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T H E

Canadian Agriculturist,

AND

JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XI.

TORONTO, DECEMBER, 1859.

No. 12.

THE *AGRICULTURIST*.

It was intimated in our last number that it had been resolved upon to issue this journal twice a month, instead of once, commencing with the New Year; and that important improvements were contemplated, which would materially enhance its value, without increasing the price. We will now refer to these intended changes somewhat in detail.

It has been found that a monthly publication representing the Agricultural interests of Upper Canada, appears at too long an interval to afford that freshness and copiousness of intelligence, on which the interest and value of such periodicals in a great measure depend. A fortnightly publication, it is hoped, will meet this want, and enable its conductors to keep its readers posted up, with the least possible delay, in the more important facts and improvements of agricultural progress, not only on this continent but throughout the world. The agricultural journals both of Europe and America will be carefully examined for the purpose of giving our readers in a condensed and agreeable form whatever is new and important in their pages. Special attention will be given to our British American possessions, which the hand of Providence seems to be rapidly forming into an advanced and wide embracing nationality, that is destined to occupy no subordinate position on this extensive continent. In our columns will be recorded not only the agricultural, but the general, industrial, and social progress of Canada, more especially of this western portion, of which this journal may be considered as an official record. Although we shall continue to study not to trench on the domain of the newspaper, and steer clear of party politics, yet any information relative to the social and industrial state and progress of the country, and whatever may tend to point out the best and speediest way of developing its resources, will always find a welcome in our pages.

The reports of, and essays obtained by the Board of Agriculture, with condensed and systematic statements of the proceedings of Agricultural Societies compiled from their official returns, will continue to constitute a part of this

journal; and by adopting a fortnightly mode of publishing, much greater facilities will be afforded the Board of communicating with societies, and of inserting the communications, and answering the inquiries of correspondents. The latter, we trust, will soon become a more prominent and useful feature of the journal.

It is also intended to afford more space to Horticulture and the Mechanic and Manufacturing arts. Gardening and farming are most intimately related, —both being based on the same scientific principles—and in many ways they can be made mutually to assist each other. Our pages, therefore, will always be open to contributions of this character, and we earnestly invite our Horticulturists, and all who feel interested in the progress of this refining and important pursuit, to favour us with contributions.

With regard to the mechanical arts—particularly those which relate to the construction of Agricultural implements and machines—we shall devote considerable space, and give illustrative wood cuts. There are now in Canada several firms that manufacture agricultural tools, and other kinds of machinery of excellent workmanship, and we shall always be happy to render them any aid that our journal can afford. The same remarks, we wish our mechanics and manufacturers in general to understand, apply to them. Our agriculture and domestic manufactures are intimately connected and mutually dependant; and it is impossible for the farmer to over estimate the advantages of a good home market. It is by encouraging those great interests, and regarding them not as hostile to each other, but as forming the necessary parts of one harmonious whole, that we but seek to promote the true welfare and happiness of the country.

We shall not forget to keep our readers informed of the state of the markets, and, at the proper season, the prospects of the growing crops, both at home and abroad, together with all such matters as possess an interest or money value to our farmers and mechanics.

To carry out these objects as fully as is desirable, it must be obvious that the co-operation of the parties interested in them is absolutely necessary. We therefore earnestly invite contributions on the various subjects embraced by this journal, in order to make it a full and faithful record of the material and social progress of the country.

The *Agriculturist* will, as heretofore, consist of two parts, the “*Journal*” and the “*Transactions*” of the Board; printed, however, on the same sheet, but in such a way that they can be easily separated. The “*Transactions*” being a publication of an official character, and depending for its contents upon certain official proceedings which usually do not terminate till after the end of the year, cannot conveniently be brought to a close each year at the same time with the “*Journal*.” The conclusion of the volume of the “*Transactions*” will, therefore, have to overlap the commencement of the volume of the “*Journal*.” The concluding pages of the “*Transactions*” of 1859, will be issued to subscribers along with the early numbers of the “*Journal*” of 1860. But this will scarcely be any real inconvenience, as the great majority of subscribers will renew their names on the books each year, and those who wish to bind the two parts of the publication together will only have to wait a few week till the “*Transactions*” are completed.

TO OUR SUBSCRIBERS.

We beg again to direct the attention of our readers to the terms of subscription for the year 1860, as advertised on the cover. The money premiums are offered with the view of affording a slight remuneration, or rather complimentary distinction, in addition to the ordinary ten per cent bonus, to those who may send us in good lists of subscribers. The readers of the *Agriculturist* are aware that with the termination of the year our subscription list is at an end. No copies of the next year's numbers are despatched till ordered. We have therefore to say Farewell, for the present, to the thousands of readers who have accompanied us during the year now closing, but we also have great pleasure in wishing them a "Merry Christmas and Happy New Year," and hope soon to see their names, with a good many new ones along with them, on our books again. And the sooner subscriptions are renewed, the more convenient and satisfactory it will be, as we shall then know what number of copies we ought to print.

The premiums will be announced, with the number of subscriptions for which they are given, immediately after the 1st of April, and the amount forwarded to the parties.

PRIZES FOR REPORTS.

With the view of inducing the officers of Agricultural Societies to collect and embody in their annual reports more information of a character which will be valuable and interesting to the public at large, and to persons residing in other countries, than has heretofore been the case, and to draw up the reports in a more generally correct and painstaking style than the majority of those heretofore received, the Board of Agriculture offers the following premiums:—

For the best County Agricultural Society Report, adopted at the Annual Meeting and transmitted to this office before or on the 1st April next, a prize of \$30 00

For the second best do. 20 00

For the third best do. 15 00

For the fourth best do. 10 00

For the best Township Society Report adopted at the Annual Meeting and forwarded as above along with the report of the County Society \$20 00

For the second best do 15 00

For the third best do. 10 00

For the fourth best do. 5 00

By reference to the 42nd and 47th clauses of the Act, which was given in full in the April number of the Journal and Transactions, 1858, it will be seen that each report should consist of four distinct parts:—

1. The names of all the members of the Society, with the amount paid by each set opposite his name.

2. The names of all persons to whom premiums were awarded, with the amount of premium, and the animal or article for which it was given.

3. Such remarks and suggestions upon the Agriculture and Horticulture of the county or township, and arts and manufactures therein, as the directors shall be enabled to offer.

4. A detailed statement of the receipts and disbursements of the Society during the year. (If this is voluminous, a condensed statement or balance sheet ought to be ad-

ded, showing the amount of receipts and expenditure under the several principal headings.)

