here. The grand object to attain is an animal that will fatten cheaply and quickly, and with some it may be almost impossible to show them low in flesh. Still we are inclined to regard this, as far as the Royal Agricultural Society is concerned, as rather exceptional than general. For one beast or sheep exhibited that has been kept down, how many are there fed up by almost every conceivable, and too often, as we fear, injurious means. At the meetings of the Highland Society the animals are shown in a far more becoming condition; and it is well known that prize animals from the English have been rejected almost immediately after at the Scotch meetings, from the overfed state in which they were sent. In 1843, for instance, some of Mr. Bates' shorthorns took the prizes at Liverpool, and thence went direct to Berwick-on-Tweed, where, though greatly admired, they were at once refused. What we in England had passed over, our northern friends declared was not in a fit state to regard as a breeding animal.

"We have dwelt thus long on an abuse that we feel the Royal Agricultural Society has yet to deal with. The jury system does not promise to answer; while we can only add, that if the judges will do their duty, there can be no occasion for the services of this new set of officers. We believe there are no juries in the Scotch Society.

"The Royal Agricultural Society has long been regarded as the landmark of English agriculture. It is both the index and guide to our progress. As such we may record it as never having looked or promised so well. It must number day by day more members, fuller meetings, and greater results. If, then, in our present notice, we have dwelt somewhat more on its few defects than its many virtues, it is only with the best intentions, and with the one hope that the more the former are exposed, the more likely are they to be removed. Of the general management, of the gratuitous services of those gentlemen who year after year devote their energies to the Society, it would be difficult to speak too highly. They are the farmer's friends indeed; and if he cannot appreciate them without our word, we are afraid he will be as little likely to do justice to himself as he is to them."

HORSES.

The prize stallion of the year was a Suffolk horse, of very great power: the heavy bulk was less than of previous years, and the general appearance much more active and muscular. The neck was rather disproportionately short, and the head large—two qualities which adhere to the horses of Suffolk. The bones of the legs were thin and flat, with large joints and broad caps, all signs of bodily vigour. The hind legs were long from the hock to the turn of the thigh, but not so

much as to form a very serious objection. The feet were large and well adapted, high rather than flat, and tapering with the proper direction of point. The color was the characteristic of the breed—chestnut, with a lighter shade in the mane and tail, and the well-known white stripe down the face, dotted betwixt the eyes, and losing the white in a point before reaching the nose. In this animal the stripe scarcely extended beyond the dot, and in that respect a small deficiency existed. The body was very compact, close, and well-ribbed, coming quite up to the character of the "Punch"—the old distinctive name of the Suffolk horses. This stallion formed much the best of many shows, and the judges could have experienced little difficulty in making the award.

The second prize went also to a Suffolk horse; and in this award similar merit must be allowed, but with more qualification. The body was deeper than that of the last animal, and the leg shorter, while there was wanting the appearance of muscular activity which is so very desirable in draught horses. On the other hand, the neck longer, and the shoulder more oblique and tapering, and the arm wider and more powerful. The color was better, being darker, and more hardy in appearance. The legs were faulty, being thick in flesh and round in the bone, capped knees, and fall thorough pins. No objections could be found in the second merit in this case, owing to the heavy body and disproportionate appearance of muscular activity. The two awards could not be disputed.

The first prize of the younger stallions was also a Suffolk horse, of considerable promise as a draught animal. The color was the best of all the Suffolks that were exhibited, being a very dark chestnut over the whole body, and nearly annihilating the whiter mane and tail and the white dot in the face. We like a dark color, as denoting a hardihood which should attach to every animal of exertion. The fore-quarters of this young horse were strong and powerful, probably somewhat coarse, especially in the legs; the neck was lengthy, crest high and well arched, joining the shoulders in an elevated taper of the withers. The head was comparatively small, and the ears fine and agile—a good property in any refined organization; on the other hand, the hind parts were objectionable in the quarters, coarse joints, and the knees standing cow-legged. These last properties are rather heavy objections in horses of any kind.

The second prize for young stallions was given to a Suffolk horse of more promise than the last award. The fore-legs, shoulder, and neck were far superior to any horse of the show, being straight and clean, oblique and well arched; the head small, and finely tapered to the nose, broad betwixt the eyes, with the proper white dot. The hind parts were not quite so good, being rather long and lean in the thigh. The bones of the leg were clean and thin, and the feet hard-hoofed with lengthy pasterns. The body was uncommonly close and well ribbed, and deep and round, with proper length. The neck, though short, was finely arched from the withers to the root of the ears. The arm was very wide and powerful for a horse of two years old, and the whole symmetry

appeared to our judgment as being very far superior to any horse of the exhibition. In this opinion we were joined by the majority of the inspectors of animals.

The prize for roadster stallions went to Yorkshire, in a very handsome animal of moderate size, but most complete symmetry. The body bay in colour, with black legs, mane, and tail, were truly Yorkshire, and their properties were never better represented. The lengthy neck always attends these animals—a sure sign of muscular power and action. In this horse the neck was sufficiently long, but thick at the junction with the head, which was itself straight in the face, and hollowed downward from the eyes to the nostril. The contour was handsome, but the whole animal was too small for the special purpose, and too slender in the bone. We fear to put our opinion in opposition to the judges; but our conclusion is in this case supported by many very eminent inspectors.

The prize for stallion ponies rested near Bristol with a roan-coloured pony with a cream-coloured mane and tail. The fore and hind feet being white above the fetlock halfway up to the knee, appeared to us to be too gaudy, when joined with a white face from the ears over the nose. But uniformity of colour is not to be expected in those mountain breeds of animals where the sexual intercourse is altogether unrestricted, and the animals copulate at random. The animal here shown was not a pure Welsh horse, but showed a mixture with some lowland animal of a small kind. The general symmetry was not of the character of Welsh ponies, the best of which are the most handsome of all horses in miniature.

The winner of the prize for mares and foals went to a heavy animal, with a width and depth of carcass almost unequalled. The head was large and heavy, with much white on the face, shoulder low and thick, barrel deep and flat, the legs round and groggy. The neck was short and flat, and low in the withers. The short rib very flat, and the hocks very flatly rounded. Having agreed with the judges in every award of the horses, our opinion differs on such forms as this animal being selected for breeding, as perpetuating the long exploded heavy carcasses for the purpose of quick and active muscular exertion. This case bears most directly upon the point—the head of the mare was half as large again as one of the proper symmetry. The girth was also lean, which shows a want of room for the necessary bulk of lungs, and their consequent action.

The Suffolk mare of Prize 2 showed a symmetrical form, very far superior to the last-mentioned animal of the first prize. The stretching length of body pleased us much, as denoting a muscular activity, and joined with a lengthy neck constitutes a good form of the draught horse. The head was large, the jawbone being broad and rather deformed. The shoulder was not of great depth, nor was the neck well crested; but all other parts were unexceptionable, and our award would reverse that of the judges, and give this mare the first prize, and that on the score of general merits.

The prize for mare ponies was joined with that of stallion ponies, the winner being a thorough

black mare, showing little or no Welsh blood. Both prizes have been produced by lowland mixtures, and did not at all represent the merits of the Welsh animals of the hills. But the judgment may not have been restricted to the special breed, though it would have much pleased the Welsh mountaineers to have been so.

The first prize of two-year old fillies rested with a Suffolk of no great merit; certainly a most faulty award to a very short neck, a head as long as the neck, flat ribs, and very hairy legs. But the animal showed much power in a lengthy carcass, high shoulders, and great strength of leg in bone, if not of muscle. The shoulder and seat of the collar were almost upright, and totally deficient in the oblique taper to the withers. This short statement quite suffices for such an animal.

The second prize was given to an animal of very similar merits, neither of them possessing scarcely any two points of excellence. The colour of this second filly was good, viz., a bay coloured body with black legs, which when well defined constitutes the most handsome and fashionable of any colour of horses. Here the bay was light and sandy, and wanted the blood-redness; and the black of the legs was mixed with whitish hairs, which spoiled the character. The neck was uncommonly short, and the head as long as that part of the body. The wither was higher than in the first prize, but the shoulder was equally heavy, and the carcass lumbering. These two specimens were the worst in the show of prize horses.

The Suffolk stallions far surpassed the animals of former shows, being lighter in the carcass, more lengthy in the body, longer in the neck, more sprightly in their appearance. The superiority to their other exhibitions could not be disputed, and the general merit of the horses has obtained a very large confirmation. A smaller head and cleaner legs are much to be desired, even in the opinion of the owners themselves; and along with a larger neck and a lighter belly, would go far to establish a breed of horses unequalled in Britain. The foundation is good on which to build, and the beginning has been made in a very considerable advancement beyond the former exhibitions. The uniform colour forms a large commendation, and also the general form of body.

With some two or three exceptions, the unsuccessful exhibition of stallions formed a group of animals of a very mediocre description, almost beyond any show that comes to our recollection. Heavy, lumbering carcasses, thick legs, stiffly upright, with a largely intermixed variety of colours, showed the very different opinions entertained on this point; and much prejudice, conceit, and ignorance must have concurred with the owners of the horses, ere the inducement was obtained to submit to the public gaze such unpolished specimens of the horse—by far the noblest animal that treads the earth. Our own opinion is never able to depart from muscular power and action for the purposes of exertion; no short, heavy fat carcass, like a pig, ever could obtain our approbation for a draught horse. The phrase of "throwing weight into the collar" has been heard from the veterinary school of anatomy; but weight must

be put into action by some motive power, and such a strength as is able to support the required exertion. This power in the horse is muscle, with bone, which it is able to lift with ease and freedom as a lever; with the flesh, or muscle, sufficient to fulfil its purpose of connecting the different parts of the body, and hold them together; but not in an abundance, to form a load for the muscular power. Such are our ideas, which are always freely expressed on every proper occasion. We think general opinion is now tending this way; it has long thus prevailed all over North Britain, where horses are more usefully adapted for active purposes. Our pleasure was very considerable to see the Suffolk horses improved in this respect; and, with the foundation that exists, something like perfection may be expected.

SHORTHORNS.

The shorthorn bull of this year was the property of Lord Berners, of Leicestershire; one of the new winners in this department. The animal was coloured in a strawberry roan, with large white spots; and possessed a very superior merit—at least in the show of this year. The head was rather large on the side view, but in front the width betwixt the eyes was very becoming, and the muzzle well tapered. The shoulder was rather narrow on the top, with a rise on the commencement of the back; the flat top width betwixt the hock bones was very superior, and the root of the tale was well set, though rather high. The thighs were deep and wide, as is usual with the shorthorn breed, and fleshy nearly to the hock. The flank was hollow and lean where joining the hind leg, and the short ribs were widely home. The animal was very respectable though only a second-rate bull of that celebrated breed where the foremost specimens appear. The horn and tail showed a hardy constitution, these extreme parts denoting a proper degree of refinement of organization as much as any others. This animal was purchased at a long figure by Messrs. James Ganley and Sons, of Usher Quay, Dublin, for the Hon. Mr. Harmon, of the County of Longford, Ireland.

The second shorthorn prize, which took the first at the late Plymouth meeting, was a less animal than the first, and with nearly equal qualities. The colour was lighter with more white in the roan. The head was faulty in a protuberant face, which is as objectionable as the concave formation. A large hollow appeared behind the shoulder, which makes a lean girth, as often happens with that breed. The inferiority was most evident by the first prize, and no mistake could be perceived in the judgment awarded.

The first prize of Class 2 went to a purely white animal of most regular symmetry of carcass, but a head much deformed by a protuberant face, and a high osseous cap of the forehead. The horns were long and irregularly set, one being lower than the other; the ear long and agile, and the eye quick. The posterior width showed well, and the touch of the skin felt very soft and gelatinous. The back was straight, and flat to a nicety; the top of the shoulder round and well covered. White animals may be delicate in con-

stitution, but the skin is generally fine and the touch silky. With the exception of the head, this animal was not equalled in the show yard.

The second prize was won by a young bull of a beautiful strawberry-roan colour, and the most exquisite symmetry. Accident had broken off one horn, but that pendicle in the one remaining showed a clean growth and a proper bulk, which always denotes a vigour of constitution. This animal showed properties of a very superior degree, and, along with the first prize of this class, very much excelled the two prizes of Class 1.

The first prize cow was a very superior specimen of the breed, and equal to any animal that has ever appeared at the shows of the Society. The horns were not handsome, being confined close to the head downwards; but the thin neck showed a milker, and the body the fattening properties. The width of the hock bones was very rare.

The second prize well supported the reputation of Mr. Booth. The cow-like head, horn, and neck, have probably never been surpassed, along with a carcass that exhibited every propensity for the butcher. There is a probability that the latter purpose is more answered than the dairy in both these specimens, but in general merit they are unrivalled.

The two prizes for heifers went to Mr. Booth, who showed two animals perhaps never surpassed by any beasts of the kind. It would be difficult to distinguish any difference in the respective merits, except that the first prize, being lower on the leg, showed more width and a greater weight of carcass for its height. The second would please the dairy farmer, and the first the grazier and butcher.

The first prize of yearling heifers lighted upon a very handsome animal, nearly white in colour, with roan in the fore-quarters. This beast formed one of the best specimens of the show, possessing every quality that could be wished at its early age; the head being very cow-like, and the body straight, cylindrical, deep, and wide.

The winner of the second prize was wholly white in colour, with much symmetry of carcass and general appearance. These two animals fully upheld the character of their breed.

With the exception of Mr. Booth's animals, the Shorthorn cattle were shown with an inferiority, though with some fair specimens among the unsuccessful competitors. An over-refinement may attend Mr. Booth's beasts, which may be pushed beyond fecundity and the milking property; but they have always been famous for carrying much flesh on a small quantity of bone. The show of this year has been largely indebted to him; as well as to Mr. H. Smith, who exhibited a very neat animal of Sir Charles Tempest's herd, she had most of the points distinguishing a well-bred shorthorn, and deservedly took the first prize for cows.

The bull of the foremost prize was an animal of much merit, and quite equal to the first place of a second-rate quality. The stature was low, with a broad compact body, showing much hardihood with a rightly appearance of activity. These properties go far to compensate the wants of the very superior qualities.

THE HEREFORD

Cattle were represented in the first prize by a bull of Lord Berwick's, who is known as a winner of fat cattle. The present case showed an animal of very superior merit—pretably the best beast in the show-yard. The variety was the New Hereford with white face, legs, and belly, with the top of the shoulder and the end of the tail. The width and depth of carcass, with the length of body, were very superior, and the animal showed an activity that does not always attend such heavy carcasses. No more superior animal of the breed has ever come under our notice. The shoulder was uncommonly well covered, which produces an uniformity of shape along the whole frame. It is a point of great importance, and the Hereford beasts excel in it. A sloping shoulder joining the neck and ribs, admits the covering of flesh, and removes the heavy objection of bare bones. The present animal was well provided in this point.

The second prize went to a smaller animal, which showed a very general symmetry of form, but in no very peculiar points. But the justice of the award could not be challenged.

The first prize of Class 2 went to a small animal, but of a very great merit. The general symmetry was probably superior to the others mentioned.

The second prize was won by an animal of similar merit with the above, with a horn perhaps too large for the body. The head was unusually handsome.

The Cows showed uncommonly well, especially in the first prize, which has been seldom equalled. The fattened condition might be objected to in a lean animal. The other prizes of this breed were equally distinguished.

The Hereford cattle were largely and richly exhibited at this show; the contiguity of the native county to the place of exhibition favoured the convenience of transit, and it was extensively used. No superior animal to the bull of the former prize has ever been presented to our view, and we believe general opinion supported our judgment on that point. The palm of merit between the Hereford and shorthorn cattle may never be settled: but the former are superior in the fore-quarter, or in the shoulder and first ribs. The slanting shoulder slopes into the neck and ribs, and has not the bony projection of the shorthorn, producing much bare bone, and a great weight of useless formations. This superiority cannot be, and, we believe, is not generally, disputed: the shorthorns show a heavy coarseness in the fore-quarter, with much leathery skin from the shoulder and neck. The very best breeders have not been able to banish this property from their herds, along with a lean girth joining the shoulder and first ribs. Eight out of ten shorthorn bulls inherit this defect. On the other side, no animals of any kind exhibit such an ample development of the hind quarter,—the deep and fleshy thigh, wide twist, and length of cut in the rump. This superiority advances to the forepart of the middle ribs, and there ceases, and other animals take the lead. This superiority was never more conspicuous than in the Hereford first prize bull of this year.

The Devon cattle excelled in two bulls, which well supported the reputation of the breeders. The first prize was the smaller beast, but probably unequalled even in the symmetry of the handsomest of all breeds of British cattle. The straight carcass from the shoulder to the rump, along the back and both sides, formed a point of pre-eminence not at all equalled in the show-yard, and probably never surpassed by animals of the Devon breed. No cattle in Britain exhibit the same squareness of carcass as the Devon; especially along the sides, from the point of the shoulder to the extremity of the mid thigh. This breed, and the Hereford, lose the posterior width behind the hook-bones, which the short-horns maintain, and even expand; but in the forequarters, in the covered shoulder, and fulness of girth, the Devon probably exceeds the Hereford—at least the equality is fully supported. If the Devon were one quarter heavier, and the horn reduced in one-half the length, the appearance in worth might be improved, although not very materially advanced. As with the Suffolk horses, the uniformity of colour much recommends the Devon cattle; the character is throughout equally uniform, and the symmetry is unequalled by any cattle in Britain; and the general and most entire character has never been more fully upheld than by the two bulls now mentioned.

The protuberant buttock of the Devon and Hereford beasts forms a defect in comparison with the upright standing of the shorthorn, confirming the former observations on the respective merits of the different breeds.

The cows and heifers of the Devon breed at this show supported the usual character—small in appearance, but capable of yielding a larger progeny than is indicated by the size of carcass. The yearling heifers of this show were most exquisitely handsome.

WELSH CATTLE

appeared in fair specimens of the mixed Pembroke colour, the mountain dingy black, and the lowland white, but no peculiar merit was shown by any of them.

SHEEP.

were chiefly exhibited by Messrs. Sanday and Webb; the latter so well known among Down sheep breeders, and the former gentleman for producing the finest specimens of the small variety of Leicester sheep, with the wool of curly pile. The fore flank, in the very large fulness, is most remarkable in these sheep, with the fineness of bone and compactness of carcass; but a delicacy is apparent, though the great merit is undeniable. The head scarcely tapers in a corresponding fineness with the body. The bare top of the head in wool and skin shows the overwrought refinement of the animal. The prize ewes were of the same description, being small in our opinion both in flesh and wool.

The excellence of the Down sheep in Messrs. Webb and Rigden's needs no commendation. The ewes of Mr. Lugar showed a strong advance to rivalry.

LONG-WOOLLED SHEEP

were numerously exhibited, the show being placed in the native country of these animals.

Judges allowed great merit to them, and certainly they were superior to any former show.

SPECIAL PRIZES

were very well won by Mr. Foster, who also received commendation for his Shropshire Down sheep. The larger specimen seemed a most useful animal for breeding and fattening.

The Messrs. Ganley, of Dublin, whom we stated elsewhere purchased Lord Bernard's shorthorned bull, also purchased several of the first class short and long-woolled rams for noblemen and gentlemen in Ireland.

PIGS

were well represented in the large breeds, and exhibited much merit. The two prize boars of this class were superior to any recollection of the animals at former shows, being long in the carcass, of proper length of leg, and activity of body. The large boars and sows were white in colour, while the prizes of the small breeds went to black animals, the white pigs of the small breed being few in number and in merit. The white colour may be preferable in pigs, as the flesh is dressed for use with the skin unremoved, and a whiteness is more agreeable on the table than blackness of any kind. The swine of the small breeds have never been better exhibited than in the show of this year. A new breed might be produced with advantage in the midway between the large and small breeds that now exist, and one to serve both purposes of bacon and fresh pork, according to age and time of being used.

THE POULTRY

formed a very great attraction to the visitors of the yard. The Dorking fowls were numerous, and splendid in the quality, as was the unanimous opinion of every inspector. Two tiers of cages, extending along the whole side of the enclosed yard, very deservedly engaged much attention. It may be difficult, probably impossible, to foretell the result of the acclimation in Britain of the Cochin China fowls; but to judge from appearances, when placed alongside the Dorking poultry, the competition will meet with a strong contention, as present judgment would decide for the Dorkings. The second prize of these fowls showed a most splendid specimen of the breed.

The game fowls in the red and white varieties were well exhibited. The proud strut, majestic mien, and piercing eye of these cock birds are very attractive and pleasing to behold, and in some respects are superior to the Dorking—more prolific in eggs and chickens, though less in bulk of flesh.

THE POLAND FOWLS

were well shown, with the black body, and white crown over the head. The general character does not reach the two former breeds; nor do the Malays nor Hamburg fowls.

TURKEYS

were splendid—specimens from Lord Hill and Mr. Fairlie. We have never seen that forest tenant of the western world so richly covered with silvery feathers, or so proud in the majestic strut, as in the prize specimens of the above-mentioned nobleman. They were much and justly admired.

DUCKS

purely white in colour, were in a beautiful specimen of Mr. M. Rowe, Devonshire. Their long square body and tapering bill showed them to be of very superior appearance. A second prize was given them. The progeny may reach the first place in future exhibitions.

GEESE

were numerous, and superior in quality. Our preference was given to the third prize, being wholly white in colour. They suited our notions, that as the flesh is prepared with the skin unremoved, the white colour is the most pleasing, as just mentioned in the case of black and white swine. It may infer a delicacy of constitution as with white horses and cattle; but the defect, if any, is not much felt, and the purposes are different. Our ideas may be unfounded partially on this point, but the justness has been admitted.

IMPLEMENTS.

The Agricultural Implements and Machinery were more numerous than on any previous occasion, and although there does not appear to have been many striking novelties, yet there were a few; and several of the old and best reputed implements had evidently undergone valuable improvements and adaptations to an advancing system of cultivation. When the report of the Judges shall reach us, particularly the results of such implements and machines as were reserved for further trial, we may notice somewhat in detail the construction and uses of several, especially such as seem suited to the wants of this country.

The following were selected for a further trial during harvest:—

Bell's Reaper.—W. Crosskill.

M'Cormick's Reaper.—Burgess and Key.

Hussey's Improved Reaper.—Dray and Co.

Hussey's Improved Reaper.—Carrett and Son.

Hussey's Reaper.—O. Hussey.

M'Cormick's Reaper.—B. Samuelson.

Of these it will be recollected that the reaper exhibited by Mr. Obed Hussey, the inventor of the machine known by his name, is one. But, as soon as the selection of the Council was published, Messrs. Dray and Co. sent in a protest, in which they call attention to the thirty-eighth article of the Society's regulations, and state that by an agreement entered into by them with Mr. Hussey, that gentleman sold to them the sole and exclusive right of manufacturing and vending certain improvements in the reaping machine of which he was the inventor, and agreed to do all in his power to promote Messrs. Dray's interest in its sale, and not to licence or authorize any other person to make or sell the same, or any improvement thereof. On these grounds Messrs. Dray protest against the machine exhibited by Mr. Hussey "being allowed to obtain the sanction of the association." The effect of this protest will

be, in case the reaper of Mr. Hussey has the prize awarded to it, that the Council will withhold the prize for three months, in order that the parties may have an opportunity in the interval of settling the question of infringement of right in a court of law.

The vast increase in the entries which goes on yearly may be seen by the following tabular statement:—

Year of Meeting.	Locality.	Entries of Implements.
1839.	Oxford	23
1840.	Cambridge . . .	36
1841.	Liverpool.....	312
1842.	Bristol	415
1843.	Derby	508
1844.	Southampton ..	948
1845.	Shrewsbury . . .	942
1846.	Newcastle . . .	735
1847.	Northampton ..	1321
1848.	York.....	1508
1849.	Norwich	1882
1850.	Exeter	1223
1851.	Windsor	No exhib. of Imple.
1852.	Lewes.....	1897
1853.	Gloucester	2032

THE DINNER IN THE PAVILION.

On Wednesday, July 13th, the annual dinner of the members of the Society took place in the now well-known Pavilion which does duty yearly at these popular festivals, and which was erected for the occasion in the beautiful grounds immediately adjacent to the Spa Gardens. Upwards of 800 gentlemen were present, the chair being filled by the President of the Society, Lord Ashburton.

We gladly make room for such portions of the many excellent speeches, as will more particularly interest our readers on this side of the Atlantic. The noble President thus introduced the toast to the American Minister:—

The CHAIRMAN said, I now call upon you to fulfil the pleasing duties of hospitality. I call upon you to drink the health of the Minister of a state, foreign from us indeed in name and in policy, but connected with us by the dearest ties of blood and of sympathy (loud cheers). That gentleman has not thought it unworthy of his high station to come amongst us and join in the celebration of this our festival. We thank him for his presence. We accept it as a token of his regard, and of the regard also of the people whom he represents—a regard which we value above that of any other nation that inhabits the globe (great cheering). I give you “The Health of Mr. Ingersoll, the Minister of the United States,” and I beg you will tender him a right English welcome.

The toast was drunk amidst enthusiastic and protracted cheers, which were renewed with increased vehemence when, the hon. gentleman rose to return thanks.

Mr. INGERSOLL acknowledged the compliment in suitable terms, alluded in a very happy manner to the beneficial results of important negotiations that had been conducted between Great Britain and the United States, and the mutual relations of these two great powers observed. “Agriculture is not only the most ancient, but the most honourable and the most useful employment of our race (cheers). Agriculture in many of its productions is especially the bond of union between your country and mine [renewed cheers] A portion of the agricultural productions of America—perhaps one of the heaviest and largest productions that go abroad—cotton, is, if I may use the phrase, without anything like an error in point of figure of rhetoric, the daily bread of the manufacturers of Great Britain [Hear, hear.] We send you at this moment millions of bales of cotton, which go to your manufacturers, who return that cotton in a new shape to our country, to clothe us to a very great extent, as it has clothed and prospered you. Perhaps it would not be going too far to ascribe in part the present prosperity of England, and certainly that part of it which is engaged in manufactures, to the employment that is given in your manufacturing towns by the cotton of the United States; and may rely upon it, that if you desire more—if your appetite should grow with that it feeds upon, we shall continue to produce more and more, in order to supply your desires, and still go on to cultivate the friendship that such an intercourse is calculated to promote [Hear, hear.] In passing, I may remark that there is no great danger, at least for a century or two to come, of a too-large demand for this article on your part; and I trust there is no danger of a diminution in the supply on ours, notwithstanding that cotton is produced in Egypt, in India, and, in fact, I believe, in Western Africa [Hear, hear]. I have lately received intelligence from Alexandria that the export of cotton last year from Egypt amounted to 500,000 bales—an immense amount truly; but the quantity grown annually in America is about 3,000,000 of bales at this moment; and it is computed that by the year 1860 another 1,000,000 of bales will be added to that—thus making the total produce amount to 4,000,000 of bales. It is said, however, that in Egypt the cotton-growing land is already occupied, and that the land of the Pharaohs and the Ptolmies will not interfere with the lands of the Washingtons in the production of the cotton which is required by this country [cheers]. But let me add that we have various other commodities, besides this leading one of cotton, which we are happy to share with you, and by means of which we may cultivate these feelings of interest that are so closely allied to the feelings of friendship, and sometimes lie at the very root of them. There is an agricultural production, perhaps not so useful as cotton, yet abundantly used in this country as well as ours—a commodity which contributes to fill your warehouses, and notwithstanding late arrangements which have been much rejoiced at throughout the country, contributing also to fill your exchequer—I mean tobacco—[Hear, hear, and laughter] Tobacco is a commodity that we grow to the extent of 200 millions of pounds per annum. I

know not to what extent you take it; but I do not believe it to be an article that is exactly food or raiment [Hear, and laughter]. Again, whenever a wet season or an unpropitious moment of any kind renders it desirable that you should call upon us for our edibles, we will promise to cultivate them to any extent that you may desire [cheers]. Rice, which is an article of food to one-third of the whole human family, is produced amongst us to the extent of 200,000,000 lbs. annually. Wheat we produce to the extent of 100,000,000 bushels. And, above all, there is an edible which has not been much introduced among you here, but which your sister kingdom of Ireland, during the famine of 1848, received largely from us—I mean maize, or Indian corn, which is produced among us to the extent of 600,000,000 bushels annually [cheers]. Do not suppose that I indulge in vain boastings when thus talking of the hundreds and thousands of millions of bushels and pounds which we produce of these articles. With the vast extent of territory, and the variety of soil and climate which we possess where everything convenient for the use of man is found in one place if not in another. Nature would cry “shame” upon her sons if we did not produce largely [cheers]. It has been computed, I believe, that there are about 46,000,000 acres of land in England and Wales; but there are in the United States, of public lands which belong to the government, ready for sale and appropriation at the smallest possible price to individuals who may be willing to take them, not less than 1,370,000,000 of acres. And I would say to this great company, that if it should at any time happen that your crops are not abundant, or that the prediction of a distinguished political philosopher 150 years ago, Joshua Gee, should in any respect be verified, that England could not contain ten millions of inhabitants—she having now long since doubled that amount—if, I say, you should ever find your population pressing upon the soil, then in great humility of spirit, but with the most hospitable feeling, I invite you to come over to us, and to stay with us as long as you please: you shall be received with a hearty welcome [loud cheers and laughter]. Observe, this is a move which has already, in some degree, been looked upon with a favourable eye. I believe it is estimated that there are now on the soil of the United States upwards of a million of friends from Ireland, and a quarter of a million of friends from England, settled and resident there. And recollect that our constitution and laws are such—I throw it out for the information of those who are not aware of the fact—that every individual who chooses to come amongst us, whose conduct and whose character are untainted, may attain nearly every political distinction, and certainly attain every social right [cheers]. But it is not alone on account of its direct effects that I have thus briefly called your attention to the importance of agriculture; it is also the great source of the extensive shipping that carries on the commerce of the world. These immense store-houses which float over the ocean in all its parts are either the produce of our primeval forests, or the results of those forests when cultivated by the science of agriculture. And now that we see

them bridging the ocean, as it were, between your country and ours, rendering the voyage so short that no one thinks it worth while to hesitate in the performance of it, and so agreeable that everybody must enjoy it, we should not forget that for all this we are originally indebted to agriculture (cheers). One word more as to my country. There, where such an abundance of soil is to be found, science has also in a degree been introduced into agriculture, and, though not to the extent it prevails among you, yet with us too the pursuit of it amounts to a passion, and by far the largest part of our population are engaged in it. In that country, and with that population, we shall be delighted at all times, as heretofore, to emulate the science and the art of the country by whose citizens I am at this moment surrounded—a country which stands at the head of the agriculture of the world (cheers). I beg to give you as a toast “The Royal Agricultural Society of England” (protracted cheering, followed by three times three).

SIR ROBERT MURCHISON, the eminent Geologist, said that a toast had been entrusted to him, to propose which required the powers of an Atlas to do justice to it. It was “The Agricultural Societies throughout the World” (cheers and laughter). And he saw by the list of toasts that he was honoured with a title which he did not know he possessed before. He was described there as K.S.A., which he presumed must mean Knight of the Society of Agriculture (laughter)—and that, therefore, upon this most remarkable occasion, he was to stand forward and be their knight-errant (renewed laughter and cheers). The task was doubtless a very onerous one for a plain man of science like himself to perform. But for a long period of his life he had had the satisfaction of being connected with many societies which had for their object the diffusion of science, and among others he had taken an active part in the British Association for the Advancement of Science, out of which this glorious Agricultural Association had taken its origin. On the foundation of that society this was established, and the principles which that Association could only carry out on a comparatively limited scale, amongst a few men of science this had carried out amongst thousands of men, and diffused its beneficent influence over the world. The day was far gone by when it was necessary for any Dominic Sampson of geology, or any itinerant geologist, to go about informing the agriculturists of England of the intimate connection which existed between the soil which they cultivated, and the sub-soil or rocks with which he (Sir R. Murchison) dealt. They had in their body men quite capable of showing them the foundation upon which the whole thing stood; and here he must beg the noble President to observe that he had omitted the foundation on which all agriculture rested, the rocks, the geology of their science. He was delighted to see, however, that in the volumes which were published by the society, the first article of their creed in every article was the geological structure of the country, and next followed the agricultural division, and everything of course which rested upon their rocks (hear, hear). The spread of agricultural societies founded upon the principles of their own had gone on, on the other side of the Atlantic, as they had heard from the Minister of the United States, and not only in that vast country, but in other portions of the American continent which had representatives sitting close to him. He had upon his right hand the Vice-

President of the Republic of Mexico, General Arista (cheers). And he would tell them that he had learned from a conversation with his Excellency, that he was the first person in the Republic of Mexico who had founded an agricultural society upon the same principle as their own. In that land General Arista offered temptations to emigrants almost greater than those which the American Minister had pointed out to them; for he had told him (Sir R. Murchison) that the fee-simple of the most exuberant land in Mexico was to be bought at three half-pence an acre (a laugh). He might also tell them that General Arista was not a man of mere words, but a man of deeds also, for he was the first person who, in the show yard that day, had bought one of the finest of their new inventions, which he was going to take back with him to his own land. He should ask General Arista to say something in reply to the toast, but he did not speak the language of this country. He had on his right hand, however, another representative of a true Englishman (loud and prolonged cheering.) He saw by their cheers that they were all very well acquainted with Sam Slick (laughter and renewed cheering.) He felt that he (Sir R. Murchison) had already spoken too long (No, no)—at all events that “good wine required no bush.” They would allow him, however, to say that in addition to Sam Slick, there were other works of the gentleman to whom he had alluded, which were imbued with the highest tone of morality, and calculated to improve the social condition of man more than perhaps any other books, and among these was the last work which this eminent man had written, entitled, “Wise Saws and Modern Instances” (cheers and a laugh). As throughout his life this man had taught them so many “wise saws” which they had implanted in their hearts, so he hoped they would allow him (Sir R. Murchison) to point him out as the best “modern instance” and exemplification in his own person of the principles which he had so ably advocated, and was still advocating (cheers). He would therefore conclude by proposing the toast respecting the agricultural societies in all corners of the world, coupling with it “The health of the Hon. John Haliburton, the author of “Sam Slick, and of Wise Saws and Modern Instances” (cheers).