It is in part 3 of the report, as above detailed, that improvement is mainly desirable. The majority of the reports have hertofore been sent in, without any attention being paid to this requirement of the Act at all. The remarks ought to be of such a character as to give the reader a correct idea, so far as possible, of the actual condition and progress of Agriculture, Horticulture, &c., in the County or Township, with the profits and advantages offered by those pursuits. And in order to do this clearly, the report ought not to embody vague generalities, so much as specific statements of facts. For instance, the generally prevailing character of the soil may be stated, the average value per acre, as proved by actual sales, the prevailing system of cultivating and cropping the land, the actual returns of the various kinds of crops as nearly as can be estimated per acre, the current rate of wages for laborers and mechanics, or any other information of a similar character. If the crops have been injured by any insect or other cause of blight, state the amount of damage done, and whether greater or less than other years. State the amount of improvement taking place in the different heads of cattle, sheep, &c., and what breeds are believed to best adapted to the locality. Give the details, with the cost and results, of experiments in breeding or feeding cattle for sale, or of doing operations; or of sheep farming. If any farmer has commenced the thorough draining of his land, the cultivating root crops extensively, or any other ameliorating improvement, state the fact and the results, and the supposed amount of such improvement taking place in the county or township. State any improvement that may be taking place in the introduction of Agricultural implements, the progress making in the cultivation of fruit trees, or other horticultural operations, and the success attending it. If there is any particular improvement necessary in farm management, or for the proper developement of the capabilities of the soil, let it be stated. The leading features of the annual exhibition, as a display of agricultural and mechanical products, and as showing the interest taken in the progress of improvements by the residents in the county or township may also be briefly referred to. In short, the report should be such a concise and faithful sketch, supported by such brief details and statistics, as would enable the reader at a distance to estimate its general progress and capabilities correctly.

It is not necessary that the portion of the reports here referred to should be very long. For a County, from ten to twenty, and for a Township from six to twelve pages of ordinary writing on foolscap paper would afford abundant space. It is not desired, however, to restrict the reports in any way. The reports, or so much of them as may be considered suitable, will be published in the Transactions, and the names of the successful competitors will be immediately announced after the prizes have been adjudged. The amount of priz. will be forwarded, unless in the case of instructions to the contrary, to the Secretary or other officer of the Society, from whom the report shall have been received. It is hoped that these reports will furnish a large amount of interesting and useful information for publication in the Transactions.

Should there not be considered to be sufficient time, after receiving this notice, to get up the information, the report might be adopted *pro forma*, and afterwards amended, with the consent of the Directors. It is highly desirable, however, that the reports should all be forwarded to the Board of Agriculture, if possible, some time prior to the 1st of April, the date fixed by law.

HUGH C. THOMSON,
Sec'y Board of Agriculture.

Toronto, Dec. 15, 1859.

Correspondence.

COWS vs. SHEEP.

(To the Editor of the Agriculturist.)

SIR,—As you have offered your paper as a medium for agriculturists generally, I write the following, thinking it may draw the attention of some and lead them to think which are the most profitable, Cows or Sheep? Every farmer knows the value of the cow, and the little one can appreciate her as well as the older ones. I would state, that every farmer should keep enough for his own use, for I consider her an indispensable article. But whether he should keep more than would keep his family in milk and butter is a query that I want to have unraveled. A farmer that lives near a city or a town and can sell milk, I say keep as many as possible, for nothing pays better. Farmers that live a distance from town and near a railroad, would do well to consider which are the most profitable, cattle or sheep? I will take a cow valued at \$20 and calculated her year's produce in butter to be 130 lbs., at 12½ cents per lb. I consider that one cow will eat as much as five sheep, therefore I will take five lambs at \$2 each, they will shear 30 lbs., of wool at 27 cents per lb., and increase in weight to the amount of \$2 each, the capital needed is only one half. Their profits would stand as follows:—

Cow—130 lbs. Butter at 12½ cents per lb.	\$16 25
Lambs—Wool, 30 lbs., at 25 cents per pound; increase in value, \$2 each; interest on \$10, at 10 per cent, \$1.....	18 50
Balance in favour of Sheep.....	2 25

Some would say that the milk is a great consideration. True, so is labour. What man, woman or child would bring the cow from the field, milk, churn and market the butter for the milk? None.

We will take it another way. Suppose we wanted to raise stock, the cow would produce almost as much butter, and her calf could be raised with the milk. Her butter at the same rate as above, would be \$16 25. Take five ewes valued at \$4 each, they would raise five lambs and shear four lbs. wool, each at 25 cents, \$5; at 18 months old the lambs would be worth \$20. The cows offspring would be worth about \$12. The account would stand something like this:—

Cow—first year's butter.....	\$16 25
Her offspring at 18 months old.....	12 00
	\$28 25
5 Ewes wool.....	\$5 00
5 Lambs ".....	7 50
5 " valued at \$4 each.....	20 00
	\$32 50
Balance in favour of sheep for raising stock.....	\$4 25

There is another consideration in favour of sheep. In the first instance a person only wants half the capital, which is a great consideration to some; in the second instance sheep at 18 months old are fit either for the butcher or for raising stock. The Cow's offspring, on the contrary, is neither fit for the one or the other.

If you think the above worthy of attention you will hear from me occasionally.

Yours, &c.,

HIBBERT, COUNTY OF PERTH, }
December 6th, 1859. }

R. H. SARVIS,

MILLET.

WHITBY, December 6th, 1859.

SIR,—When at the Crystal Palace in Toronto, in 1858, I saw a man at the north west corner working amongst what I supposed to be Millet. I entered into conversation with him and purchased only half a package of his seed; also, I carried off one or more of his bills in which he stated great things: such as that it (the Millet) would yield from 40 to 50 bushels, at 60 lbs. per bushel of seed, and two tons of fodder equal to clover hay. I thought if only half true it was a great boon to Canada.

Early in May, 1859, I made one sowing, and again about the middle of May made another. The ever-to-be-remembered frost of June, killed every green thing in our vicinity, and also my Millet. I sowed again on the Monday after the frost; that sowing had not ripened yet, nor would be worth anything for seed, as the canary birds eat the seed in preference to anything they can get at, and having secured enough for my own sowing I cut it up (the third sowing) without regret. Before cutting, I carried some to our local show or seed fair at Columbus; it had attained to six feet in height. I cut on the 11th of September and weighed on the 17th, considering the stuff dry enough to store. What grew on half a rod weighed 34 lbs., equal to 5 tons, 8 cwts., 3 quarters, 13 lbs., equal to at least three good crops of hay as this year goes. It should be mentioned that I cut twelve inches from the ground—as I do not consider stubble fodder—so as to give a fair estimate of what may be grown upon an acre. Moreover it comes at a season very suitable for farmers, as from the beginning of August, until their stubbles are cleared, they are generally short of pasture, especially in cereal growing districts, and one acre of this fodder cut and fed green, or, as we would say, soiled, would be a boon.