The toast having been suitably honoured,

JUDGE HALIBURTON, on rising to respond to the toast, was greeted with renewed applause, which lasted for some minutes. He said he felt quite overpowered at the manner in which his name had been received, and which was so unexpected that it had taken away from him the ability to express himself in the manner that his accustomed calmness would have enabled him to have done. (A laugh.) It was a parliamentary custom—he appealed to his noble friend the chairman to support his assertion—to give some “notice of motion,”—(a laugh)—and if he had had that notice on the present occasion, it was possible that he might have been prepared to be a little more calm than now, though perhaps he should not have made so natural a speech. (A laugh.) He had to thank his friend on his left for the very handsome manner in which he had been pleased to bring forward his name, and he was the more gratified that it had fallen to his share to do so, because *Gauleo laudari, a te laudato viro.* (Cheers.) He believed it there was a man who had promoted the welfare of the farmers of this country, it was their scientific friend who had done him the honor of proposing his name to them. (Cheers.) He was the man who, with marvellous foresight and foreknowledge, had predicted the gold of Australia. He was the man who had sent

out thousands and thousands of their superfluous population to dig that gold, whilst the British farmer had to feed them. (Hear). Politicians claimed to themselves the merit of all the present high prices for home produce, but factitious cause had really led to those high prices. (Hear, hear). Certainly, politics were not the bread of life. (A laugh). During the war, when the high prices raised up the farmers of this country, it was because the unproductive classes existed in such numbers; it was because the army and navy, and people in the public employments, had to be fed. And now, one quarter of the whole population of this country was either afloat on the water or digging at the diggings, and as they had to be fed, the unproductive class had again increased, though from an entirely different cause and thus prices had increased. Therefore, he said, don't let the politicians take the whole credit of it to themselves. (Cheers.) He had also to thank them for the honor they had done him in naming some of his books—books that he never could have written unless he had spent his whole life in the country—unless it were that he had never lived in towns, but among his countrymen the farmers. He loved the farmers—(Hear)—from the opulent farmers (and it took very little to make a man opulent in a poor country) down to the occupier of the log hut—and the happiest days, or rather hours, of his life he had spent in their society. It was by talking to these people, and by knowing their feelings and prejudices—for they, too, had their prejudices like other people—it was from knowing them intimately that he had acquired some little insight into that human nature which they had done him the honour of saying he had put in his books. (Cheers.) He liked the farmers; and why? Because “God made the country, and man made the town.” (Cheers.) Agriculture was the most simple, the most natural, the most ancient, and the most honourable employment of man; and although he could not say that he had contributed anything to the exhibition in the show-yard, in the shape of a model or anything of that kind, yet a little wooden clock he had exhibited to his own countrymen, together with some moral lessons, which he hoped had done them some good. (Cheers.) One thing he must say, that he should be a most ungrateful man, and as vain and conceited as ungrateful, if he did not say that he was proud that his lessons had been read and approved by the farmers of England as well as by those of his own country. (Cheers.) One of the moral lessons that had come from that simple instrument the wooden clock, was the teaching of the farmers of his country the value of time, which they were all too apt to forget: it taught him the hours of work and of recreation, and how to get an extra hour for an extra dollar if he wanted it. But, like the human machine, it had one great defect which ought not to be copied—it “went on tick.” (Roars of laughter.) He had had the honour to be an Englishman, but was a native of a distant part of the world. A hundred and fifty years had now elapsed since his forefathers left this country. Whether they slipped off at the assizes (loud laughter, in which the learned judge heartily joined)—whether they slipped off at the assizes, or were sent out by one of his own cloth at the public expense, there was nobody now old enough to say, (renewed laughter,) and therefore it would be perhaps as well that they should not make too strict an enquiry into that matter. (Laughter.) It was a long exile, though. (Renewed laughter.) His excellent friend the American Minister had talked about that country being ready to receive the surplus population of England; but he (Judge Haliburton) should like to emigrate back to England again. (Laughter.) It would be his delight and his happiness to return to England; and he was not sure that if one of his learned brethren would trans-

port him there, that he would not commit some crime, provided there was no moral guilt attached to it. (Laughter.) But, turning to the object which had led to their assembling there that day, he assured them that he had never spent two such delightful days in his life as that and the previous one, which he had devoted to the witnessing of their exhibition (applause). As a practical farmer himself—one who had engaged in, and was fond of, the cultivation of the soil—he had come from the north, from Scotland, for the purpose of being present at the exhibition to witness the improvements that had taken place in agriculture during the last ten years. He had observed everywhere, and it gave him great pleasure that without the least flattery he could say so, that within the last ten years since he was last in this country, such an improvement had taken place as was beyond everything that could be conceived (cheers). The improvement in that class to which Lord Harrowby had referred—the lower orders—had been greater than in any other class, for they were better fed, better clothed, better paid, and respected themselves (cheers). As a traveller, perhaps they would permit him to mention an instance of this improvement. He saw in St. James's Park the other day a notice—"The public are requested to protect the gardens and trees in this place" (Hear). No notice of man-traps and spring-guns, or of prosecutions (cheers). That one fact spoke volumes. He was at Loughborough last week, and on examining some public grounds he saw a similar notice—"These grounds are for the benefit of the public, and the public are requested to protect them"—That, too, was an evidence that the working classes respected themselves, and that they were worthy of the respect of their superiors; and it was a most gratifying fact that it was so (cheers). And when he looked at those implements at the exhibition, and at the state of the working classes at the present time, he saw that there was now no fear of any prejudices being awakened in the minds of the labourer against the use of machinery on account of its depriving him of his bread. That day was gone by, and they might thank God for it (applause). They might also thank God for another thing, and that was that the day of the demagogue was gone by (cheers). His occupation was gone (cheers), for he had now no idle, lazy, or pauperised population to talk to and excite, and therefore he could do no mischief (renewed cheers).—Having shown how the use of improved machinery, in the cultivation of the land, rendered necessary the employment of increased labourers, and expressed his belief that the grain-cutting machines would yet be rendered available, the learned judge expressed his warm approbation of the automaton reaping-machine, which he considered did honour to those who had invented it and brought it forward, and concluded amidst great cheering, by again thanking the assembly for the honour they had done him.

THE ABRAHAM TUP SHOW.

The annual letting of Mr. Jonas Webb's celebrated tups took place on Wednesday July 6th, Mr. King officiating as auctioneer. The attendance was about as large as usual. The animals met with unqualified admiration; and one hired by Mr. Roche, an American, fetched the astonishing price of 130 guineas, being the highest figure yet obtained by any single tup since Mr. Webb has commenced as breeder. There were 71 sheep let, which netted £1,580, being an average of £22 4s. Previous to the letting every animal has a reserved bid fixed upon

it, by Mr. Webb himself, and it is but justice to that gentleman to say that every tup put up realized more than the price put upon it. Indeed, the aggregate produced £500 more than the reserve; one instance we might name, of a ram being fixed at £5 5s fetching £18.

THE DINNER.

The usual tent was erected for the dinner. Substantials and delicacies were beautifully laid out, the tables being decorated with a profusion of flowers and evergreens, as well as the capacious tent itself, presenting a sight of surpassing excellence. This annual festivity draws together 200 gentlemen; it is graced by the presence of nobility, clergy, yeomanry, landlords, tenant farmers, professional gentlemen, and tradesmen; and, by a judicious arrangement of the worthy and hospitable host, political subjects are carefully eschewed, so that not a remote chance should exist to jeopardise or mar the spirit, good feeling, and conviviality of the day. Many eminent agriculturists who were present at the letting were obliged to content themselves with hiring some of the best tups, circumstances not permitting them to stay to dinner, to which about 200 gentlemen sat down, under the able presidency of the Earl of Hardwicke.

Among many excellent observations of the Noble Chairman, we select the following:—These annual meetings were of a peculiar character; even this day a gentleman had come over to this country from the United States, on purpose to purchase at the sale, from the most important country on the face of the earth, connected with them by blood, name, language, and facility of intercourse; this meeting was distinguished by his attendance, and he congratulated them upon finding a brother from the other side of the water present at their board (cheers). As now situated the ties of America, the success of their commerce, and the encouragement of their familiar association, was of great importance; he sees at this meeting the honest yeomen, and witnesses their nationality in song, never forgetting the great people on the other side of the Atlantic, whose flag is the similitude of our own, that we so much boast of. We are reminded still to uphold it; and if called again to emulate, there is no people he should like to be coupled with so much as their brethren of America; to extend their great liberties, carry their flags through "the battle and the breeze," and blend together that important relationship already existing between them (cheers). The gentleman, when he appeared bidding, was always going ahead, prepared to purchase, be the cost what it might.

The annual toast was proposed, "The hirer of the highest price of the day."

Mr. Roche begged to thank the gentlemen present for the flattering way in which they had received the toast. He little thought in his desire to obtain the ram, that he was also bidding for the honour of making a speech (laughter). It was said that it was necessary to take care of No. 1; and he had also taken care to get No. 112 (the highest lot). He had crossed the Atlantic to be present on this anniversary, an event which

was almost as well known on the other side of the Atlantic as it was on this; and he hoped that, although this was his first, it would not be his last visit among them. (Loud cheers). America was trying to improve her stock, and was glad to send to the mother country to enable her to do so. He was very grateful to the noble Earl for the kind allusions he had made to America. They were brothers in habits and in religion—(cheers)—and if at any time, through spots on the political horizon, assistance should be required of America for the mother country, that would never be wanting (loud cheers); for on the other side of the Atlantic, people looked upon England as the only stronghold of Liberty, and he trusted that between the two countries the most amicable feelings would ever continue to exist."

The *Mark Lane Express* has the following remarks in reference to the above meeting:—

"This is now the twenty-seventh anniversary of the Babraham letting: and we are told by those who have been most frequently in the habit of attending, that it was in every respect one of the best. The proof here, in some measure, must be taken from the auctioneer's book, which gives a lining of seventy-one sheep at a gross return of £1,531. In these are included a ram, one of the prize sheep at the Lewes show of last year, which let at the extraordinary sum of one hundred and thirty guineas! It may appear difficult to many of our friends to justify such a bidding as this—one that reads, in fact, something like that approach to "fancy prices," with which the sober business of farming has or should have little or nothing to do. When it further comes out, too, that the gentleman hiring it was the stranger-visitor from the other side of the Atlantic, the less weight may we feel inclined to attach to such a precedent, as the less likely to see it followed up. No one, as it is now almost proverbially known, goes ahead with so much determination as brother Jonathan, when he has once set his heart upon having "an article." It is his pride, and boast, too, to try the length of his purse against the old country; and so, whether it be a race-horse, a short-horn, or South-down, "the figure" he went to becomes a prominent feature in the report of his bargain. Good judgement and good advice may do much for him; but it is what Sam Slick calls "the speit" that, after all, stamps the value of his Derby winner, his Bates' heifer, or his Jonas Webb's ram.

We should be the last to dispute the real judgement and care evinced by most of our friends from the United States in their purchases of stock. Indeed, as we have already had occasion to state within these few weeks, they are becoming day by day better qualified to make their own selections, and not to trust so much to those "introductions" on which they at first altogether depended. Mr. Roche, in fact, has ample confirmation for the long price to which he extended his offer at the letting on Wednesday. The last bid against him was, we believe, a *bona fide* one, from an English agriculturist, deservedly distinguished as a breeder of some of our best kinds of farm-horses and cattle, though not yet so famous for his flock. Still there is no gainsaying but

that this extraordinary price, standing *per se*, might naturally be regarded with something like a doubt as to its genuine character; and hence the attention we have called to, and the comment we have offered upon it.

There are few who have not heard, if not all enjoyed, the pleasures and real "treat" the Babraham day affords to the lover of agriculture and of rural life. Perhaps of all the many scenes and "sights" our visitors from the United States may be called on to witness or to take a part in, none will be calculated to make a deeper impression upon them than this; none can certainly give them a better notion of what the individual exertions of an Englishman may accomplish, or of how liberally his fellows can encourage and enjoy his success. The first to originate gatherings of this description, none has ever essayed on them with better taste, or in a more thorough spirit of national hospitality, than Jonas Webb."

The Agriculturist.

TORONTO, SEPTEMBER, 1853.

PROGRAMME OF THE PROVINCIAL EXHIBITION,

TO BE HELD AT HAMILTON, OCTOBER 4TH TO 7TH, 1853.

As this great annual event is near at hand, and knowing the interest which our readers and the public generally feel in the undertaking, it may serve a useful purpose to sketch in regular order, the principal outlines of the proceedings of the Show week.

The site chosen for the Exhibition, is precisely fitted for the purpose, and the Local Committee are making the most energetic exertions for completing the buildings and arrangements in a satisfactory manner. The *Hamilton Spectator*, in reference to the site for the Show, observes:—

"A more beautiful site for an exhibition of this sort is not to be found in the Province. The ground is finely undulating, interspersed with handsome shady oaks, and covers some of the highest points of land in the city. Upon a natural mound, rising some feet above the others, is to be erected the Grand Association Stand, a building of one hundred and sixty feet long and two stories high, and from this point is presented one of the most enchanting views imaginable. Several capacious tents will be employed. To the south and west we have the bold scenery presented by the mountain front, as it sweeps away in the direction of Ancaster and Flamboro', encircling with its rugged arm this favored spot, and forming an amphitheatre of surpassing grandeur and beauty; while to the east and north the eye is charmed with a panoramic view—embracing the city, the bay, the shipping, the dis-

tant beach and old Ontario—which must be seen to be appreciated. Thirty acres in the block, lying between King and York streets, and Locke and Dundurn streets, are now being enclosed by a close board fence, nine feet high, with three gates on York street, and two between King and York streets. The fencing will be completed in the course of a few days, and the erection of the buildings, which are to be very numerous and commodious, is required by the terms of the contract to be finished before the 20th of September. Everything bids fair to sustain the general expectation that the approaching exhibition will be the most attractive, and we trust in its results being the most satisfactory of any yet held."

The payment of a Dollar constitutes a person a member of the Association, to whom a badge is presented, which will admit him free to the Exhibition, and to enter, without charge, whatever Stock or articles he may desire for competition. Members' badges are not transferable, and will admit *only the purchaser*. None but Members (except Ladies and Foreigners) can exhibit for premiums.

Blood Horses and Thorough-bred Cattle must be entered, and have their full pedigrees properly attested, and sent to the Secretary, at the office of the Board of Agriculture in Toronto, *not later than Saturday, September 24th*. No animals will be allowed to compete as *pure bred*, unless they possess regular Stud and Herd Book pedigrees, or satisfactory evidence produced that they are directly descended from such stock.

Persons making entries by letter must enclose a dollar for membership, and no entries can be received by the Secretary in Toronto *later than Saturday, October 1st*, after which the books will be removed to Hamilton.

Monday and Tuesday, Oct. 3rd and 4th, will be devoted to the entering and arranging of Stock and articles for exhibition, on the Show Grounds. Entries must be completed by eight o'clock on *Tuesday evening*. All entries made on *Wednesday morning* before nine o'clock will be subjected to a charge of 5s. each. After that hour the books will *finally close*, and whatever may subsequently arrive can only be admitted to compete for *discretionary* premiums.

The JUDGES will enter upon their duties early on *Wednesday morning*, and MEMBERS will be admitted to the grounds at 2 o'clock P.M.

The *Public*, or *Non-members*, will be admitted during the whole of *Thursday* and *Friday*; tickets, 7½d. for each admission, can be obtained at the Treasurer's office, where also Member's Badges may be had.

It is intended to hold *Public Meetings* in the City Hall, during the evenings of *Wednesday* and *Thursday*, for addresses and discussions on subjects affecting the agricultural and commercial interests of Canada.

The *Annual Meeting* of the Directors of the Association will be held in the Committee Room on the grounds, on *Friday*, at ten o'clock A.M.

We take this opportunity of reminding the officers of County Societies that, according to the present Agricultural Act (16 Vic., cap. 11, sec. 50), the Directors of the Provincial Association consist of the officers appointed by the Annual Meeting thereof, the ex-Presidents, the Members of the Board of Agriculture, and the *Presidents and Vice-Presidents of County Societies, or any two members whom a County Society may have appointed Directors, instead of its President and Vice-President*. Persons thus qualified have the sole right of voting at the Annual Meeting to be held during the show week.

THE PRESIDENT'S ADDRESS will be delivered on the grounds on *Friday* at two o'clock, after which the awards of the Judges will be declared.

Every exertion will be made for the prompt payment of the Premiums, especially to parties coming from a distance.

A separate List of Premiums is prepared for foreigners, whose articles will pass through the Custom House *duty free*, unless they are actually sold.

Delegates, Judges, and Members of the Press, are particularly requested to report themselves at the Secretary's office on their arrival.

We wish the public, particularly our fellow-subjects in the Lower Province, to understand that the Exhibition is equally open to *all Canadians*.

The Local Committee have made arrangement with Railroad and Steamboat Proprietors

for carrying visitors, stock, &c., to and from the Exhibition, during the show-week, at the usual reduced rates. The Hotel and Boarding-house keepers in Hamilton, have agreed not to advance their ordinary rate of charges,—which will vary from 5s. to 7s. 6d. per day, for meals and lodging. Hamilton with its immediate neighbourhood, is very favorably situated for accommodating the vast numbers, which it is confidently expected the approaching occasion will call together. There are some engineering works in the vicinity of this thriving city alone worth the expense of a long journey to see; while the country for many miles around is not exceeded for picturesque beauty and agricultural advancement by any equally extensive area on the North American continent.

In addition to the numerous prizes offered by the Association, amounting in the aggregate to about £1,500;—the *President, Wm. Matthie, Esq.*, offers the handsome sum of £50 for particular prizes; while the *Canada Company* continue their usual liberal support, and the *Ex-President, T. C. Street, Esq., M.P.P.* again offers a handsome prize for a Stud Horse. Nor must we omit to notice the Premium for a Draining Tile Machine, by His Excellency the Governor General.

All that is required to ensure another glorious display of the results of Canadian skill and industry is the prompt and hearty co-operation of the people. And we shall be much mistaken, as well as deeply mortified, if amidst our general prosperity, in an age and on a continent, on both of which are so deeply marked the signs of progress, the approaching Provincial Exhibition at Hamilton should prove in any way unworthy of our highly-favoured country, or of the intelligence, energy, and character of our people.

Persons desirous of farther information may obtain Premium Lists, containing regulations, &c., by applying to the Secretary of the Board of Agriculture in Toronto, or to Neh. Ford, Esq., Secretary of the Local Committee, Hamilton.

Our exchanges will serve the interests of the Public by publishing an epitome of these arrangements.

ADDITIONAL PRIZES FOR THE PROVINCIAL EXHIBITION.

Just as we were going to press we received the following communication:—

Toronto, August 29th, 1853.

G. Buckland, Esq.,
Secretary Board of Agriculture.

SIR: Taking a deep interest in the Education of the Country and conceiving that the choice of proper materials for promoting its diffusion, is a legitimate subject for competition at the approaching Provincial Show, at Hamilton, may I request you to offer the following premiums for competition, for which I beg to enclose the necessary funds.

I am, Sir,

Your most obedient servt.

A CANADIAN.

The best collection of School Books, printed and bound in Canada, for the use of Common Schools and Grammar Schools. £2 10 0 and Diploma.