Now, Sir, as there is not within my ken any of this excellent substitute for pasture, I will feel obliged if you will give publicity to this hint; and it may so happen that some one may condescend to try next year and prove what is above asserted. Having said often that seeing only can be believing, they may try for themselves, and then they will see and believe.

I think I hear some one say, as was said on a former occasion when I was recommending a given kind of seed, "He has a great quantity to sell, and that makes him recommend it." I answer in the negative; nor can I tell where the seed may be obtained, as that may help to the inquiry. Scarce articles are most valued.

In 1860 you may hear something of the Alsike clover, unless some more able pen condescend to write. And also something about the Kansas wheat.

Yours, &c.

A SUBSCRIBER.

Agricultural Intelligence.

EPIDEMIC COLDS OR INFLUENZA, AND INFLAMMATION OF THE LUNGS OF CATTLE.

This disease is very frequent among horned cattle, and is produced by a variety of causes. Cold, dry, harsh winds are severely felt, by closing the pores of the skin, and checking perspiration. It is also frequently brought on by beasts drinking cold water when they are overheated. It is sometimes produced by turning them into fresh pastures, when their stomachs being overcharged with herbage, the pressure produced on the lungs is very great; the sily and viscid part of the blood becomes crassus, or thick, obstructs the vessels, and brings on a troublesome cough or wheezing (a moaning like). These symptoms are a sure indication of an affection of the lungs. The discharge from the nostrils and mouth continues to be copious; the inflammatory symptoms make but little progress; but as soon as this discharge is stopped, the inflammation increases, and if not timely checked will soon terminate in the animal's dissolution.—Symptoms of inflammation taking place are discovered by the alternate heat or cold of the body—in the extremities for the most part, especially the ears, horns, and feet. If the animal be in a low condition, weak, and much debilitated, bleeding is seldom necessary; but if in a high condition, and the fever increases, and the body feels hot and

dry, and the breathing be the same; if the eyes are much inflamed, and the white has a yellow appearance, bleeding becomes highly necessary; and from two to four quarts of blood may be taken away, according to the strength and condition of the animal; if found necessary let it be repeated, or a small quantity may be taken away every day. Sometimes this disease has a false appearance, the fever and heat are scarcely perceptible; at other times it seems rapid in its progress. This disease appears in a great measure to proceed from a deficiency of bodily vigour; and a consequent inability of carrying on a due circulation through the vessels. The blood, through these impediments, becomes surcharged with pituitous lensor, so that the glands cease to secrete the bile, which is not poured into the intestines, but becomes deposited on the skin. Hence is produced the jaundice, which is known by the yellowness of the eyes and different parts of the body. The cure must be attempted according to the symptoms already stated.

The costive state of the animal's body, which accompanies this disease, must be strictly attended to. First give the following purging drink:—

Glauber Salts.....	1 lb.
Nitre, in powder.....	1 oz.
Ginger, in powder.....	1 oz.

Pour three pints of boiling water over the above, and give it lukewarm. In most cases this will be found sufficient for a full grown animal. Should it fail in its operation, one half of the dose may be given, night and morning, until the desired effect is obtained. The above drench will generally operate in twenty hours, or even less; if not, proceed as I have directed, and after the bowels are properly opened, give the following drink:—

Emetic tartar.....	1 drachm.
Pulvis digitalis recentis.....	1 ..
Gum camphor.....	2 ..
Salt of Tartar.....	½oz.
Nitre, in powder.....	1oz.

Mix; give it in a pint or quart of warm ale, and repeat one half of it every eight hours. If the fever continue after the intestines have been evacuated, it will be necessary to take some blood, the quantity of which must be regulated according to the disease and habit of body of the animal, and the purging drink repeated to prevent costiveness. The drink to be administered after the purging drink will be found to operate powerfully in removing the disease, by promoting insensible perspiration and in dissolving and evacuating the phlegm in the ventricles and intestines: also opening and cleansing the vessels of the lungs, promoting a discharge of urine, and lowering the velocity and force of pulse. If any symptoms of the disease should still remain, it will be proper to give the following drink:—

Dried squils, in powder.....	2 drachms.
Gum myrrh, in powder.....	2 ..
Salt of tartar.....	2 ..
Valerian root, in powder.....	2oz.
Balsam of copaiva.....	2..
Sulphur.....	1..
Nitre, in powder.....	1..
Tincture of opium.....	½..

The balsam of copaiva, sulphur, and salt of tartar, ought first to be well rubbed together in a mortar, then add the other ingredients, and lastly a quart of warm ale, after which it may be given to the beast.

BRACING MIXTURE FOR STRAINS.—Take, old verjuice, or good wine vinegar, one quart; camphorated spirit of wine, four ounces; gouldard water, two ounces; spirit of turpentine, two ounces; oil of origanum, one ounce. Mix, and put them into a bottle for use. This mixture will cool and brace the sinews greatly. After it has been well rubbed in on the part affected, take a linen bandage, or roller, two or three yards long, and apply it round the leg, upon the swelled tendon, in order to strengthen and brace the part.

GENERAL OBSERVATIONS ON THE SCOTTISH BREEDS OF CATTLE.

Some of the Scottish breeds from being either well adapted for certain localities, or celebrated for peculiar properties, it is advisable to keep pure; while with others no question can arise as to the propriety of crossing, on even complete amalgamation with other breeds. On these points the following remarks, the result of long observation and experience, may perhaps prove useful.

The Galloways.—This breed should be kept pure, although no doubt splendid animals may be, and indeed have been, bred from Galloway cows and short-horned bulls. The fact, however, of the breed being a favorite in Smithfield market, and realizing the top price, is a sufficient reason for maintaining its purity.

The Ayrshires.—This breed having attained a world-wide celebrity as dairy stock, should also be kept pure.

The West Highlander.—To maintain the purity of this breed is a matter of primary importance, as no other cattle can thrive in the Western Highlands and Isles. Efforts should also be made to introduce them in those districts now occupied by that coarse and inferior breed, the North Highlanders. The high district of Ross-shire, the Lewis, Sutherland and Caithness, the eastern parts of Inverness-shire and high districts running south as far as Forfar-shire, are well adapted for the West Highland cattle, where they would be found to thrive well. From their hardy constitutions and habits, they can withstand almost any degree of cold in the open air, foraging for their food in woods and glens even in pretty deep snow. The extension of this breed to the Highland district generally, could be effected if landlords were to lay down stringent rules and regulations with this object in view; but as the interest of landlord and tenant is identical, a plan might easily be carried out for effecting this improvement, in which there is no doubt, the tenant would readily acquiesce. Suppose a certain district to contain fifty small tenants, the proprietor of which is anxious to introduce an improved breed of cattle. Let him send a competent and skilful man to Dumbarton, or some other market where the best West Highlanders are shewn, to purchase 100 two-year-old heifers of a good stock, these should be divided among the tenants and charged at cost price, including expenses. Two or three young bulls to serve these heifers should also be provided, but at the expense of the landlord, a fair price being charged for their use. This arrangement would soon effect the desired change, care being taken that the old bulls were cut off. A couple of years would clear off the old breed and its place being supplied by a new race worth at least £1 per head more than the old, the stock would command a ready market.

The Zelanders.—This breed is also recommended to be kept pure, for the reasons before set forth under this head.

The Fife, Angus, Aberdeen, Banff, Moray and other unenumerated breeds, should be crossed with short-horns, wherever the climate is suitable; it being now an established fact, that either pure short-horns or crosses are more profitable than the original cattle in all those arable and feeding districts on the east and north east of Scotland.—*Dickson's Breeding and Management of Live Stock.*

GALLS AND WOUNDS ON HORSES.

GALLS ON THE SKIN.—A horse newly put to work, and working in a new harness, or under a new saddle, which touches parts not inured to the pressure, is very likely to have the skin of the back and shoulders abraded.

Unless there is an absolute necessity for the animal to be used, he should, in all cases, be allowed a few days rest, that the wound may heal and become somewhat hard; even then, until the hair has fairly grown out, the greatest care must be used to see that the chafing of the harness is entirely obviated, as when the skin is in the least sore it is peculiarly susceptible to irritation. When a gall is fresh and bleeding, nothing will so soon dry it and cause it to cicatrise, as a little dry table salt sprinkled upon it.

After the wound is in a measure healed, if it be absolutely necessary to use the horse, a careful examination of the harness or saddle should be made, and padding should be

taken out, or parts of the leather removed, to prevent any part of it from touching the wound. To prevent friction, when caused by the saddle or collar, there is nothing so useful as a piece of raw sheep-skin, worn with the *flesh* side next to the horse. In riding long journeys, it is the safest plan to have such protection always under the saddle.

If the chafing is caused by loose straps striking and rubbing against the skin, they should be covered with sheep-skin having its *woolly* side turned toward the horse.

Saddle galls are unlikely to occur, if the saddle fits the back, and is left on the horse for at least one hour (and it had better remain on two or three hours) after he is put into the stable. If convenient, he should be saddled half an hour before going out, as it is much better that the saddle should become warm, or slightly softened by the insensible perspiration of the back, before the rider's weight is put upon it.

The following is a good lotion for galls of the skin :

Sal ammoniac,	1 ounce.
Vinegar,	4
Spirits of Wine,	2
Tincture of Arnica,	2 drachms.
Water,	half a pint.

Mix.

If no other remedy is used, a mixture of burnt leather, gunpowder, and lard should be occasionally rubbed on the gall to prevent the growth of white hair.

Sit-fasts, and their treatment, are thus described by Stonehenge :

"Sit-fast is merely a name for an obstinate and callous galled-sore, which has repeatedly been rubbed by the saddle, and has become leathery, and disinclined to heal. If time can be allowed, there is nothing like a small quantity of blistering ointment rubbed on; or the application of a small piece of fused potassa; or even the nitrate of silver in substance, or blue-stone; all of which will produce a new action in the part, and if followed by rest from the saddle, will generally effect a cure."

FLESH WOUNDS.—The following, on the treatment of or' any flesh wounds, is from Dadd's Modern Horse Doctor :

"Incised wounds are those inflicted by sharp instruments. On the human body they often heal without any subsequent inflammation beyond what nature sets up in the restorative process; but the difficulty with the horse is, that we cannot always keep the parts in contact, and therefore it is not so easy to unite them. * * * If the wound is seen immediately after infliction, and there seems to be the least probability of healing by first intention, we place a twitch on the horse's nose, and examine the part. If there be found neither dirt nor foreign body of any kind, the blood had better not be washed off; for this is the best healing material in the world. The edges are then to be brought together by interrupted sutures, taking care not to include the hair between the edges of the wound, for that would effectually prevent union. Nothing more is needed but to secure the animal so that he cannot get at it. If he is to be kept in the stable, without exercise for any length of time, he had better be put on half diet.

"Contused wounds are generally occasioned by hooks, or some blunt body connected with the harness or vehicle. They generally leave a gaping wound with bruised edges. We have only to remember that nature possesses the power of repairing injuries of this kind—of filling up the parts and covering them with new skin; all we have to do is, to attend to the general health of the animal, and keep the wound in a healthy condition. Our usual application is the compound tincture of myrrh. If the part assume an unhealthy aspect, a charcoal poultice will rectify that. If such cannot be applied, owing to the situation of the wound, dress it with pyroligneous acid.—*Herbert's Hints to Housekeepers.*

DEFINITION OF SOILS.—In common phraseology, soils are characterized by various, and, in many instances, very vague terms, such as heavy, light, stiff, open, tenacious, porous, wet, dry, warm, cold, etc. These always convey certain important characteristics, but are differently understood by different persons. Soils are properly classified according to the presence, in greater or less proportion, of certain bases, such as clay lime, sand, and vegetable matter, these being important constituents.

A Pure Clay—is a soil in which very little sandy, silicious matter is found; accurately it consists of a chemical combination of about sixty parts of silica and forty of alumina, with a trace of oxide of iron.

A Strong Clay—contains about twenty parts in one hundred of sand, capable of separation.

A Clay Loam—contains a large proportion of sand, easily separated.

A Loam—contains one-half or more sand, readily separable.

A Sandy Loam—contains eight or nine-tenths sand.

A Sandy Soil—contains one-tenth or less of clay.

The above are the varieties of soil as regards the base *clay*.

In reference to the second important constituent, *lime*, we have a *marl*, containing from five to twenty per cent of lime.

A Calcareous Soil—in which lime is the predominate constituent. Marls are always characterized as sandy, loamy or clay marls, according to the portion of sand.