The best collection of Books, Maps, &c., published in Canada, descriptive of the Topography, History &c., of the Province. £2 10 0 and Diploma.

A VEGETABLE SERPENT.

According to some Italian journals, a new organized being has been discovered in the interior of Africa, which seems to form an intermediate link between vegetable and animal life. This singular production has the shape of a spotted serpent. It drags itself along on the ground, and instead of a head, has a flower shaped like a bell, which contains a viscid liquid. Flies and other insects attracted by the smell of the juice, enter into the flower, where they are caught by the adhesive matter. The flower then closes and remains shut until the prisoners are bruised and transformed into chyle. The indigestible portions, such as the head and wings, are thrown out by two aspirated openings. The vegetable serpent has a skin resembling leaves, a white soft flesh, and instead of a bony skeleton, a cartilaginous frame filled with yellow marrow. The natives consider it delicious food, at least so says the paper from which we copy the above, but we consider the whole story a fabrication.—*Scientific American.*

The Western Virginia Agricultural Fair will be held on Wheeling Island, September 14th, 15th and 16th. Ten acres of ground have been enclosed for the purpose, and the halls for floral, mechanical and manufacturing exhibitions are in process of erection. The arrangements are all designed for succeeding Fairs, for seven years.

LIVE FENCES.

To the Editor of the Canadian Agriculturist :

SIR,—The formation of Township Agricultural Societies, and the establishment of Township Farmers' Clubs, are no doubt beneficial in their results, from the stimulus given to competition in the exhibition of stock and vegetables, in the first case; and the information elicited in the discussion of the several subjects propounded, in the last. A judicious rotation of crops—the rearing, feeding, management, and improving the breed of cattle, horses, swine, &c.—road making—draining—and many other topics relative to the farm and the farmer, have been handled, and well handled, in the several clubs, and have, no doubt, raised a spirit of enquiry, and also led to improvement in practice.

There is one subject, however, which I have not seen discussed, but which, I take it, is becoming of exceeding great interest to the farmers of Canada, and which, somehow or other, seems to have a bearing on all the subjects above mentioned,—I mean *fence-making*. Rails will not last for ever. In very many places rail timber is exhausted, and rails have to be brought from a distance, and at great expense. Stones are not to be had in every section of the Province; and even if they were, and put up with great care and caution, although they might possibly make a solid and durable fence, yet, I take it, they are not generally admired. What is to be done? Surely it is a subject not unworthy of discussion in the different Farmers' Clubs and Societies of the country, and, I hope, of serious notice by the Provincial Board and Minister of Agriculture, to ascertain—and when ascertained, to encourage—the best mode of making permanent fences, in lieu of the perishable, and I may say unsightly, fences now in use. As temporary fences in a new country reclaimed from the wilderness, they have done good service, but they ought to give way to something more indicative of the *fruit accompli*, the settlement and improvement of the country on a permanent basis. These crooked fences of ours, made of wood, cannot last for ever,—that is another fact. Therefore, I say it would be well and prudent to be prepared for their final decay, by testing beforehand the feasibility of making good and permanent fences, and combining therewith, if possible, that which may be ornamental and serviceable both in a general and local point of view.

Now what I would propose is, a quickset fence. There are various descriptions of them to be seen in England, and I should not be disposed to quarrel with any one for adopting that one which may best please his fancy, or may be best suitable to the soil and locality he may be

in; but with the view to the present *partial*, and ultimate *perfect*, drainage of the country, I would propose a hedge and ditch of the following description, as the one, in general, best adapted for the drainage of the land, and as a good fence. The ditch to be 3 feet 6 in. wide at the top; to be 4 ft. in depth, with the width of one foot at the bottom,—the bottom to be well cleaned and levelled, to permit the free flow of water. The earth from the ditch to form a bank of a height and width corresponding with the excavation made, and the front or face of it to be placed six inches from the brow of the ditch, to allow for the settlement of the bank;—so that in fact, from the bottom of the ditch to the top of the bank would be 8 ft.; the width of the ditch at the bottom 1 ft.; the width of the bank at top 1 ft.; at its base, 3 ft. 6 in., the same width as the upper part of the ditch. In the bank, at the height of 2 ft. or 2 ft. 6 in., thorn layer and young seedlings of oak, maple, or other trees, would have to be placed before the top of the bank is completed by the mould from the ditch, to form the future fence; the whole to be crowned at the top with wattled hedging to protect the bank until the layer is of sufficient height and strength for its intended purpose. For the layer I would propose the English white or black thorn, both of which thrive well here, or the Canadian thorn, which seems equally well adapted for fencing. The thorn layer and the seedlings of the future trees to be of the second year's growth; and the roots of thorn layer to be placed 4 in. apart from each other, the seedlings of trees one yard from each other,—that is to say, eight roots of thorn and one seedling tree to the yard.

Could it once be established that a fence of this kind could stand the vicissitudes of our Canadian climate, as I feel confident it would, if made by a careful and skilful hand, great good would result to the farmer and the public. The ditch of itself would partially drain the field round which it runs, and, if made to the depth I suggest, would be a receptacle for the water from the underdrains of the land, when underdraining shall be taken up as a part of our husbandry. The fence I speak of is common in many parts of England, with this exception, that perhaps the ditches are not altogether of the depth I suggest, because most of them were made before underdraining in the way it is now carried on was a part of English husbandry. Could we once establish these fences, our roads would come in for their share of the benefit by good drainage; and, what would be of great advantage to the public, our roads would not be so frequently moved as they now are at the caprice of our municipal councillors, and permanent improvements, in gravelling and other-

wise, might with advantage be made on them. There can be no doubt the country would be beautified by the substitution of shady, pleasant-scented live fences, in lieu of our present unsightly and frail crooked affairs. I even venture to predict that the climate itself would be ameliorated. At present I would be glad if you would bring the matter before the agricultural public, with some remarks of your own on the value of improving our fences. I should like to see the subject fully discussed, so that an interest may be taken in it, and finally, as our Yankee neighbours have it, "action had thereon."

Mr. Editor, I think the subject of substituting good, handsome, and permanent fences for those we now have, of so much importance to the advancement of agriculture and the benefit of the Province, that, if others thought as I do on the subject, I should be glad to see the Parliament of the Province placing £500 or £1000 at the disposal of the Board of Agriculture, to be distributed in premiums through each county of the Province, to the persons who shall make the first, second, and third-best 100 rods of the fencing I have described by midsummer, 1858. It would require something like that time to raise the thorn layers and seedling trees from the seeds of this year, transplant them into the soil where they are to grow, and to enable them to take good root in it.

I am, Sir, yours obediently,

A HEDGER AND DITCHER.

August, 1853.

P.S.—If you, or some of your correspondents would acquaint us with the proper quantity of lime, rock or slacked—the state of the land, and the best time, for receiving it—for the general benefit of the soil, but more particularly for securing a wheat crop, you will oblige.

REMARKS.

We strongly recommend the subject embraced by the preceding communication to the earnest attention of our readers. It is a matter of constantly increasing importance, and we shall always be happy to open our pages to its elucidation. Will such of our readers as have had practical experience in raising live fences in Canada favour us with some account of the results? In the meanwhile, we may observe that it is intended, as soon as practicable, to test the capability of different plants for the construction of hedges, on the Experimental farm, near this city.

The quantity of lime per acre, applied as manure, will vary materially, according to the actual condition and composition of the soil. On land containing naturally very little lime, particularly if it abounds in large quantities of imperfectly decayed vegetable matter, from 80 to 100 bushels of *quick* lime would not be found too much. Such a dressing, however, would not need repeating but at long intervals. The best time, perhaps, for applying lime on land intended for wheat, is a short time before sowing; spreading it evenly over the surface, followed by a good harrowing, and the last ploughing, at a moderate depth. Lime has a strong tendency to sink into the ground, and ought not to be covered too deeply. It should be applied, if possible, in dry weather, on land free from stagnant or superfluous water. Upon naturally wet soils the application of lime is a useless expenditure. Hence the necessity of draining.—ED.

TRIAL OF REAPING MACHINES.

To the Editor of the *Agriculturist*.

HAMILTON GARDENS,

Port Hope, Aug. 15, 1853.

DEAR SIR,—A very interesting trial of Reaping Machines took place on my farm last Saturday, on a somewhat novel principle. It was not intended as a competition for premiums at all, but as I was aware that three or four of the most approved machines of this kind were actually working in this neighbourhood it would not be amiss to place them in juxtaposition, and then let the farmers judge for themselves.

You are well aware of the difficulty there is for any Committee of Judges to decide on the merits of machines or implements of any kind, without seeing them in actual operation; but when, as in the present instance, a number of machines were put in the same field under the same circumstances, and without the usual excitement of being supposed to work against each other—much more room was left not only for *each man's fancy*,—but also the comparative working of the machines themselves, could be more easily decided upon.

The idea on my part originated from hearing that I was appointed a judge on Implements at the forthcoming show at Port Hope, for the County of Durham, in October next, and knowing from experience the utter impossibility of deciding on the merits of things of this kind, merely standing on the show-ground, without having seen them tried at all, I proposed to my

friend Mr. Choat, who has introduced into this vicinity one of the self-raking machines made in Brockport, N. Y. State, and also to Mr. Rapalje, who has had manufactured in Port Hope this season, a number of the Burrall Machines, that they should bring them to my place and let them work together. I had also one of Hussey's Machines which has now cut its fourth harvest, and which has not cost me altogether more than five or six dollars in repairs, and that only in simple wear and tear, and which is now as good as ever.

Four machines were in the field, viz., Mr. Choat's self-raker, two of the Burrall machines, and my own Hussey machine, above mentioned. The afternoon of Saturday, the 13th inst., was, as you have not forgotten—hot—but that hardly begins to express the actual feeling of 'Roasting, Broiling, and Stewing,' we had to experience; yet notwithstanding, a very respectable assemblage of not only the *Bone and Sinew*, the practical farmers of Hope and Hamilton Townships, but also many of the Merchants and Mechanics of Port Hope, as well as several of the Contractors and Engineers of the Port Hope and Lindsay Railroad attended; and all, as far as I am at present posted up, expressed themselves not only gratified, but delighted with the performance.

Of course, as I am to be a judge, as I have already mentioned, it would be quite invidious to mention my own opinion: and really it would puzzle the best judges to decide upon the mere shade of difference between the machines, where all worked so well; but I can say (and the manufacturers themselves will not be sorry) that many of our *stiff* Farmers, who have been hitherto sceptical about reaping Machines, were that day converted, and the result will be that every farmer who has got two-thirds of his stumps out of the ground, will go for a reaper.

There cannot be on the broad surface of our globe a country where labour saving machines can be of more benefit than to ourselves; and particularly as British Capitalists have turned their attention this way at last, and coaxed our laborers to work on railroads instead of farms, and that is what is now arousing the more lethargic of our farmers to turn their attention to things of this sort.

Yours truly,
JOHN WADE.

GRAPE VINES.—Loosen the earth about their roots and give them manures. Swamp muck which has been decomposed by the salt and lime mixture answers a good purpose. Whole bones buried near the roots of grape vines will soon be appropriated, and, during the summer rest, a little potash water will hurry up their action.—*Working Farmer.*

REMARKS ON THE POTATO PLANT.

BY DAVID FERGUSON, ESQ.

The following very interesting paper, by David Ferguson, Esq., was read by the Rev. Mr. Porter, before the Kilkenny Literary and Scientific Institution. Prefixed to it being an engagement by Mr. Ferguson to pay £500 promised in the paper, when the Council of the Literary and Scientific Institution of Kilkenny decide it fairly gained. The Provincial Bank of Ireland, Kilkenny, is named as reference. The seed mentioned in the paper may be obtained from Robert Molyneux, Esq., John's Bridge, and from Mr. William Bryan, Scotch House, Kilkenny:—

"The potato plant is only an annual, empowered by God with two modes of reproduction. The one, like the oak tree, lives only for years; the other, like the acorn, liveth for ever. Both reproductions are deposits from the plant, different in chemical properties; '*live and die*' independent of each other, with the plant providing for, but independent of, both.

"Here (exhibiting a potato stalk) is the plant. This stalk, with its small fibres, is the annual. These eight apples upon the top possess each from three hundred to three hundred and twenty seeds, each seed has the germ of a plant with seed lobes, which perform the same office to the germ that the yolk of an egg does to the germ of a bird, supplying it with nutriment until all its parts are perfected by germination to supply itself.

"Hence the seed in the potato apple is, like the acorn of the oak, the seed in the apple of the tree, or the egg of a hen. These eight potatoes at the bottom of the stalk possess each a quantity of eyes; each eye possesses the same property for a time that the seed or egg of a hen does; but the potato, like the tree and hen, becomes aged and past bearing; the oak lives after it ceases to bear, as do also the apple tree and the hen, and so also does the potato. But the oak, the apple tree, and the hen die from age, and why not also the potato? Has nature made it an exception?

"Besides, like the oak, the apple tree, and hen, the potato has a graduated scale of ascending and descending life. Here (exhibiting a potato stalk) is a plant grown direct from the seed. Observe, the potatoes are small, like marbles. This stalk blossomed, but had not strength to form an apple. Here (exhibiting a large stalk) is another which is one year older. Observe the difference in the bulk of the tubers which it produced. They may be compared to a small

egg increasing. This stalk also blossomed; and potatoes thus grown from seed continue to blossom up to five years, and then first begin to form apples. Here (exhibiting a stalk) is a plant six years' old, which bore an apple; consequently I call the parent of this apple a potato; the plants before it not being able to perform the functions of a potato I call germs, Nos. 1, 2, 3, and so on ascending according to their age.

"Now to get at the descending germ let us take this lumpers [now exhibited]. I can trace the history of this kind of potato back to the year 1818; and I am told that from 1825 to 1835 it was so charged with vitality that it would grow without manure in any soil, of large size, and producing 160 barrels to the acre, but of a quality more fit for cattle than for man. Then was the time to take seeds from its apples and have the young rising into strength for cattle, and the old losing strength, but becoming more dry and floury, for man's use.

"This lumpers, once the prince of potatoes, like its great progenitors, the barbers, the kerrippens, white Turks, red Turks, slipper-potato, peeler-potato of Connaught, black-bull of Kerry, and a host of others, each in their turn ruled supreme. They are now gone. Here is the lumpers, the cup, English-red, and Irish apple; look at them. The red twelve years ago produced 160 barrels to the acre; at present, in the best land, it produces only 60 barrels; lumpers 40 barrels, and cups 30 barrels; and, like the ascending germs, they now blossom, but cannot grow apples; consequently all these kinds of potatoes enumerated may be called 'descending germs.' See this diagram showing the life of the lumpers. [Two ingenious diagrams, which, of course, we have no means of representing, were here exhibited and explained by the Rev. Mr. Porter.]

"The first diagram shows the potato existing for thirty-four years in forced states of being; first, as an ascending germ in blossom for five years; a potato, with apples, for nineteen years; and there not being any apples seen upon the stalks for the last ten years, they then become descending germs, unable now to give any produce on mountain land, where they formerly grew. The law laid down in this diagram rules every potato, and the same law guides its seed; thus we find the plant to grow apples for nineteen years.

"The second diagram shows the plant ascending in vitality for ten years, its longest day, and green from five to seven months, in proportion to its age; then descending, losing its vitality, from its tenth to its nineteenth year; at which period it remains green only five months, and produces no seed. Thus the seed supplied

by the parent plant at its longest period must of necessity be best and strongest. The descending germ of the tenth year will remain green only three months, and with little produce. Hence, seed from the plant at ten years is perfect; the other only in proportion to its place in the diagram; consequently I fear it is hardly possible to procure good seed now, and I question if ever perfect seed has been sown, except by fortunate accident, the belief hitherto entertained being, that the seed was only to give variety of kinds.

"The plant at transplanting is as perfect in all its parts as the oak, the apple tree, or the female bird from the egg. The root performs the same functions to the plant that the stomach does to the animal—absorbs juices from the earth and transmits them through one set of vessels to the leaves, which are a continuation and extension of the same vessels and matter. These extend their surface for absorption and transmission of air and moisture, assimilate the juices and return them through another set of vessels to nourish and enlarge the various parts of the plant. Thus, the leaves perform the same functions as the lungs of the animal, besides giving shade to the vegetable. These truths point out the true mode of cultivating ascending and descending germs, and also the potato. The plant from a perfect potato lives seven months perfecting its fruit before it dies. The plant from descending germ lives only from five to three months, unable at either stage to perfect its fruit. Therefore, when the plant dies, the fruit not being ripe continues to absorb the decomposing matter in the leaves and vessels, until these vessels close. Consequently, when we see the leaves getting spotted and black, and emitting an offensive smell from decomposing matter, we should at once dig the crop to save what potatoes exist, and turn the land to some useful purpose. This is what we, in our wisdom call, 'the incomprehensible potato disease,' produced, you will observe, by our own neglect of the immutable laws of God and nature.

"The largest potato, being first from the plant, and consequently longer in the world than the small one, is best for seed. This (producing a tuber) is a potato with twelve eyes, consequently containing twelve plants. If I set it whole I put twelve plants to live upon the land of one; in other words, I put twelve cows to live upon one cow's grass. Therefore scoop out the eyes of the large potatoes for seed, and use the rest. Let seed potatoes be the largest, and left in the light until they become green. They are thus best for seed, but not so good for the table, the oxygen having escaped. To keep potatoes for use, turf char is best; it will keep them perfect, though not a month old.