In respect to decayed vegetable matter, there are soils which owe their character to this. Such are our swamp soils or *muck*, in which masses of ferns and the roots of dead grasses predominate, forming a black fibrous mass. *Vegetable or leaf-mold*, formed by the decay of leaves, found in our wood lands, is one of the most valuable items to the gardener. *Muck*, however, can not be used with safety in compost with other soils, until it has been meliorated by exposure to the sun and air, to the admixture of some alkali it contains; potash, soda, lime or magnesia are the most efficacious alkalis used, and are found in several forms, such as wood ashes, common salt, etc. The term *peat* is frequently used in speaking of soils, resulting from decayed vegetable matter; the term *muck* has a very different signification with our English fellow-laborers, though the popular phrase with us.—*Germantown, Telegraph*.

FOOD FOR HORSES.—The *Working Farmer* says:—Carrots have a value far beyond that which can be attributed to the mere nutriment they contain, for in addition to what they furnish in this way, they contain a quantity of pectic acid, and this carries the property of gelatinizing the vegetable and animal matters held in solution, and thus enabling the peristaltic motion of the intestines to seize hold of their contents, so digestion of all matters of food is perfected by the presence of carrots. It is for this reason that a bushel of carrots and a bushel of oats, are better for the horse than two bushels of oats; not from the nutritious matter contained in the carrot, but in part from the power of the carrot to cause all the nutriment of the oats to be appropriated in the making of muscle, instead of part of it being evacuated in excrement. This action is true in regard to all the vegetable substances which go to make up the variety of food for animals, and the very instinct of every animal gives evidence of this truth.

Horticultural.

THE EFFECTS OF TREES ON BUILDINGS.

Trees, whether single or in groups, whether young or old, are obviously of the greatest use in accompanying buildings of every kind; but there seems to be a much closer union between them and low buildings. Cottages appear to repose under their shade, to be protected, sometimes supported by them; and they, on the other hand, hang over and embrace the cottage with their branches; it seems as if they could never have been separated from each other; and there would be a sort of cruelty in dividing them. If trees thus adorn the cottage, that in return, by the contrast of its form and colour no less enhances the peculiar beauties of vegetation, and often fixes the attention on trees, which, in other situations, would be unnoticed; no wonder, then, if we are struck with any of the beautiful exotics when so placed—with an acacia, a pine, a cedar, that shade part of a village house—with an arbutus, or a cluster of lilacs, over-topping the walls or the pales of its garden. In those cases, besides the real and less familiar beauty of such trees and shrubs and the effect of contrast, there is another circumstance that helps to attract and fix attention; they are separated from that infinite variety of similar productions, which, while it amuses, distracts the eye in shrubberies and collections of exotics.

But though trees and shrubs of every kind have a peculiar and distinguished effect, in consequence of accompanying and being accompanied by the houses of a village, there is another tribe of plants which gain still more by such a situation, and which,

indeed, no other can shew to such advantage; I mean the various sorts of climbing plants. All of them, in their native soils and in their wild state, twist themselves round trees or bushes, mixing their foliage with that of their supporters, enriching their summits, or hanging in festoons from their branches; nor can anything be more beautiful than such a union. But of the exotic kinds, few among those that endure the open air will bear the drip of trees so as to flourish amidst their boughs; they, therefore, are generally seen nailed against a flat wall, or supported by a pole, neither of which are very favourable to their effect. As almost all of them require a free circulation of air, many of them warmth and shelter, the best situation, in regard to their health and effect, seems to be a projection from a building. Porticoes of regular architecture are too costly to be made supporters of climbing plants, however beautiful their union might be; and the same thing may in general be said of temples and ornamental buildings in gardens and pleasure grounds. Other buildings might be made expressly for that purpose; but it would be difficult to contrive such a variety of supports of different characters as may be found in a village, or which if not found there, may always be added to the houses of it. A great diversity of sudden and singular projections is to be met with in all old houses, that have been added to them at different times; but what I principally allude to are porches, of which so many models may be taken, both from real buildings and from pictures. Wherever honeysuckles, vines, jasmine, grow over them, they attract and please every eye; and the same sort of beautiful effect (not indeed more beautiful) would be produced by the less common exotic climbers. It seldom happens that the taste of the mere collector of curious plants, and that of the picturesque improver, can be made to accord so well as in this instance. Village houses generally afford many warm aspects and sheltered situations, where the less hardy climbers will flourish, and, of course, a still greater number of exposed walls and projections, against which those that are perfectly hardy may be placed; and from the irregular shape of many of the houses, there are various divisions and compartments of various sizes and heights, by means of which a collector of climbing plants might arrange them according to their different degrees of hardness and luxuriance; so that while he was indulging his favorite passion, he would be adding the most engaging ornaments to the pleasing of all rural scenes. In all climbing plants there is so much beauty, arising either from their flowers, their foliage, or from their loose and flexible manner of growing, that no arrangement could well prevent them from giving pleasure to the lover of painting, as well as to every spectator; for the detail would be in a high degree interesting, whether the plants were considered in a botanical light, as detached flourishing specimens, or in a picturesque light, as exhibiting a variety of new combinations of form and colour; the different vegetable tints being sometimes blended with the rich, mellow hues of old stone or wood-work, sometimes with the neatness and the fresh colors of new work. Sometimes, too, the more light and delicate leaves and brilliant flowers would appear alone; at other times mixed and twined with large, broad leaves either jagged and deeply indented, such as the vine, or entire as those of the *Aristolochia*. Where there are brick houses in villages, we sometimes see fruit trees against them, while honeysuckles or jasmines are trained over the porch or the trellis before the door. This mixture of utility with ornament, of boughs which are nailed close to the wall with those which hang loosely over a projection, forms a pleasing variety. Indeed, fruit trees, which in every situation give the cheerfulest idea, are peculiarly adapted to villages; for as they exhibit, both in Spring and Autumn, a striking image of fertility, they are the most proper, and indeed the most useful, accompaniments to habitations. Considered likewise in another point of view, they are seldom seen to such advantage in other situations. The effect of blossoms, however gay and cheerful, is often spotty and glaring; but I have frequently observed that when they are seen near stone buildings, or houses of a light colour, the whole is upon the same scale of colouring, and produces a highly brilliant but harmonious picture.—Should the taste of improvers be turned towards the embellishment of villages, a variety of such standard and fruit trees might be introduced as are remarkable in their different kinds, not only for their goodness, but for the beauty of their blossoms and fruit.—*Price on the Picturesque.*

KEEPING CIDER SWEET.—In the *Cultivator* for September 1st, a correspondent asks for a recipe for keeping cider. Put into twenty gallons of new cider, 1 lb. of black mustard seed, and you can have your cider at six months old as sweet as when first made.—*Ohio Cultivator.*

LANDSCAPE ENGINEERING.—Sir Walter Scott, in his prose works, considers the name "Landscape Gardening," as expressing the object of that profession, to be an unfortunate selection, inappropriate and not conveying a true meaning; the result of which has been to give it a mechanical turn, and, as we see, followed by those who possess none of the requisite qualifications.