“To give an idea how to manage potato seed for sale or use:—Hang up the apples in the barn or other out-house, in the light, until they become white, soft, and pulpy, like a ripe gooseberry; then press out the seed into water, and throw away the hull; wash the glutinous matter from the seed by change of water, and dry it in the sun; or take a pulpy apple and press out the seed between the folds of blotting paper, the paper absorbs all the glutinous matter, and you will find from 300 to 320 seeds a (sufficient quantity for one farmer). Another mode:—Cover the apples in sand, which will absorb the hull and glutinous matter; and in spring sow sand and seed together in a hot-bed, which is simply twelve inches of stable manure covered with two inches of earth. I transplanted 800 plants from a box four feet long by one foot wide, when the plants were from four to six inches above the earth, to drills eighteen inches apart, and sixteen inches between each plant. March or April is the best time for transplanting, and drills should be adopted in every instance in preference to lazy beds, because the latter retain rain and grow weeds, which prevent the circulation of air, and cannot be easily got at. The juices of the potato sleep during winter and awake in the spring; therefore, do not plant before February. The experiments stated in this paper can be tried and tested equally by the learned sage or unlettered peasant, for one shilling.

“This paper demonstrates, from the leaf being the lung of the plant, that the potato cannot possibly grow after the leaf dies, except we suppose it to grow upon decomposing matter; and the diagrams demonstrate that there never was any disease in the plant or potato. Why and whence then are these various antidotes against the ‘mysterious incomprehensible potato disease’ leading the peasantry of these realms to loose their land, manure, and labour, year after year? A Frenchman tells us to insert a pea in each set to absorb the superabundant moisture—the cause of blight. An Englishman bids us plant in tan; a Scotchman tell us to plant in peat char, because, having ninety-six per cent. of carbon, it is, like the pea and tan, a certain cure. The Royal Agricultural Society of Ireland has a gentleman that professes to take the sting or disease out of the potato by some chemical charm: and there is another gentleman who undertakes to extract the sting from the earth! *but neither of them tell how.* These like other varieties of mysterious cures and causes whispered from man to man, stagger the senses and make reason reel. Therefore, in order that the truth of my views, and the virtues of these charmers, may be fully tested, I have lodged FIVE HUNDRED POUNDS in the Provincial Bank, which I

now freely offer to them and the world, if they bring to this Society, within three years, the following potatoes, which have been the principal support of the peasantry of this country for the last thirty-four years—namely, the old Irish apple, the cup, the English-red, and the lumper, in the same strength that I shew this stalk, with apples upon the top, potatoes at the bottom, and remaining green from 12th April to 12th October.

“The potatoes now exhibited (and which are open to inspection until seed time) shew ten distinct varieties, ranging from one to six years old; these have never been in the world before, and their existence demonstrates that the power to grow them existed previous to, and since the blight of 1845 and 1846.”

ON THE COMPARATIVE VALUE OF LARGE AND SMALL ROOTS.

By WILLIAM K. SULLIVAN, *Chemist to the Museum of Irish Industry; and* ALPHONSE GAGET, *Assistant Chemist.*

In consequence of the practical importance which was attached to some of the results obtained during the investigation into the composition of the sugar beet, carried on in the Museum of Irish Industry, and which were published in the form of a parliamentary report, and especially to that of the relative value of large and small roots, which was so strongly dwelt upon by Mr. Sproule, in his paper read before the Royal Agricultural Society, it was thought advisable to continue the investigation of last year. As the examination was carried on as a part of our official duties, we could not make any use of them, prior to their authorized publication, but for the kindness of the director, (Sir Robert Kane), who permitted us to lay a short abstract of the principal results obtained before the Society.

A great number of analyses of the usually cultivated roots have been from time to time published; but in consequence of certain necessary conditions not having been attended to, the results have been of little practical importance. Now, one of the first conditions is that of weight, which, as we shall now endeavour to show, exerts a very remarkable influence upon the composition of bulbous roots.

On the Continent, where the roots are grown for the purpose of manufacturing sugar, it was long since remarked, that large-sized roots yielded less sugar than moderate-sized ones, between one and three pounds in weight. Analytically this was fully shown by the researches of the continental chemists, who had examined the subject, and was fully confirmed by our results of last year. Further than this, no practical application seems to have been made of the fact; and as very large roots grown in a rich and properly tilled soil may be better than moderate-sized ones grown in another place, no general law as to growth was surmised. In most previous investi-

gations upon the composition of roots the examination was confined to a single root from each locality; and hence it is owing to this cause that no satisfactory results were obtained.

To remedy this defect, we determined to take six roots from each locality—three of the largest and three of the smallest; and in order to diminish the influence of accidental causes, we subjected a great number of roots to examination. Our results are, in fact, founded upon the examination of about 450 roots of every kind, including Swedish turnips, carrots, the different varieties of the beet, &c.

With a very few exceptions we have found that, as a general rule, small roots contain a larger per-centage of solid matter than large roots, in some cases even to the extent of fifty per cent. Thus, the mean per-centage of solid matter contained in three roots of sugar beet, varying from 3lbs. 11½oz. to 4lbs. 2oz., grown by Mr. Niven, of Drumcondra, was found to be only 10.408, whilst in three small roots, varying from 1lb. 3½oz. to 1lb. 11½oz., it was 17.427; or, in other words, 100 tons of the small roots would be equal to 167.43 tons of the large. To take another example:—Three roots of long red mangel-wurzel, grown by Mr. Kelly, of Portrane, varying from 6lb. 14½oz. to 9lb. 3oz., contained only 10.986 per cent. of solid, whilst three small roots, varying from 6½oz. to 7½oz., contained 15.624 per cent.—that is, 100 tons of the small contained as much solid matter as 142.18 tons of the large. The rule applies equally to Swedish turnips. Thus, three turnips grown by Mr. Boyle, at the workhouse farm of Ballymoney, county of Antrim, varying from 6lb. 5½oz. to 6lb. 12oz., yielded 13.731 per cent. of solid matter, and three small roots, varying from 1lb. 2oz. to 1lb. 5½oz., 16.254 per cent.; or, in other words, 100 tons of the small would be equal to 118.37 tons of the large.

Owing to the influence of accidental causes—such as the comparative ripeness of the grains of seed, the influence of manure, &c.—it could not be expected that, in every case, a small difference in weight would be accompanied by a corresponding difference in the amount of solid matter; and accordingly we find that, in many cases, a root of 4lbs. may contain as much and even more solid matter than a root of 3lbs. Nevertheless, such examples are rare, as will be found by reference to the tables of the detailed report about to be published. But, if we divide the roots grown upon a field into several groups, showing large differences of weight, the rule becomes universal. Thus, in seventeen roots of sugar beet, grown by Lord Talbot de Malahide, upon the Island of Lambay, there were—

4 roots of from 6 to 8lbs. in weight, which yielded, as a mean per cent. of solid matter.	12,541
5 roots, between 3 and 5lbs.	14,197
8 " under 3lbs.	15,756

These results clearly indicate, that with increase of weight the solidity of root diminishes.

On tabulating our results we have found that, taken as a whole, small roots, no matter how or where grown, are superior to large roots in the amount of solid matter. The following table

contains a summary of our mean results, as far as we have been able as yet to reduce them:—

SIZE OF ROOTS.	White Swedish or Sugar Beet.	Long Red Mangel-wurzel.	Orange Globe Mangel.	Red Globe Mangel.	Swede Turnips.	Red Carrots.	White Belgian Carrots.
Average of roots.							
Above 7lbs.	10.201	10.017	10.735	8.701	10.755	—	—
5lbs.	11.633	11.476	11.028	10.115	11.257	—	—
From 3 to 5lbs.	15.703	14.931	13.971	12.030	12.810	—	—
Average of all roots.	14,552	13,635	12,615	11,189	12,031	13,370	12,990

This table presents some curious results, besides showing the decreasing value of roots as the size increases. Thus, for instance, as far as these results go, the sugar beet contains the largest amount of solid matter of any of the root crops now cultivated; and red and white carrots, though usually sold for £2 or £2 10s. per ton, are very little superior to ordinary swedes, and much inferior to the varieties of beet. Of course we do not pretend that the value of roots can be determined by the per-centage of solid matter alone, as its composition must be taken into account. But, in the same variety of plant, it will give an approximation to the truth—indeed, practically speaking, a very close one; in different species, or different families of plants, it is absolutely necessary to take the composition as well as the quantity of solid matter into consideration. In the case of carrots, however, an examination of the solid matter does not show that they are superior to that of the beet.

In the few exceptions to the general rule which we have observed, the large and small have had nearly the same composition, and no case has occurred where the small roots exhibited a decided inferiority to the large. In general, we were able to account for the cause of these exceptions. In one case, it arose from the seed being mixed; consequently, each root examined belonged to, more or less developed, distinct varieties. As a general rule, we have found that those roots of a particular variety of the beet which had white flesh were superior to those exhibiting a coloured flesh. In one case, this was remarkably shown, as the largest root which had this character was far superior to the smallest, which was remarkable for the amount of colouring matter which it contained. Another cause of exception was, that the roots which grew out of the soil, and whose upper segment was coloured more or less green, contained less solid matter than those which had grown fully under the soil. This result is in perfect accordance with the fact, that the segment of the root immediately below the crown contains less solid matter than the body of the root; and hence, if a large part of the root grows out of the soil, the portion thus exposed will partake of the character of that segment.

This last observation would seem to recommend the hoeing up of the soil close to the crown, —a practice which, however, appears to be opposed to that of practical farmers. It is singular that not a single exception occurred in the Swedish turnips.

These results lead to the conclusion, that nearly all the analyses of roots hitherto made, especially with reference to the action of manures upon gross weight and composition, are valueless. The same remark applies to all experiments made upon the relative feeding qualities of certain crops. We make this sweeping assertion with considerable diffidence, although we feel certain that, on a little consideration, it will be found to be just. Suppose, for instance, that roots grown with one manure are to be compared with the same kind of roots grown with another manure; it is quite clear, that if the roots of one set examined be larger than those of the other, the manure with which the small roots were grown will be pronounced to be the better adapted of the two for the growth of that particular root crop. Now, the size of the roots depends, among other circumstances, upon the intervals between the plants; and hence, in all such comparisons, the manure applied to land upon which the close-planting system prevails will have the advantage over that applied to land cultivated under the other system. Need we wonder, therefore, that practical agriculture has hitherto derived so little benefit from such an analysis?

It is needless to point out the influence which the facts that we have established must have upon the system of giving prizes for large roots, on the one hand, or of growing them on the other. It is evident that the object of the farmer ought to be, to grow the largest possible amount of food from a given space of ground, quite irrespective of the size of the roots; and if science leads to the conclusion, that that end will be best attained by the cultivation of moderate-sized roots, the present system, which favours the growth of large roots, must be modified. It is for the practical agriculturist to show how this is to be attained; but we are of opinion that a good many useful hints might be gleaned from the practice followed on the continent, with reference to the sugar beet.

TIPTREE FARM.

Mr. Mechi held his annual gathering of agriculturists on Wednesday, July 20th, and it went off as pleasantly as ever. Mr. Mechi entertained 300 guests, every one of whom must retain most agreeable recollections of his visit. The day was fine, and the first three hours of the day were spent in examining the state of the crops, and in testing the latest novelties in agricultural implements. Whatever may be the effect of a very unpropitious season elsewhere, at Tiptree it has done no harm; and while the agriculturists there seemed to be generally of opinion that the harvest would be short and late, not a grumble about the weather fell from their hosts' lips. He has this year very excellent wheat, and in other respects the produce of his farm promises a good average; but the two points on which his management shows strongest and to the best advantage are his clover and his rye grass. These bear unmistakable testimony to the value of the new system of liquid manure irrigation which Mr. Mechi has adopted, and in the details of which he has carried out many valuable improve-

ments. The clover is a second crop, and the rye grass a third, and both are exceedingly luxuriant. It may therefore be regarded as the chief feature of the present gathering at Tiptree, that it furnishes, within easy reach of the metropolis, a remarkable confirmation of the large results which have been already obtained in Scotland from liquifying the manure of the farm, conveying it through iron pipes to every part of the land, and, by gutta percha tubing attached to hydrants, distributing it liberally either upon the fallows or upon the growing crops. Such a system not only saves the heavy expense of cartage, but presents the plants with their natural food in the most convenient, direct, and effective form. It is a great step in advance; and, being no longer an experiment, but fairly adopted by the most enterprising farmers, is paving the way for the introduction of that larger and still more important change, by which the sewers of the towns will be made to fertilise the country, and, instead of breeding fever and pestilence, will help to increase the supply of food for the people. The next important point of any novelty brought forward was the trial of Samuelson's digging machine. It is rather too much for horse power within any moderate limits, but the manner in which it raises and pulverises the land, and the depth to which it is capable of acting, encourage us to hope that the time is not far distant when we shall have that most desirable and valuable of all implements, and which has been so long sought for—a steam digging machine doing the work of unskilled agricultural labour, and relieving our peasantry from the bondage of toil, the conditions of which are compatible with the grossest ignorance.

In the management of his stock, Mr. Mechi has made some advances upon the practice of former years. By a coating of limewash he has got rid of the swarms of flies that used to torment his cattle, and the same simple expedient tends to keep his feeding-sheds cool and sweet. His tank regularly every morning draws off the accumulations of the manure during the previous day, which are washed into it and liquefied.—He now keeps upon the produce of the 170 acres of which his farm consists, 360 sheep and 40 bullocks. He has also about 160 pigs, which, however, are fattened off with purchased food. The spirit which draws such a character from his shop in Leadenhall-street to improve the agriculture of his country is more creditable to him than the ambitions of many people whom society places far higher up in her ranks. Mr. Mechi, if he never produced a favourable balance-sheet, has done great service to the cause which he has striven so vigorously to promote. He has, in very difficult circumstances, and with unvarying good humour, been a chief connecting link between the practice and the theory of farming.—Claiming, and even insisting to be recognised as practical, he still inclined his ear to the speculative—some said the visionary. When events had opened a chasm between the two, he adventurously and goodhumoredly helped to span it, and now he is doing all in his power by these annual gatherings to cement the union so effected. The names of the people he invites to Tiptree sufficiently indicate this motive, for there we found

yesterday men eminent in a number of departments, kindred more or less to the pursuits of agriculture, all brought into friendly communication with many of the best agriculturists not only in this country but from France and America.—The Earl of Harrowby, Lord Kinnaird, and Viscount Ebrington fairly represented a liberal-minded landlord interest favourable to improvement. Viscounts de Courzay, M. Barral, the Hon. Stephen Salisbury, M. Gourdiere, M. Allier, and Professor Nash gave a suitable idea of the interest with which foreign countries are watching our progress both in the practice and the science of agriculture. Then Mr. Mechi had invited Mr. Chadwick, Dr. Southwood Smith, and the leading officers of the General Board of Health, to show his anxiety for the union of sanitary reform and increased fertility. Such names as those of Mr. Samuel Gurney, Mr. Charles Knight, Mr. Bohn, Captain W. Peel, R.N., Mr. Waddington, M.P., Colonel Leslie, Captain Owen, R.A., Mr. Warren Delarue, Mr. Fuller, and Mr. Bird may appear somewhat out of place on such an occasion; but when it is remembered how widely spread the taste for rural pursuits in this country is it cannot be considered inappropriate that Mr. Mechi should have included them in his list of invitations. Besides, he took care to have present a number of our most enterprising farmers, breeders of stock, and implement makers.—Among these we may mention the names of Mr. Jonas Webb, Mr. Fisher Hobbs, and Mr. Garrett. Last, but not least among the guests, was Professor Way, whose recent researches in agricultural chemistry have attracted such great and deserved attention. When the survey of his farm was over, Mr. Mechi invited the large party which he had assembled around him, to a substantial and well-provided luncheon, set out in his barn, where, after the claims of their appetites, sharpened fresh by air and exercise, had been appeased, toasts went round and speeches were made, chiming in well with the spirit of the gathering.

CLASSIFICATION OF SOILS.

The best classification of soils is a chemical classification, founded upon their composition according to the proportion of sand separable by washing; it divides them into sands, sandy loams, loams, clay loams, and clays. It subdivides these again into fine and coarse sands and sandy loams, according to the size of the particles of sand, and into gravelly sands, loams, and clays, according to the proportion of pebbles or fragments of rocks. The proportion of calcareous matter indicates whether they are to be called marly or calcareous sands, loams, and clays; while if they contain a certain proportion of vegetable matter, they are called vegetable soils. Each name should express some defined proportion of sand separable by washing, and of calcareous or vegetable matter. The defect in the classification of soils given in the instructions to the Irish valuers is want of precision in this respect. In such a classification as we advocate, we should have:—

1. *Siliceous soils*, containing from 90 to 95 per cent. of sand. These would be divided, on the

same principle, into blowing sand, coarse sand, good agricultural sand, and calcareous sand.

2. *Loamy soils*; 70 to 90 per cent. of sand separable by washing, subdivided into coarse sandy loam, fine sandy loam, rich loam, and calcareous loam.

3. *Clayey soils*, with 40 to 70 per cent. of sand; divided into clay loam, clay, and calcareous clay.

Each of these soils, termed calcareous sand, calcareous loam, &c., contains 5 per cent. of lime.

Marly soils constitute a fourth group, in which the proportion of lime ranges between 5 and 20 per cent., and are divided into sandy marls, loamy marls, and clayey marls.

Calcareous soils contain more than 20 per cent. of lime. They are divided into sandy calcareous, loamy calcareous, and clayey calcareous. While in calcareous sands, clays, and loams, the proportion of lime does not exceed 5 per cent. The difference of composition denoted by difference of name, is similar to the sulphates and sulphites of chemical nomenclature, which contain different proportions of sulphuric acid.

According to the quantity of pebbly fragments yielded by a square yard, or by a cubic foot of the soil, they might be denominated *gravels*, or *gravelly sands*, loams, and clays.

Vegetable soils vary from the common garden mould, which contains from 5 to 10 per cent. of vegetable matter, to the peaty soil, in which the organic matter is about 60 or 70 per cent. They will be vegetable sands, loams, clays, marls, &c.

Considered geologically, soils may be classed in three groups:—

1. *Local soils*, or those derived exclusively from the debris of the rock upon which they rest, unmixed with the materials of other rocks.