The practice of Landscape Gardening involves a thorough knowledge of so many professions, that it seems almost out of the question for any one person to be master of it; and the nonsense that has heretofore been written about it, to prove that only persons gifted with good taste, artistic appreciation, correct eye, happiness of expression, &c., can hope to be successful, will avail nothing, if the subject is thoroughly sifted and placed upon a proper basis. We do not favor the idea of keeping the principles of the art in obscurity, but believe that the more thoroughly they are understood, the more general will be their application. We are of the opinion that the Gardener who has made himself master of all that relates to the successful cultivation of whatever is deemed useful, beautiful, and ornamental in the vegetable kingdom—if he understands chemistry, geology, botany, and the composition and organization of soils, manures, plants, &c., has done well. He has attained a point which, we fear, few of that calling have yet reached, and the field before him must always continue to reveal new beauties, and call for still further progress.

But when we come to topographical maps, plans, roadways and their construction, drains, grading, bridges, culverts, and the preparation of ornamental grounds, it strikes us forcibly that another profession must be called in to help us to attain the beautiful—to do so in the most economical manner, and to be free from all guess-work and experimental forms. It is not to be presumed that a gardener is familiar with the practical operations of drafting, levelling, surveying, measuring and removing earth-work, curves, tangents, gradients, lines, angles, &c., so necessary to accomplish the useful and beautiful, and a knowledge of which must be acquired before success can be attained. The fact is Landscape Gardening embraces two distinct professions—that of Civil Engineering, or that application of it which might properly be denominated Landscape Engineering; and the ornamental and beautiful display of effects produced by planting, which comes strictly within the gardener's art, and to which the name of "Landscape Gardening" is appropriate. The designing, laying out and grading of grounds, the construction of roads and drains, &c., is but the preparation of the canvass, on which the gardener of taste and ability is to plant his effects.

Copeland, in his valuable work on Country Life, places much importance upon a thorough knowledge of engineering, as of value to the Landscape Gardener; and he is, I believe, the only writer who has alluded to it.

The Central Park of New York is a most admirable example of Landscape Engineering, as are also Greenwood Cemetery, and the Cemetery of the Evergreens near New York. Among private places we may mention "Sunny Side," and "Oak Hill" on the Passaic above Newark, N. J.; "Keewaydin" and "Boulder Hill," near Newburg, and the Parsonage Grounds at New Windsor, N. Y. At the latter place, the drive or turn around in front of the house, was made in the form of a regular mathematical ellipse, whose conjugate and transverse diameters are 24 and 36 feet; having a quantity of earth to dispose of, and to avoid the expense of a long haul, it was determined to raise the center of the ellipse $2\frac{1}{2}$ feet, and to graduate it towards the edges so as to produce a section of a prolate spheroid, (a solid generated by the revolution of an ellipse around its major axis,) the profile of which on the long diameter was a portion of an elliptical curve, and on the short diameter of a circular curve; the entire figure laid on a grade of 1 in 24 feet, sufficient to drain surface water. To perfect its shape with mathematical accuracy, on which depended its true beauty, it became necessary to set grades to guide the workmen, and this gave rise to a series of beautiful problems. It is needless to say that such figures convey a lesson, aside from their usefulness and beauty, while the meaningless and expensive productions of guess work and opinions fail even to please.

A common road, if not the most difficult example in the practice of civil engineering, is one on which every amateur engineer and road builder has utterly failed. It is somewhat questionable whether a man can be found who will admit his ignorance of the construction of a common road, and yet our roads, with scarcely an exception, are most shamefully located, constructed and repaired. There does not appear to be any improvement in this matter. The common road of thirty years ago was as good as the common road of to-day, and except in the vicinity of large cities, are a reproach to the community. The construction of a common road is as much of a science as the con-

struction of a railroad, and yet is not, nor never has been considered of any importance whatever. The civil engineer in his theoretical studies, scarcely ever has his attention called to them, and only acquires a practical knowledge of road building in the pursuit of other branches of his profession. Certain it is, that no one ever deems it necessary to call the services of a practical engineer in any department connected with the production of a common road. In the ornamental grounds of a country estate, the perfection of road building is desirable; they should be located on the most approved principles, and in accordance with the theory of motion; they are for use as well as for beauty, and the closer they approach perfection in the useful, the closer they approach the beautiful. No taste can locate a roadway or give it expression, compared with those infallible mathematical rules which have been assigned for their location. Roadways are the leading features, and convey the first impressions of well kept grounds, and they should be beautiful in their alignment and gradients; they should in fact be model roads from which lessons of value may be learned and applied to the improvement of the common roads of the country. And if gentlemen of wealth would, in the improvement of their estates, endeavor to introduce the highest standard, not only of road building, but of other branches of the constructive art, they would not only add largely to the beauty of their property and increase of their enjoyments, but confer a lasting benefit upon the community at large.—*Country Gentleman*.

A NEW HEDGE PLANT.—*LIGUSTRUM VULGARE*.—In Gray's Botany the following is the description of this plant:

"Leaves elliptical-lanceolate, smooth, thickish, deciduous; berries black—used for low hedges; naturalized in copses by the agencies of birds in E. New-England and New York. May, June."

A writer in the Horticulturist, proposes that this be used as a hedge plant; he says that a good deciduous hedge is still a desideratum, and this he thinks will supply the want. He objects to the Osage Orange and Honey Locust, on the ground that their luxuriant growth renders it quite necessary that they are trimmed at least two times during the summer, that they may be kept in proper order. This, he says, will be too severe a tax upon those who would otherwise have a good hedge. In regard to this new hedge plant the writer thus speaks in its favor:

"Compared with Osage Orange or Honey Locust its growth is slow, but *it grows into a hedge*, and will not require to be headed down for two or three years, as these strong growing plants must be in order to induce side-shoots, and will, under good treatment, form a hedge five feet high as quickly as those of more luxuriant growth, since the upright growth of the latter is in a measure lost for a year or two. The flower of this *Ligustrum* is much like the hawthorn both in appearance and fragrance, and altogether it is one of the most desirable plants for a shrubbery, although seldom planted. Being a native shrub, it is seldom grown in nurseries to any extent, but as it seeds freely there need be no difficulty in raising it in quantities. I hope to see it become a favorite hedge plant. WILLIAM SAUNDERS."