2. *Erratic soils*, containing the mixed materials of several, and in many cases distinct formations, transported by currents of water, which, at the close of what is called the tertiary period of geology, act irrespectively of the present lines of drainage and sea levels.

3. *Alluvial soils*, composed of finely divided matter, transported and deposited by rivers and tidal currents, in subordination to the existing levels and lines of drainage.

In this combined chemical and geological classification, then, we would reverse the form of Mr. Bravender's table, and arrange the chemical groups in horizontal lines, beginning with the siliceous, and refer them to one or the other of three vertical columns, headed erratic, local, and alluvial. We should thus have erratic, local, and alluvial sands, sandy loams, or clays; of which the erratic would be found to be by far the most numerous. To these names might be added that of the formation upon which they rest. Thus we should have, as in a large portion of Norfolk, Suffolk, and Essex, erratic clays and clay loams on the chalk or London clay; and we should have local calcareous soils in certain parts of the chalk, the oolites, and the carboniferous limestone. In the case of alluvial deposits, the soil has been formed of the fine matter derived from so many rocks along the course of the river, that the formation upon which it rests makes little or no difference in its composition.—*Mark Lane Express.*

MISCELLANEOUS.

THE BEST METHOD OF KEEPING EGGS.

Some of your correspondents inquire about the best method of keeping eggs fresh; and as we have a plan here which I have not seen mentioned in any of the replies which have been given to these inquiries, I send it to you, particularly as I find it better than any I have seen mentioned:

"Take a half-inch board of any convenient length and breadth, and pierce it as full of holes (each $1\frac{1}{2}$ inch in diameter) as you can, without risking the breaking of one hole into another—I find that a board of 2 feet 6 inches in length, and one foot broad, has five dozen in it, say twelve rows of five each; then take four strips of the same board of 2 inches broad, and nail them together edgewise into a rectangular frame of the same size as your board; nail the board upon the frame, and the work is done, unless you choose, for the sake of appearances, to nail a beading of three-quarters of an inch round the board at the top; this looks better and sometimes may prevent an egg from rolling off. Put your eggs in this board as they come in from the poultry-house, the small end down, and they will keep good for six months if you take the following precautions:—Take care that the eggs do not get wet either in the nest or afterwards (in summer, hens are fond of laying among the nettles or long grass, and any egg taken from such nests in wet weather should be put away for immediate use); keep them in a cool room in summer, and out of the reach of frost in winter, and then I think the party trying the experiment will have abundant reason to be satisfied with it. I find there are some in my larder which I am assured have been there nearer eight months than six, and which are still perfectly fresh and good; in fact, it is the practice here to accumulate a large stock of eggs in August, September, and October, which last until after the fowls have begun to lay in the spring. If two boards are kept, one can be filling and the other emptying at the same time. This is an exceeding good plan for those persons who keep a few fowls for the supply of eggs to their own family; but would, perhaps, not do so well for those who keep a large stock of hens, as it would take up too much room. I have endeavoured to account for the admirable way in which eggs keep in this manner, by supposing that the yolk floats more equally in the white, and has less tendency to sink down to the shell, than when the egg is laid on one side; certainly, if the yolk reaches the shell, the egg spoils immediately.—*Agricultural Gazette.*

THE BEST MANURE.

In the scope of my limited observation, in regard to manures—stable manure—the residuum of cattle and the offals of the barn-yard are decidedly the most reliable, and all that is necessary is to provide it in abundance. To those who feed their animals well, there will always be a good return, for animals are chemical locomotives, which transform fodder into manure, and the better the fodder, the better the manure.—*Dr. Keim.*

THE MYSTERIES OF A FLOWER.

From the Popular Educator.

The mysteries of a flower, as indicated in the following thoughts of Professor R. Hunt, of England, are both instructive and pleasing. They are admirably fitted to awaken a feeling of wonder, and call back the heart of man to the love of nature

Flowers have been called the stars of the earth; and certainly, when we examine those beautiful creations, and discover them analyzing the sunbeam, and sending back to the eye the full luxury of colored light, we must confess there is more real appropriateness in the term than even the poet who conceived the delicate thought imagined. Lavoisier beautifully said, "The fable of Prometheus is but the out-hadowing of a philosophic truth: where there is light, there is organization and life; where light cannot penetrate, Death for ever holds his silent court." The flower, and, indeed, those far inferior forms of organic vegetable life which never flower, are direct dependencies on the solar rays. Through every stage of existence they are excited by those subtle agencies which are gathered together in the sunbeam; and to these influences we may trace all that beauty of development which prevails throughout the vegetable world. How few there are of even those refined minds to whom flowers are more than a symmetric arrangement of petals harmoniously colored, who think of the secret agencies for ever exciting the life which is within their cells to produce the organized structure—who reflect on the deed, yet divine philosophy which may be read in every leaf—those tongues in trees which tell us of Eternal goodness and order!

The hurry of the present age is not well suited to the contemplative mind; yet, withal, there must be hours in which to fall back into the repose of quiet thought becomes a luxury. The nervous system is strung to endure only a given amount of excitement; if its vibrations are quickened beyond this measure, the delicate harp-strings are broken, or they may undulate in throbs. To every one the contemplation of natural phenomena will be found to induce that repose which gives vigor to the mind, as sleep restores the energies of a toil-exhausted body. And to show the advantages of such a study, and the interesting lessons which are to be learned in the fields of nature, is the purpose of the present essay.

The flower is regarded as the development of growth; and the consideration of its mysteries naturally involves a careful examination of the life of a plant, from the seed placed in the soil to its full maturity, whether it be as herb or tree.

For the perfect understanding of the physical conditions under which vegetable life is carried on, it is necessary to appreciate in its fullness the value of the term *growth*. It has been said that stones grow—that the formation of crystals was an analogous process to the formation of a leaf; and this impression has appeared to be some-

what confirmed by witnessing the variety of arborescent forms into which solidifying water passes, when the external cold spreads it as ice over our window-panes. This is, however, a great error; stones do not *grow*—there is no analogy even between the formation of a crystal and the growth of a leaf. All inorganic masses increase in size only by the accretion of particles, layer upon layer, without any chemical change taking place as an essentiality. The sun may shine for ages upon a stone without quickening it into life, changing its constitution, or adding to its mass. Organic matter consists of arrangements of cells or sacs, and the increase in size is due to the absorption of gaseous matter through the fine tissue of which they are composed. The gas—a compound of carbon and oxygen—is decomposed by the excitement produced by light; and the solid matter thus obtained is employed in building a new cell, or producing actual growth—a true function of *life*—in all the processes of which matter is constantly undergoing chemical change.

The simplest developments of vegetable life are the formation of *confervæ* upon water, and of lichens upon the surface of the rock. In chemical constitution, these present no very remarkable differences from the cultivated flower which adorns our garden, or the tree which has risen in its pride amidst the changing seasons of many centuries. Each alike has derived its solid constituents from the atmosphere, and the chemical changes in all are equally dependent upon the powers which have their mysterious origin in the great centre of our planetary system.

Without dwelling upon the processes which take place in the lower forms of vegetable life, the purposes of this essay will be fully answered by taking an example from amongst the higher class of plants, and examining its conditions, from the germination of the seed to the full development of the flower—rich in form, color, and order.

In the seed-cell we find, by minute examination, the embryo of the future plant, carefully preserved in its envelope of starch and gluten. The investigations which have been carried on upon the vitality of seeds appear to prove that, under favorable conditions, this life-germ may be maintained for centuries. Grains of wheat which had been found in the hands of an Egyptian mummy, germinated and grew; these grains were produced, in all probability, more than three thousand years since; they had been placed, at her burial, in the hands of a priestess of Isis, and in the deep repose of the Egyptian catacomb, were preserved to tell us, in the eighteenth century, the story of that wheat which Joseph sold to his brethren.

The process of germination is essentially a chemical one. The seed is placed in the soil, excluded from the light, supplied with a due quantity of moisture, and maintained at a certain temperature, which must be above that at which water freezes; air must have free access to the seed, which, if placed so deep in the soil as to prevent the sremation of the atmosphere, never germinates. Under favorable circumstances,

life-quickening processes begin; the starch, which is a compound of carbon and oxygen, is converted into sugar by the absorption of another equivalent of oxygen from the air; and we have an evident proof of this change in the sweetness which most seeds acquire in the process, the most familiar example of which we have in the conversation of barley into malt. The sugar thus formed furnishes the food to the now living creation, which in a short period shoots its first leaves above the soil; and these, which, rising from their dark chambers, are white, quickly become green under the operation of light.

In the process of germination, a species of slow combustion takes place, and—as in the chemical processes of animal life and in those of active ignition—carbonic acid gas, composed of oxygen and charcoal, or carbon, is evolved. Thus, by a mystery which our science does not enable us to reach, the spark of life is kindled—life commences its work—the plant grows. The first conditions of vegetable growth are, therefore, singularly similar to those which are found to prevail in the animal economy. The leaf-bud is no sooner above the soil than a new set of conditions begin; the plant takes carbonic acid from the atmosphere, and having in virtue of its vitality, by the agency of luminous power, decomposed this gas, it retains the carbon, and pours forth the oxygen to the air. This process is stated to be a function of vitality; but as this has been variously described by different authors, it is important to state with some minuteness what does really take place.

The plant absorbs carbonic acid from the atmosphere through the under surfaces of the leaves, and the whole of the bark; it at the same time derives an additional portion from the moisture which is taken up by the roots, and conveyed “to the topmost twig” by the force of capillary attraction and another power called *endosmosis*, which is exerted in a most striking manner by living organic tissues. This mysterious force is shown in a pleasing way by covering some spirits of wine and water in a wine-glass with a piece of bladder; the water will escape, leaving the strong spirit behind.

Independently of the action of light, the plant may be regarded as a mere machine; the fluids and gases which it absorbs pass off in a condition but very little changed, just as water would strain through a sponge or a porous stone. The consequence of this is the blanching or *etiolation* of the plant, which we produce by our artificial treatment of celery and sea-kale—the formation of the carbonaceous compound called *chlorophyle*, which is the green coloring-matter of the leaves, being entirely checked in darkness. If such a plant is brought into the light, its dormant powers are awakened, and instead of being idle other than a sponge through which fluids circulate, it exerts most remarkable chemical powers; the carbonic acid of the air and water is decomposed; its charcoal is retained to add to the wood of the plant, and the oxygen is set free again to the atmosphere. In this process is exhibited one of the most beautiful illustrations of the harmony

which prevails through all the great phenomena of nature with which we are acquainted—the mutual dependence of the vegetable and animal kingdoms.

In the animal economy, there is a constant production of carbonic acid, and the beautiful vegetable kingdom, spread over the earth in such infinite variety, requires this carbonic acid for its support. Constantly removing from the air the pernicious agent produced by the animal world, and giving back that oxygen which is required as the life-quickening element by the animal races, the balance of affinities is constantly maintained by the phenomena of vegetable growth. This interesting inquiry will form the subject of another essay.

The decomposition of carbonic acid is directly dependent upon luminous agency. From the impact of the earliest morning ray to the period when the sun reaches the zenith, the excitation of that vegetable vitality by which the chemical change is effected regularly increases. As the solar orb sinks towards the horizon, the chemical activity diminishes: the sun sets—the action is reduced to its minimum; the plant, in the repose of darkness, passes to that state of rest which is as necessary to the vegetating races as sleep is to the wearied animal.

These are two well-marked stages in the life of a plant; germination and vegetation are exerted under different conditions; the time of flowering arrives, and another change occurs; the processes of forming the alkali and the acid juices, of producing the oil, wax, and resin, and of secreting these nitrogenous compounds which are found in the seed, are in full activity. Carbonic is now evolved, and oxygen is retained, hydrogen and nitrogen are also forced, as it were, into combination with the oxygen and carbon, and altogether new and more complicated operations are in activity.

Such are the phenomena of vegetable life which the researches of our philosophers have developed. This curious order, this regular progression, showing itself at well-marked epochs, is now known to be dependant upon solar influences; the

“Bright effluence of bright essence incarnate”

works its mysterious wonders on every organic form. Much is still involved in mystery: but to the call of science some strange truths have been made manifest to man, and of some of these the phenomena must now be explained.

Germination is a chemical change which takes place most readily in darkness; *vegetable growth* is due to the secretion of carbon under the agency of light; and the processes of *floriation* are shown to involve some new and compound operation; these three states must be distinctly appreciated.

The sunbeam comes to us as a flood of pellucid light, usually colorless; if we disturb this white beam, as by compelling it to pass through a triangular piece of glass, we break it up into colored bands, which we call the *spectrum*, in which we have an order of chromatic rays as are seen in the rainbow of a summer shower. These colored rays are known to be the sources of all the tints by which nature adorns the earth, or

art imitates in its desire to create the beautiful. These colored bands have not the same luminating power, nor do they possess the same heat giving property. The yellow rays give the most light; the red rays have the function of heat in the highest degree. Beyond these properties, the sunbeam possesses another, which is the power of producing CHEMICAL CHANGE—of effecting these magical results which we witness in the photographic processes, by which the beams illuminating any object are made to delineate it upon the prepared tablet of an artist.

It has been suspected that these three phenomena are not due to the same agency, but that, associated in the sunbeam, LIGHT, producing all the blessings of vision, and throwing the veil of color over all things—HEAT, maintaining that temperature over our globe which is necessary to the perfection of living organisms—and a third principle, ACTINISM, by which the chemical changes alluded to are effected. We possess the power, by the use of colored media, of separating these principles from each other, and of analyzing their effects, a yellow glass allows light to pass through it most freely, but it obstructs *actinism* almost entirely; a deep blue glass on the contrary, prevents the penetration of light; but it offers no interruption to the *actinic* or chemical ray; a red glass, again, cuts off most of the rays except those which have peculiarly a *calorific* or heat-giving power.

With this knowledge we proceed in our experiments, and learn some of the mysteries of nature's chemistry. If, above the soil in which the seed is placed, we fix a pure, yellow glass, the chemical change which marks germination is prevented; if, on the contrary, we employ a blue one, it is greatly accelerated; seeds, indeed, placed beneath a cobalt-blue finger-glass, will germinate many days sooner than such as may be exposed to the ordinary influences of sunshine: this proves the necessity of the principle of *actinism* to the first stage of vegetable life. Plants, however, made to grow under the influence of such blue media present much the same conditions as those which are reared in the dark; they are succulent, instead of woody, and have yellow leaves and white stalks; indeed the formation of leaves is prevented, and all the vital energy of the plant is exerted in the production of stalk. The chemical principal of the sun's rays alone is not therefore sufficient; remove the plant to the influence of light, as separated from *actinism*, by the action of yellow media, and wood is formed abundantly; the plant grows most healthfully and the leaves assume the dark green which belongs to the tropical climes or to our most briliant summers. Light is thus proved to be the exciting agent in effecting these chemical decompositions which already have been described; but under the influence of isolated light, it is found that plants will not flower. When, however, the subject of our experiment is brought under the influence of a red glass, particularly of that variety in which a beautiful pure red is produced by oxide of gold, the whole process of floriation and the perfection of the seed is accomplished.

Careful and long-continued observations have proved that in the spring, when the process of

germination is most active, the chemical rays are the most abundant in the sunbeam. As the summer advances, light, relatively to the other forces, is largely increased; at this season, the trees of the forest, the herb of the valley, and the cultivated plants which adorn our dwellings, are alike adding to their wood. Autumn comes on, and then heat, so necessary for ripening grain, is found to exist in considerable excess. It is curious, too, that the autumnal heat has properties peculiarly its own—so decidedly distinguished from the ordinary heat, that Sir John Henschel and Mrs. Somerville have adopted a term to distinguish it. The peculiar browning or scorching rays of autumn are called *parathermic* rays: they possess a remarkable chemical action added to their calorific one; and to this are due those complicated phenomena already briefly described.

In these experiments, carefully tried, we are enabled to imitate the conditions of nature, and apply at any time these states of solar radiation which belong to the varying seasons of the year.

Such is the rapid sketch of the mysteries of a flower. "Consider the lilies of the field, how they grow; they toil not, neither do they spin; and yet I say unto you, Solomon's in his glory was not arrayed like one of these."

Under the influence of the sunbeams, vegetable life is awakened, continued, and completed; a wondrous alchemy is effected; the change in the condition of the solar radiations determines the varying conditions of vegetable vitality; and in its progress those transmigrations occur which at once give beauty to the exterior world, and provide for the animal races the necessary food by which their existence is maintained. The contemplation of influences such as these realizes in the human soul that sweet feeling which, with Keats, finds that

"A thing of beauty is a joy for ever;
Its loveliness increasing, it will never
Pass into nothingness, but still will keep
A bowen quiet for us, and a sleep
Full of sweet dreams, and health, and quiet breathing.

"Such the sun and moon.
Trees old and young sprouting a shady boon
For simple sheep; and such are daffodils,
With the green world they live in."

POETRY.

The pleasure produced by poetry, if analyzed, will be found to consist of three elements: First, the pleasure derived from the excitement of our emotions; second, that derived from the play of the imagination; and third, that from the diction.

A poem should possess these three characteristics, and to whatever extent it comes short in any one of these, to that extent it is imperfect and defective. A poem occupying the highest place in the poetic art will exhibit these three excellencies.

There are some poems in the English language which exhibit some one of these excellencies in a very high degree. For instance, the *Endymion* of Keats and the *Alastor* of Shelley are written in remarkably pure poetic language. Indeed, several of the poems of these gifted men are specimens of poetic diction. They are

like jewellery, burnished, tasteful, and ornate. Other poems, again, excel in thought. Wordsworth, Milton, and Shakespeare fascinate in an eminent degree by their thoughts. Sir Walter Scott and Thomas Moore thrill and excite the reader by the perpetual play of the imagination.

Few poets have excelled in the three elements of poetic excellence. Burns and Byron have succeeded better, perhaps than any of their contemporaries. Campbell has elaborated his diction too much. Pollok, his by far too little. Wordsworth understood well the wonderful sorcery of style. Bryant is always careful of his style. Longfellow has succeeded better, probably, than any other living poet in marrying thought to appropriate language, especially in several of his smaller poems.

Some of the poets of the early part of the seventeenth century overlooked both thought and style, for the mere play of the fancy. Their writings are little perused. They are, in the firmament of song, what the summer lightning is, which shoots in zig-zag courses through the blue sky. In a poem, style and fancy may be sacrificed, but thought never. Thought is the soul of poetry. Measured language is not poetry; there must be thought in it—thought which stirs the soul of the reader as the voice of a trumpet at midnight rouses the sleeping inhabitants of a city. Thought is the soul of poetry. Nor should any person attempt the sublime art, unless his own soul has been moved by the thoughts which he embodies in it.

The following story has something in it which makes the reader sad. The diction is deficient in polish, and yet there are thoughts in it which move the soul:

THE DYING CHILD AND THE FLOWERS.

I.

"Where are the flowers?" the dying child exclaimed;
Winter had come and soved the snow on hill
And vale. "Where are the flowers?" the dying child
Did ask, as she looked through the window.
The last time, on the earth. For months she lay
A dying, but on this cold Sabbath morn
She bade them lift her from her little couch,
And take her to the window, that her eyes
Might see once more the lawn, the trees and flowers:
The winter's wind raved round the dwelling,
And all the landscape lay like a corpse-wrapt
In the winding sheet of driven snow.
"Where are the flowers, mamma? are they all dead
Before me. Say, mamma, where are the flowers."

II.

As soon as that young mother's heart was calmed,
And she had wiped the salt tears from her face,
"The flowers," she said, "are only sleeping now:
The spring will come full soon, and wake them up;
The flowers will come again, my blessed child,
The snow will pass away, the chilly earth
Grow warm; and the nipping frost and sweeping rains
Will soon be o'er. The flowers will come again;
My little Mary soon will see the flowers."

III.

To this the dying child replied in calm
And thrilling tones. "Mamma, I know me where
The flowers have gone. The angels love the flowers,
And they have taken them to holy heaven:
Earth is too cold for flowers; they always die;
And they have taken them to their own gardens,
Where all the flowers are made immortal.
Mamma, the angels have come back to me,
To take me where the pretty flowers never die.
The Saviour loveth flowers and children:
Come soon, mamma, into the heavenly world,
Up where the angels and the flowers ever dwell."

—Popular Educator.

CROWTHER THE BOTANIST.

[The following Biographical notice will be perused with interest by many of our readers. We had a personal acquaintance with the subject of it, and can vouch for its correctness. Some years since, we knew several similar characters among the working classes of Manchester, and its vicinity, men who though socially in a very humble condition, labouring incessantly for their daily bread, yet found time for forming an acquaintance with the several departments of natural science, and even in some instances of enlarging their boundaries. The hand loom weavers—although the worst remunerated of any of the manufacturing operatives—have in numerous instances been distinguished by an enthusiastic fondness for horticulture and natural history. We have known some of these men, after a hard week's work, walk thirty or forty miles on the Sunday, in search of Botanical or Geological specimens. What a lesson does such a profound devotion to scientific pursuits, read to those who are blessed with leisure and ample means! If our young people would emulate such examples, and eschew the senseless and but too often demoralising Novel, a firmer and higher tone of feeling would soon pervade the community. The flood of inferior books which the press is daily pouring forth, in the shape of tales and romances, forms one of the characteristics of the present age, and presents several serious difficulties to the progress of a healthy and higher civilization.—E.D.]

James Crowther, a porter at Manchester, England, furnishes one of the most extraordinary instances on record of devotion to science in humble life. He was born at Manchester, and at the age of nine years was employed as errand-boy in connection with one of the factories, like most of the children of the poor in those great seats of industry. He had been sent to school during some short period, and had made such good use of his time that he had learned to read with sufficient ease and correctness to acquire some literary taste; but from his earliest years he exhibited the utmost fondness for natural history, and above all for botany. Manchester and its environs have always numbered amongst its working-men a considerable number of amateurs in science, if we may use the expression, and the fields in the neighbourhood are frequented by them for the purpose of collecting specimens.

Crowther made the acquaintance of some of these, and remained upon intimate terms with them during his life-time. Thirty or forty persons belonging to the town, and who were fond of botanizing, met every week during spring and summer to exhibit the specimens they had collected, and communicate to each other the result of their observations. Crowther, however, being

employed as a porter during the day, could only devote the night to his favorite study. He might often be seen in the fields about daybreak, where he continued busily engaged until the approach of the hour of labor compelled him to hasten home. While thus employed he frequently ran great danger of being arrested by gamekeepers, watchers, and others, who could not imagine that a man in his rank of like could be roaming through the fields at such an hour for any purpose but a mischievous one. Upon one occasion he was found botanizing upon the property of a Mr. Egerton, and was taken into custody, charged with fishing in his preserves, and was brought up before a magistrate. The proofs appeared sufficiently plain. He was armed with a long pole with a sharp crook and a net at the end. It was in vain that the botanist protested his innocence of the design imputed to him, and explained that his weapon was intended for no other purpose than the pulling up of aquatic plants and dragging them ashore; and, would in all probability have paid for his imprudent devotion to science by being immured in prison, had not Mr. Egerton become convinced of the truth of his story, and given direction to his gamekeepers not to prosecute him nor molest him in his excursions in future. His friends tell many stories of the delight which the discovery of a plant previously unknown to him caused him even in old age. He never seemed in the least degree affected by cold or fatigue. One day he persuaded one of his friends to accompany him to a lake, on the banks of which he stated he had seen a rare plant; but on their arrival they found to Crowther's great chagrin, that the water's had risen so much in consequence of the heavy rains that the object of their search was no longer to be seen. His friend was about to go away dissatisfied, when he heard a plunge, and turning round, he found that Crowther had disappeared. In a few minutes he reappeared, and swam ashore, carrying the specimen in his mouth.

Crowther's name has not been entirely unknown to fame. Sir J. E. Smith, Dr. Hull, and Larmetti speak of him in terms of the highest praise, and of the services he had rendered to science by his valuable collection of mosses and lichens. He also devoted considerable attention to entomology, and had in his possession a large collection of insects, which he classified himself with great care: but he was obliged to dispose of them by degrees, in consequence of the pressure of poverty, as he had a wife and a large family. His innate modesty always kept him from seeking either assistance or patronage, and he consequently remained all his life the porter of a warehouse. For a long time he received only sixteen shillings a week of wages, and afterwards twenty shillings, the whole of which he placed in his wife's hands, reserving to himself nothing but the proceeds of any extra jobs he might pick up in the town, which he spent in furthering his botanical pursuits. Age and infirmity having rendered him no longer fit for the duties of his situation, he was obliged to subsist during the latter years of his life upon a pension of three shillings a week allowed him by the Society for the Encouragement of Needy Men of

Science. This was all Manchester could do for a philosopher in humble life—the great emporium of commerce, which spends thousands without hesitation upon the uncertainties of political agitation. Crompton died in 1847, at the age of seventy-seven years, leaving all his children in a position as hirable as his own. When he was dead, the world found out that he was a great man, and spent seven guineas in burying him and building a tomb over him, by way of compensating him for the misery and destitution of his old age!

THE NEW ENGLISH CRYSTAL PALACE.

The Crystal Palace at Sydenham begins to cast before it a very distinct shadow of the magnificence to come. Those who have availed themselves of the privilege, now open to all, of inspecting the works, on payment of a five shilling fee, must have been sufficiently impressed with the thoroughness with which the business is being done. They must have felt, if not said to themselves, "This promises to be, not only the finest exhibition in the world, but the finest exhibition possible, at the world's present stage of progress." In magnitude and variety, the display will certainly extend to the extreme verge of the practically comprehensible. To have seen the old exhibition thoroughly, would have required no small fraction of the leisure of a lifetime; but the Sydenham display will be one which, if numerically more finite, will yet demand far more time for its entire comprehension, on account of the vastly greater average interest of the objects displayed. These objects will be precisely those which are fitted to be of the best and deepest interest to the greatest possible number of persons. Those of the fine arts which are capable of being put under contribution for exhibition will be represented with an extent and completeness hitherto unknown. Facsimiles of all the noblest sculptures which ancient and modern times have produced will be assembled in one spot. Architectures—Egyptian, Greek, Arabic, and Gothic—will not only be represented, but re-produced, "life-size," in all their more notable forms, and with practical illustrations of the popular mysteries of polychromy, hypæthral roofs, honey-comb vaulting, ancient frescoes and arabesques, &c.; and furthermore, the main building itself will be the first and most glorious specimen of an entirely new style of architecture of singular beauty, and of great, though, as yet, very imperfectly foreseen powers of adaptation to our peculiar modern wants. Mr. Ruskin, who said of the architecture of the old Crystal Palace, that

The earth has bubbles as the water hath,
And this is of them;

will be found to have committed a memorable blunder; and he will doubtless be not slow to retract it when he beholds, from the lovely western valley, the terraced hill blazing with millions of flowers and jets *d'eau*, and crowned with the lofty transepts, vaulted naves, and soaring towers of the new cathedral of the arts and sciences. If, in the presence of so poetical a sub-

ject, we may be permitted to express ourselves by a poetical figure, our old stone and brick architecture may be said to have died, like Goethe, calling for "more light," and to have arisen, in the present form, with the full enjoyment of the desiderated brilliance.

The art of nature will be represented side by side and hand in hand with the art of man, and in the same order—that is, historically. The marvels of Karnak and Nineveh, with their sphinxes and bulls as big as the Trojan horse, will be matched with the production of the "heroic ages" of nature—the vast mud lake, the dreary shore of the pre-Adamite isle, with its rank cover of ferns, and its mighty *Jenizens*, the *Ichthyosaurus*, the *Mastodon*, the *Plesiosaurus*, and the *Megatherium*, as large as life, and larger than credible to the modern eye. The race even of man will be called upon to render a full account of itself, and the halls of the Sydenham Palace will present to our astonished senses every variety of the posterity of Shem, Ham, and Japhet, from the "pure Caucasian" to the *Bosjeman*, and from the giants of Patagonia to the *Aztec Lilliputians*, together with the physiology of these personages, we shall be enabled to contemplate their main attainments or shortcomings in the useful arts; especially the useful art of war, of which the implements will no doubt appear to have constituted the chief staple products of nine varieties out of ten.

After the men among their war-tools, will come the beasts, birds, and fishes of modern times, *i. e.*, the last six thousand years or so—with their favorite botany: monkeys in their real skins climbing up the parasite bound columns of the palace; bats and vampires clinging to its leafy roofs; lions and their prey couching through the shadowy and everlasting summer of the aisles; dodos and penguins squatting in appropriate recesses; marvellous molasses taking their tranquil pleasure in crystal tanks; and fishes disporting themselves, secure from every danger, unless, perhaps, that which was contemplated in the famous rhyme which described them as sweating and swearing under "the sun's perpendicular heat."

The winter garden will, of course, put all other winter gardens in the world to blush, since the advantages under which it will be created were never yet even distantly approached; and the English summer garden, outside, already shows its intention of surpassing everything in the way of gardens either in fact or fable, from the hanging gardens of Babylon to the stately avenues and terraces of Versailles.

Full advantage of the opportunity is to be taken for giving a system of illustrations of geology upon the natural scale; and, in connection with this department, we are to have complete exemplifications of the processes of mining, quarrying, well-sinking, and tunnelling.

Over and above all this, which formed no part of the old Exhibition, we are to have all that was most significant in the old Exhibition selected and systematised in the new.

A complete and intelligible collection of "raw produce," mineral, vegetable, and animal, is to be found under the same roof with the "Court of

Inventions," in which models and working illustrations of all that is most valuable in human ingenuity will be displayed, together with the results in objects of necessity, convenience, and taste. Were we not right in saying that the new Crystal Palace promises to be the best exhibition at present possible? It would certainly be difficult to add any new element to those now enumerated without danger of diminishing the total effect by making it collectively too vast to be the subject of contemplation.

Although there is every reason to suppose, from the present appearance of the works, that the Palace will be sufficiently advanced by next May to be thrown quite open to the public, it is not to be supposed that the Exhibition can be perfected by that time. The Winter-garden and the departments of Manufactures and Zoology will require a long time for their completion; but whatever may be the incompleteness of the Palace next May, the public may rest assured that, in general effect, the display will almost surpass our present conception, and that, in matter of detail, there will be far more than can be inspected in one season by any person, with only a reasonable amount of sight-seeing time on his hands.—*Daily News.*

THE MOCKING BIRD OF AMERICA.

The American Mocking Bird is the prince of all song-birds, being altogether unrivalled in the extent and variety of his vocal powers; and, besides the fullness and melody of his original notes, he has the faculty of imitating the notes of all other birds, from the humming-bird to the eagle. Pennant states that he heard a caged one imitate the mew of a cat, and the creaking of a sign in high winds. Barrington says, his pipes come nearest to the nightingale of any bird he ever heard. The description, however, given by Wilson, in his own inimitable manner, as far excels Pennant and Barrington as the bird excels its fellow songsters.—Wilson tells us that the ease, elegance and rapidity of his movements, the animation of his eye, and the intelligence he displays in laying up lessons, mark the peculiarity of his genius. His voice is full, strong and musical, and capable of almost every modulation, from the clear and mellow tones of the wood thrush to the savage scream of the bald eagle. In measure and accents he faithfully follows his originals, while in strength and sweetness of expression he greatly improves upon them. In his native woods, upon a dewy morning, his song rises above every competitor, for the others appear merely as inferior accompaniments. His own notes are bold and full, and varied seemingly beyond all limits. They consist of short expressions of one, three, or at most five or six syllables, generally uttered with great emphasis and rapidity, and continued with undiminished ardor for half an hour at a time.—While singing he expands his tail, glistening with white, keeping time to his own music, and the buoyant gaiety of his action is no less fascinating than his song. He sweeps round with enthusiastic ecstasy; he mounts and descends, as his song swells or dies away: he bounds aloft with the celerity of an arrow, as if to recover or to recall his

very soul, expired in the last elevated strain. A bystander might suppose that the whole feathered tribe had assembled together on a trial of skill—each striving to produce the utmost effort—so perfect are his imitations. He often deceives the sportsman, and even birds themselves are sometimes imposed upon by this admirable mimic. In confinement, he loses little of the power or energy of his song. He whistles for the dog; Caesar starts up, wags his tail, and runs to meet his master.—He cries like a hut chicken, and the hen hurries about with feathers on end, to protect her injured brood. He repeats the tune taught him, though it be of considerable length, with perfect accuracy. He runs over the notes of the canary and the red bird with such superior execution and effect, that the mortified songsters confess his triumph by their immediate silence. His fondness for variety, some suppose, injures his song. His imitation of the brown thrush is often interrupted by the crowing of cocks; and his exquisite warblings after the blue bird are mingled with the screaming of swallows and the cackling of hens. During moonlight, both in the wild and tame state, he sings the whole night long. The hunters in their nocturnal excursions, know that the moon is rising, the instant they hear this delightful solo.

After Shakespeare, Barrington attributes, in part, the exquisiteness of the nightingale's song to the silence of the night; but if so what are we to think of the bird, which in the open glare of day, overpowers and often silences all competition? The natural notes of the American mocking-bird are similar to those of the brown thrush.—*Audubon.*

ENTERPRISE.

The *Paris Star* of the 24th ult., states that Messrs. Robert and William Gordon, farmers near Paris, have just imported from England one Ram and eleven Ewes, pure Southdown breed, purchased from Mr. Rigden, of Hove near Brighton, a gentleman who took the first prize for this description of sheep, at the Royal Agricultural Shows of 1851 and 1852, and at the Gloucester Show in July last. After a long passage of ten weeks they reached Paris on Friday last. Mr. R. Gordon has also selected from the flock of Mr. Douglass, of Athelstaneford, Scotland, one Ram and eleven Ewes, pure Leicester breed. These have not yet arrived. Mr. Gordon has also sent out some Wheat and Oats for seed, from Mr. Lawson's seed store in Edinburgh, seedsman to the Royal Agricultural Society of Scotland. Such enterprise is truly praiseworthy. The expense attending this importation has, no doubt, been great, but the Messrs. Gordon will speedily realize in an improved flock an ample return for all their outlay.

The man who loses half an hour, worth one shilling, and wears his waggon and team equal to two shillings more, by going over a long and rough road, to avoid a plank road toll of sixpence, loses exactly two shillings and sixpence by the operation. This does not apply to the loaded waggon, where the loss is much greater from the smaller load.

SEWING BY MACHINERY.

A machine, of American invention, has been introduced into this country, by Mr. Darling of Glasgow, (at whose manufactory numerous examples of it are now in operation,) which carries the mechanical principle into a fresh department of human labour—namely that of common hand sewing. The patent sewing machine promises to produce a revolution in the seamstresses as great as the power loom effected in that of the weaver. The machine is extremely simple in construction, but it is not very easy to give such an explanation of it as would be intelligible to the general reader, or even indeed to those familiar with the ordinary technical phrases of mechanics. To be understood it must be seen, and even then, so clever is its working, that it requires a sharp eye to follow its evidently simple, yet amazingly expert movements. Its framework is cast metal, but it must not be imagined to be a huge, clumsy, affair like a hand-loom; on the contrary, it occupies little more space than two cubic feet, and might stand on the top of a ladies work table. The right hand of the worker turns a small wheel, which puts in operation two needles, one an upright one, the other a sort of semi-circular one; and on a strong tubular surface, at the left hand extremity of which those two needles work—the upright above and the circular under—the cloth is laid with the left hand, and propelled between the needles as the machine proceeds with its stitching. This it does with amazing rapidity, running off, in something less than a minute, a line of stout sewing which an ordinary seamstress would scarcely overtake in the course of half an hour. Line after line in traces of unabating celerity and ease, till the two hobbins which supply the thread to the double needle machinery be wound off. Delicate in some respects as the machinery is, we are told, it is little liable to entanglements or derangement of any kind; and any breakage of thread that may occasionally occur is rectified with very little loss of time. Again, the machine can be readily adapted to be driven by the foot of the worker, after the fashion of a turning lathe, and in sewing other than simple straight lines—for the machine can stitch in circles or zig zag, or any other way that may be desired; this is a great advantage, and it leaves both hands of the worker free to manage the cloth. This mode of working also secures a much higher rate of speed. By the hand the machine may be driven at the rate of 500 stitches per minute, by the foot at nearly twice that rate. Nor must it be supposed that the work executed at this extraordinary rapid rate, is loose, irregular, “slop” sort of work. On the contrary it is strong, close sewing, beautiful, regular, and altogether such as it would require a very firm and well practised hand to equal. We do not wish to exaggerate the far passed period of probation, that it is in very extensive operation in America, that such trial as it has had in this country has been extremely successful and that already its inventors are improving on it and adapting it still more carefully and completely to its end. Looking at it when at work, it is impossible to resist the conclusion that it is destined completely to supersede all

ordinary plain hand sewing, and that such sewing as an occupation for either men or women, tailors or seamstresses, is gone for ever.—*Glasgow Chronicle.*

CAUSES OF INDIGESTION.