The author of the above plea for this new plant as a shrub for hedges, also suggests that the *Celtis occidentalis* or Nettle tree, would also be a good plant for hedges.—*Country Gentleman*.

THE JOY OF A GARDEN.—Think of the morning walk, all coolness and fragrance; think of the mid-day lounge, under embracing branches, where the mind sinks into sweetest dreams, and all our past readings of old lore, poetry, and Holy Writ take shapes, and float before us like realities. Think of the mid-day summer glow of all things, when the parterres burn with colour, and the cool green grass defies the sun to brown one ravel of its mossy carpet; think of the "quiet cigar," all alone in seraphic contemplation; think of the indoor readings of the works of men who have loved gardens, from Bacon to Wordsworth, whose avenues of hollyhocks still remain at Rydal; think of the summer visits to the gardens of friends to make notes of comparison on the trips to noted gardens, not forgetting *fetes* and exhibitions, where the genuine gardener has pleasures that the mere sightseer knows nothing of; think of the pride with which you show your friends over your ground, and display your stock to those that have sympathies kindred with your own; and think of the fame you acquire in your circle as a clever gardener, a man of worth, a gentleman, and a Christian, for you must be all these to love a garden rightly, and then say if there is any pursuit besides this

that can match it in its fulness of joy, that can take its place for even one hour; for it comprehends the love of nature in its most extended meaning; it comprehends the love of man in the reality of affectionate kindness, good-will and sober behaviour; and it comprehends the love of god, in the daily witnessing of His works in their loveliest aspect. Who would not be a jolly gardener? Who would not have at least some living flowering thing to set an earthly love upon? Who would not ever keep at least one flower near the heart, to cheer it in a glowing hour, and read in it an easily-learned lesson of love and duty to man and God? Surely, without a garden, life is hardly possible; with it all the foes of man may rise up against him, and he may turn aside for a moment, and catch a glimpse of his roses through the open window, and say, "My peace is there: there will I seek God, my refuge."—*Shirley Hibberd, in The Floral World.*

Miscellaneous.

FOOD AND ITS CONSTITUENTS.

The food best adapted for one man is not always the most suitable for another. In a recent number of *Blackwood's Magazine*, the following cases are given as exceptions to general rules regarding food:—

"In 1844 a French soldier was forced to quit the service because he could not overcome his violent and repugnant disgust towards animal food. Dr. Prout knew a person on whom mutton acted as poison. 'He could not eat mutton in any form. The peculiarity was supposed to be owing to caprice, but the mutton was repeatedly disguised, and given to him unknown, and uniformly with the same result of producing violent vomiting and diarrhoea. And from the severity of the effects, which were, in fact, those of a virulent poison, there can be little doubt that, if the use of mutton had been persisted in, it would soon have destroyed the life of the individual.' Dr. Pereira, who quotes this passage, adds: 'I know a gentleman who has repeatedly had an attack of indigestion after the use of roast mutton.' Some persons, it is known, cannot take coffee without vomiting; others are thrown into a general inflammation if they eat cherries or gooseberries. Hahn relates of himself that seven or eight strawberries would produce convulsions in him. Tissot says that he could never swallow sugar without vomiting. Many persons are unable to eat eggs; and cakes or puddings, having eggs in their composition, produce serious disturbances in such persons, if they are induced to eat them under false assurances."

These statements may be perfectly reliable, but they are exceptional cases; the following general information, by Dr. Lankester, of London, is of universal application:

Flesh-producing food, like every organ in the human body, contains three out of the five known gaseous elements of nature, namely, oxygen, hydrogen and nitrogen, together with one only of the many solid elements of chemistry, namely, carbon, which may be said to be the only solid basis of all organisms, vegetable as well as animal (bones excepted, the basis of which is calcium or lime.) Without these four elements of flesh-producing food—oxygen, hydrogen, nitrogen and carbon—no ingredients of food can be of use in building up the wasted parts of the body. The nutritive or flesh-forming ingredients, or proximate elements of food are called fibrin, albumen and casein; they contain the four elements just named in exactly the same proportions, and are found both in vegetable and in animal food. The nutritive value of food depends upon its richness in flesh forming matter. An adult man, in vigor, wastes five ounces of dry flesh daily, and requires the same amount of flesh formers in his food.

The flesh formers of the vegetable world are most abundant in those plants which yield the most substantive food of man; such as wheat, oats, barley, rice, Indian corn, &c.; and leguminous plants, such as peas, beans and lentils, or pulse. Wheat is the most important of these yielders, although the pea and bean tribe are so highly nutritious that they, in fact, require, or at least ought to be mixed with other food, to prevent them from being too heavy or indigestible.

Flesh-formers are indispensable to the very existence of the body, which is now believed to waste so fast that every forty days we may be said to possess a new body. This is certainly fast living compared with the slow ideas of the last generation of chemical physiologists who estimated the time for such waste and renewal at seven

years; but such is the modern idea, as we have stated, and perhaps the truth lies somewhere in the rather wide interval between forty days and seven years. But although flesh-forming food is thus indispensable, fuel-yielding food is no less indispensable, as the natural heat of the system is kept up by the latter, and not by the former.

Fuel-yielding or heat-giving food must consist essentially of three of the four elements of flesh-yielding food, namely, carbon, hydrogen and oxygen, the nitrogen not being essential to it as a heat-giver, though often still contained to some extent, in heat giving food; and indeed, neither is the oxygen of use as a heat-giver in the composition of the food, although it is essential as the evolver of heat when it combines, from the breathed air, with the elaborated heat giving food of the blood, in the lungs, or burns that food as fuel, in so combining with its hydrogen and carbon or its hydro-carbonaceous forms, thus converting these into carbonic acid gas and watery vapor, which are sent up the windpipe by the expiratory act of breathing, and so expelled, like so much smoke from a furnace, through a locomotive funnel or a chimney.

The proximate elements or ingredients of heat-giving food are mainly starch, gum, sugar, and fat, each of these containing more or less of the three elements of heat-giving food. Thus, fat, sugar, gum and starch are of little or no use in building up the structure of the body, or in repairing its waste. The natural heat of the body is 98° Fah. This must be kept up by the heat giving food—easy work for such food in tropical climes or in summer, but somewhat hard labor in the arctic regions, and in winter of the temperate climates.

Among heat-giving food are potatoes, carrots and other vegetables, rice, sugar and the fat of animal food, the butter of milk, the oils of vegetables, &c.