Doctor Wieting, when lecturing at the Brooklyn Institute, lately, described the manner in which persons destroy their stomachs, and produce indigestion and dyspepsia. A gentleman sits down to dinner, and partakes of a multitude of dishes, each seemingly prepared for the purpose of coaxing the stomach to accept more than it can digest. Being completely loaded, it sets to work to agitate the heap, and put it through the process of digestion. The gentleman then starts for home and sees some seductive looking apples on a stand, which he thinks he should like to eat. He purchases a few and commences to gulf them down. “Halloo!” says the stomach, looking up in alarm, “what are you about up there? I have more work than I can attend to already.” However, remonstrance is in vain, and, with a gripe or two, the stomach goes to work as before. The gentleman next meets with a friend; a glass of wine, a brandy smash, or some other liquid compound, is gulped down, aided by some tobacco fumes. Supplies are lowered into the stomach like bales of cotton into the hold of a Mississippi steamer, until the organ, wearied and overburdened, gives up in disgust, and leaves the mass to indigestion, dyspepsia, and its train of accompanying evils. Thus the harmony of the system is destroyed, which might have been prevented by a little prudence and self-denial.

THE SHEPHERD'S DOG.

Without the shepherd's dog the whole of the mountainous land in Scotland would not be worth sixpence. It would require more hands to manage a flock of sheep, gather them from the hills, force them into houses and folds, and drive them to markets, than the profits of the whole stock would be capable of maintaining. Well may the shepherd, then, feel an interest in his dog. It is indeed he that earns the family bread, of which he is content with the smallest morsel. Neither hunger nor fatigue will drive him from his master's side; he will follow him through fire and water. Another thing very remarkable is, the understanding these creatures have of the necessity of being particularly tender over lame and particular sheep. They will drive these a deal more gently than others, and sometimes a single one is committed to their care to take home. On these occasions they perform their duties like the most tender nurses. Can it be wondered at, then, that the colley should be so much prized by the shepherd; that his death should be regarded as a great calamity to a family, of which he forms, to all intents and purposes, an integral part; or that his exploits of sagacity should be handed down from generation to generation, and form no small share of the converse by the cozy ingle on long winter nights.

Charity, like the sun, brightens every object on which it shines; a censorious disposition casts every character into the darkest shade it will bear.

HOW TO DRY PEACHES.

Take those of the best quality, just as they are ripe enough to eat, halve them, remove the stones, and sprinkle over them, in the hollow from which the pit was taken, a little nice sugar; dry them in a brick oven after the bread, &c., is withdrawn.

They are far better than if dried in the sun, retaining their aroma and flavour, and besides are totally free from insects. Prepared in this way, from peaches fully ripe, they need no cooking, but are simply soaked in cold water. All the sugar they require (ranging of course with the variety) is added while drying. Peaches thus dried and prepared, are only inferior to the fresh fruit, of which they retain the flavour in a remarkable degree. If you prefer, take them not quite so ripe, and peel the fruit, but the flavour is not so good as when fully ripe, and is dissipated more in the process of drying.

WONDERFUL GEOLOGICAL CALCULATION.

In a paper read by Sir Charles Lyell, before the Royal Society in London, on the coal fields of Nova Scotia, he entered into speculations respecting the solid matter contained in the carboniferous formation of that country. He believes that it was once a delta like that of the Mississippi, and that the formations were produced by river inundation drifts. The average thickness of the whole of the coal measures is three miles, and the area, including the fields of New Brunswick, &c., may comprise 36,000 square miles, or 108,000 cubic miles, but taking the half of this, it would be 54,000 cubic miles of solid matter. It would take more than two millions of years for the Mississippi River to convey to the Gulf of Mexico an equal amount of solid matter at the rate of 450,000 cubic feet per second, as calculated by Mr. Forshey.—This is a subject for deep reflection and examination by all Biblical geologists especially. Sir Charles Lyell found fossil reptilian remains, and a land-shell in the interior of a fossil tree in a Nova Scotia coal field.

GRAFTING WAX.

We made some remarks last week, in relation to cutting and preserving scions. We will give this week, a recipe for making the best kind of *grafting cement*. Take three parts of the best quality of rosin; two parts of bees-wax; and one part of tallow; melt them *thoroughly* together, and pour the composition while hot into cold water, and then work it like shoemaker's wax, till it will spread as thin as paper, or draw out as fine as gossamer. Should the rosin precipitate when cooling in the water and remain in the wax in small lumps, it must be melted over and worked again. In such case care must be taken that no water remains in the vessel that the composition is melted in, as water will remain at the bottom, and when the cement becomes heated to a certain temperature, the operator will witness a rather unpleasant experiment upon the expansive power of steam.

In rather cold weather, a little more tallow than in the above proportion may be added, and the cement will work very well, and in very warm weather a little more rosin will harden the wax, without material injury to its good proper-

ties. But for all seasons and all kinds of weather, we have never found any kind of grafting wax, that worked as well as wax made according to the above proportions. In cold weather, we keep our wax in warm water, in order to have it work well,—and in very warm weather it is necessary to keep it in cold water. Care should be taken to procure pure bees-wax for making cement.—Much of the bees-wax that is purchased in the market is adulterated with tallow; such may be detected, by placing it in a temperature that will melt the tallow and not the wax.—*Keene (N. H.) News.*

PLANTS IN ROOMS.

The reason why plants fade so soon, is because due attention is not paid to them. The mere supplying with water is not sufficient. The leaves should be kept perfectly clean. "If as much washing were bestowed, in London," says Dr. Lindley, "upon a pot plant as upon a lap-dog, the one would remain in as good condition as the other. The reasons are obvious. Plants breathe by their leaves; and if their surface is clogged by dirt, of whatever kind, their breathing is impeded or prevented. Plants perspire by their leaves; and dirt prevents their perspiration. Plants feed their leaves; and dirt prevents their feeding. So that breathing, perspiration, and food, are fatally interrupted by the accumulation of foreign matters upon leaves. Let any one, after reading this, cast an eye upon the state of plants in sitting-rooms or well-kept greenhouses; let them draw a white handkerchief over the surface of such plants, or a piece of smooth white leather, if he desires to know how far they are from being as clean as their nature requires."

TRANSPLANTING EVERGREENS.

A good article on this subject urges (what we have long since endeavoured to enforce) "*that the roots while out of the ground, should be moist—that they should never for a moment even become dried during the process of transplanting.*" Hence a rainy day is recommended, in all cases, and especially where the roots are denuded. A few experiments are given. A long screen of Arbor-vitæ were set out in a stormy week, with the sod on. Six were set aside in a tub of water—four were left exposed to a drying wind. These four only died, out of two hundred and ten. The six, after three weeks neglect in the water, all survived. Again, fifty Norway Spruces, were set out on a moist day. One, by mistake, was left, and received a few hours of sunshine—this only died. We have succeeded well with some sorts, brought long distances, by insisting on the instant immersion of the roots in water, as soon as up—packing in wet moss, kept soaked with water—the roots plunged, in mud as soon as received, and laid in—and again mudded and the earth well settled with water, when transplanted. Removing plenty of earth on the roots—an infallible mode,—besides preserving all small fibres, keeps the roots constantly moist.—*Cultivator.*

TO HEAD CABBAGES IN WINTER.

"Head him or die," was the vow of a politician; we forget which he did; but for us farmers he cabbages might as well die as forget to head.

A plan that never fails to cause a cabbage, that has the least curl in the inner leaves, to head during the winter—and a very good way to keep headed cabbages through the cold winter, is the following which we have tried with success.

Select a suitable spot in a garden or field, six feet in width, of any devised length, free from standing water; run a furrow the proposed length of your bed and throw a back furrow upon it. This double furrow will form a *side wall* of your cabbage house. In the trench stand your cabbages on their roots leaning towards the furrow at an angle of forty or forty-five degrees. Let the next furrow be thrown upon the roots and stalks of the cabbages, and another row be placed in the trench made by the second furrow; thus proceed until your six feet of width is planted, then let the last furrow be a double one—making the other side-wall about the height of the cabbage-head. Through the whole length of the middle of the patch lay rails lengthwise, supported by crutches, at a height of about two feet from the cabbages; this will form the ridge of the cabbage house. Lay light brush-wood from the side walls to the ridge-pole; then throw on salt hay, or bog hay, or straw two inches in depth. As the cold weather advances throw on dirt until you have a depth of say six or eight inches—or even more, when the winters are severe, and finally spank the dirt roof with the flat of a spade, until it will shed the rain. Fill up the two ends of your house in the same manner, leaving only small air-holes of a foot or two diameter, which may be closed with hay, and opened occasionally on a fair day. The length of the house should be on a north and south line.

In the early spring you will find your most unpromising plants have heads of their own; and all be thriving and fresh. Try it once, and you will try it ever afterwards.—*Journal of Agriculture.*

SHELTER YOUR MANURES.

“In the preparation of farm-yard dung,” says Nesbitt, “there are two or three points worthy to be observed. The first is, that many of these substances are soluble. Now, the common way of preparing farm-yard dung everybody is acquainted with; a large mass of straw and excrement is allowed to rot in the midst of a quantity of water, where, instead of a genial heat being produced, it is washed by the water, which, saturated with soluble matter, is allowed to run away, as if the cleaner the straw, the better the manure. Now, it so happens that every one of these substances carried away is the most valuable, in fact, only the insoluble and most worthless are left behind. A quantity of dung thus exposed will lose its potash, its soda, the greater part of its ammonia and its soluble salts of lime, all of which, with very little care, could have been preserved, to the great advantage and profit of the farmer.”

Agriculture, the original employment of man, is, perhaps, if we except the ⁷ *chemical* profession, the best adapted to preserve the morals, train the feelings, and raise the heart to the great First Cause.

EDITOR'S NOTICES.

HIBERNICUS in our next.

EXHIBITION OF THE LOWER CANADA AGRICULTURAL ASSOCIATION.

We beg to remind our readers that this important exposition of Lower Canadian industry, will take place at Montreal on the 26th, 28th, 29th and 30th of September. Upper Canadians may compete for prizes, which amount in the aggregate to £1,500. Prize Lists can be obtained of the Secretary of the Board of Agriculture, in this city.

THE NEW YORK STATE AGRICULTURAL SOCIETY

Will hold its annual Fair at Saratoga Springs, Sept. 20th, 23rd, and will doubtless maintain the high position which it has for several years occupied.

TORONTO HORTICULTURAL SOCIETY.

The third Exhibition of this Society will be held on Thursday, the 15th of September, in the beautiful grounds of the Old Government House, on King Street, in this city. The premiums offered on this occasion, amount to the handsome sum of £100, and may be competed for by residents in any part of Canada. We are happy to see this young Society already putting forth most vigorous energies, and wish it most heartily a long career of increasing prosperity.—All who feel any interest (and who does not?) in Horticultural pursuits, ought at once to enroll themselves Members of this promising Society.

TOWNSHIP OF WESTMINSTER FALL SHOW.

The Westminster Society's Fall Show will be held on the 22nd day of September next ensuing, at Mr. Francis Nichols, 4th Concession, Lot No. 15.

THOMAS FLEMING.

Secretary.

STATE FAIRS, 1853.

New York, at Saratoga,	Sep.	20, 21, 22, 23
Michigan, at Detroit,	"	28, 26, 30
Vermont,	"	13, 14, 15
Pennsylvania, at Pittsburgh,....	"	27, 28, 29
Kentucky, at Lexington,	"	13 to 17
Ohio, at Dayton,	"	20 to 24
New-Hampshire, Manchester, ..	Oct.	5, 6, 7
Maryland,	"	25, 26, 27, 28
Illinois, at Springfield,	"	11, 12, 13, 14
Indiana, at Lafayette,	"	12, 13, 14
North Carolina, at Raleigh,....	"	18
Missouri,	"	3 to 7
Wisconsin, at Watertown,	"	4 to 7
Virginia, at Richmond,	Nov.	1, 2, 3, 4
Delaware Horticultural Society, at Wilmington,	Sept.	14, 15
Lower Canada Board of Agricul- ture, Annual Exhibition,	Sept.	27 to 30
Upper Canada,	Oct.	4 to 7
Southern Central Agricultural Society, Augusta, Georgia, ...	"	17 to 20
South Western Association, Louisville, Kentucky,	"	11 to 16
American Institute,	"	19, 20, 21

Poetry.

THE THRUSH'S NEST.

A SONNET, BY JOHN CLARK, THE NORTHAMPTONSHIRE PEASANT.

Within a thick and spreading hawthorn bush,
That overhangs a mole-hill large and round,
I heard from morn to morn a merry thrush
Sing by us of capture, while I drank the sound
With joy; and oft, an untrading guest
I watched her secret toils from day to day;
How true she warped the moss to form her nest,
And model'd it with wool and clay.
And by-and-by like heath-bells gilt with dew,
There lay her shining eggs, as bright as flowers,
Ink-spotted over, shells of green and blue:
And there I witnessed, in the summer hours,
A brood of nature's minstrels chirp and fly,
Glad as the sunshine and the laughing sky.

THE RICH MAN AND THE BEGGAR.

A beggar boy stood at the rich man's door—
"I am houseless and friendless, and faint and poor,"
Said the beggar boy, as the tear drop tolled
Down his thin cheek, blanched with want and cold.
"Oh! give me a crust from your board to-day,
To help the beggar boy on his way!"
"Not a crust nor a crumb," the rich man said,
"Be off, and work for your daily bread!"

The rich man went to the parish church—
His face grew grave as he trod the porch—
And the thrashing poor, the m'ought mass,
Drew back to let the rich man pass.

The service began—the choral hymn
Arose and swelled through the long aisles dim,
Then the rich men knelt, and the words he said
Were—"Give us this day our daily bread!"

CANADIAN DEPARTMENT.—CRYSTAL PALACE.

The following letter has been received by Mr. Carpenter, of Townsend, County of Norfolk. Mr. Carpenter is the gentleman, who, last year, obtained the Canada Company's Prize of £25, for the best 25 bushels of wheat, exhibited at the Provincial Exhibition:—

New York 9th August, 1853.

SIR,—Your Specimen of Wheat here, has excited unqualified admiration and I have hourly applications for small samples to bring the applicants into seed. With one exception I have refused this. Those samples would sell at so much per ounce. If you think proper I shall sell samples to the United States Farmers, and hold the proceeds for your use. If you do not wish this, pray notify your views to me.

I am accredited Agent here, from Lower Canada and known in that capacity by Mr. Thompson, of Toronto.

In the absence of Mr. Holwell, (Commissioner,) I am in charge of the products of both Provinces.

I am, Sir, your Ob't. Serv't.,
ROBERT POOBLE.

Mr. J. B. Carpenter,
Townsend, C. W.

ADVERTISEMENTS.

PAIGE'S THRASHING MACHINES!

FARMERS who desire to obtain a first rate Machine, which, with *less than half* the number of horses, and *half* the number of hands will thrash as much grain in a week, as one of the cumbersome eight horse-powers, should supply themselves with Paige's celebrated machine. Terms easy. For sale at the Office of the *Agriculturist*, Toronto.

August 3, 1853.

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IMPORTANT TO
BREEDERS OF STOCK.

THE Subscriber offers for sale Two Thorough Bred Short Horn DURHAM BULL CALVES, one 20 months old, a beautiful Roan Colour, splendid proportions, a descendant of the much celebrated 'Belled Will' of England—the other about two months old, white, of unequalled Symetry and beauty, and is a descendant of "Belled Will," his Dam was got by "Bellville," the Champion of England, Scotland and Ireland, and was imported to this Province in 1851, and the first of Mr. Hopper's, celebrated herd, ever brought into Canada.

ALSO:

Two other Calves of the same unequalled breeding 3 weeks old.

Satisfactory certificates of pedigree will be furnished. For further particulars application may be made to

RALPH WADE, SEN.

Spring Collage, near Port Hope, Canada West.

June, 22nd 1853.

3-m.

BUREAU OF AGRICULTURE,

QUEBEC, 28th May, 1853.

HIS EXCELLENCY THE GOVERNOR GENERAL has been pleased to appoint

Messrs. Whitman & Wheelock,

OF No. 100 FRONT STREET, IN THE CITY AND STATE OF NEW YORK,

To be the Agents to Receive and Bond, or Pay Duties on all such Goods as may be sent from Canada to the approaching INDUSTRIAL EXHIBITION at New York.

WANTED,

A FEW DECEMBER Nos. of the "AGRICULTURIST" for 1852. Subscribers who can spare any of the above Nos. will be paid by sending them to this Office.

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TERMS.

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N. B.—No advertisements inserted except those having an especial reference to agriculture. Matters, however, that possess a general interest to agriculturists, will receive an Editorial Notice upon a personal or written application.