Five ounces of flesh-formers, being the amount required to restore the daily waste of the body, are contained in the quantities of each of the following vegetable substances:—

	lbs	oz		lbs	oz
Wheat flour.....	2	1	Potatoes.....	20	13
Barley meal.....	1	6	Carrots.....	31	4
Oatmeal.....	1	13	Parsnips.....	15	10
Maize.....	2	9	Turnips.....	17	13
Rye.....	2	3	Cabbage.....	10	6
Rice.....	4	13	Tea (dry).....	1	11
Buckwheat.....	3	10	Coffee (dry).....	2	1
Lentils.....	1	3	Cocoa (nibs).....	3	2
Peas (dry).....	1	5	Bread.....	3	13
Beans (dry).....	1	5			

WHY WE EAT, AND WHAT.

Now that the fruits of the earth are well nigh gathered in, and the labours of the husbandman have brought him to the completion of his harvest, it may not be out of place to enter into a critical examination of his principal crops, and to enquire whether or not all he has toiled for is "bread."

In coming to conclusions upon this point, we must first enquire what is "bread?" that is, what is the nature of those substances which an animal, in a healthy condition of body, requires for the daily sustentation of that *body*, and the due development of its structure and powers?

If we first inquire into the nature of the materials out of which the animal machine is made, we shall find that they may be summed up in the following catalogue:—

WATER.—The mestruium in which certain matters are dissolved; one of the conditions of the softness and flexibility of animal substances.

MINERAL MATTER.—Forming the skeleton or solid framework, on which the softer parts are built. Ingredients, in small quantities, of certain tissues and fluids.

FLESH (nitrogenous).—Forming the muscles, and nearly identical in composition with the solid portion of the blood.

FAT (carbonaceous)—acts as a protecting cushion to the bones and to the muscles that move them—is a kind of fuel destined to be burnt in the animal economy to develop heat.

This is an epitome of the more necessary proximate principles of which the bodies of animals are composed, and as these same animals are machines in a state of activity, so they are liable to wear, and consequent waste in these essential constituents, and hence the necessity for a continuous supply, which is affected by our daily consumption of

LIQUID MATTER. SOLID MATTER.
Drink. *Victuals.*

Constituting Food.

In order, therefore, to meet the supply of these requirements, we have in food the following substances, which have been thus classified:—

Classification of Food.

CLASS I.—ALIMENTARY, OR NECESSARY.

GROUP 1.—Mineral.

- a. Water.
- b. Salt.
- c. Ashes of plants and animals.

GROUP 2.—Carbonaceous—Respiratory—Heat-giving.

- a. Starch.
- b. Sugar.
- c. Fat.

GROUP 3.—Nitrogenous—Flesh-forming.

- a. Albumen.
- b. Fibrin.
- c. Casein.

CLASS II.—MEDICINAL, OR AUXILIARY.

GROUP 1.—Stimulants.

- a. Alcohol.
- b. Volatile oils.

GROUP 2.—Alteratives.

- a. Acids.
- b. Alkaloids.

GROUP 3.—Narcotics.

- a. Tobacco.
- b. Indian Hemp.
- c. Opium.

GROUP 4.—Accessories.

- a. Cellulose.
- b. Gum.
- c. Gelatine.

From this classification we see that food, on analysis, yields two sets of principles, one which is absolutely necessary to meet the wear and tear of the animal machine when in healthy action; the other, to aid in producing effects on different organisms, according to the defect or aberration of their functions. Now, if we enquire into the nature of these different groups of substances, more especially those of the first class, we shall find, as one essential characteristic, that these are not all required in uniform proportions, and that though all may be developed in every kind of vegetable, it may not be the most economical plan to derive all of them from the vegetable kingdom. This may be illustrated by reference to the first substance in the list.

Water—This fluid can be readily obtained from a spring. There is, therefore, no reason why we should desire its presence in large proportions in vegetable food, so that instead of a plant being more valuable as food in proportion to its amount of water, it is rather the reverse, for every alimentary substance of much value contains relatively but little water. This will be evident from the following table:—

Quantities of water in 100 parts of different kinds of vegetable food.

Turnins, - - - - -	87		Beans, - - - - -	14
Carrots, - - - - -	86		Wheat-flour, - - - - -	14
Parsnips, - - - - -	79		Barley-meal, - - - - -	14
Potatoes, - - - - -	75		Oat-meal, - - - - -	13
Peas, - - - - -	14			

These figures are calculated, at first sight, to startle the inquirer, who would naturally ask, "can it be true that in what we call our root crops we have eighty-two per cent. of water?" but that it is so, is easy of demonstration. If we cut any of these kinds roots in slices, and thoroughly dry them at the heat of boiling water=212 Fahrenheit, we shall find that the table above shown has understated rather than exaggerated this matter. Indeed, by this simple test have we made out that some specimens of turnips yield only five per cent. of solid matter, or as much as ninety-five per cent. of water!

Viewed, then, in this light, it is no wonder that people should commonly use the terms "watery" and "poor" synonymously, or that the farmer should distinguish the more watery kinds of food for his stock as having "no proof," and this is, indeed, a point which he so nicely estimates, that whatever be the physical appearance of a crop, he can tell by its effects how much stock it will carry, that is, how much more nutritive one crop is than another, and a greater or less proportion of water is usually at the bottom of the mystery.

Judging by this test alone, who, on looking at the first four kinds of crops—roots, which we have tabulated—would not conclude that they were infinitely below the last five in nutritive properties? Though it does not follow that potatoes are more nutritious than all other roots, because of their lesser amount of water; for putting aside the water as a non-nutritive element in vegetable substances, we must judge of their relative feeding value, by the other constituents.—*Irish Agricultural Review*.

TWENTY THINGS WHICH A BAD GROOM OR COACHMAN WILL DO.

1st. He will recommend his master to buy horses from the dealer who will allow him the greatest bribe, without taking into consideration whether they are likely to suit or not.

2nd. He will expect more profit, in the shape of gratuity, from the horsedealer, coachmaker, saddler, or corn-dealer, than those tradesmen realise for themselves out of his order.

3rd. He will, in place of exercising his horses when not in regular work, let them stand with their legs swelling in the stable, while he is smoking a short pipe and backing racehorses for shillings, behind the bar of a back-street beerhouse, with more of the same fraternity.

4th. He will, when he does take it in his head to exercise his horses, ride them on the hard stones in crowded thoroughfares, at any pace, to suit his own purpose, whether beneficial to the horses or not.

5th. He will fill the racks with good hay until the horses contract a habit of pulling it out under their feet, and so mix it with litter and waste it. He will also roll up the horse's bed in a morning and cram it under the manger, and thus keep it under the horse's nose all day, and often prevent him from feeding, in place of taking it clear out of the stable, shaking it well up, and mixing with clean straw to sweeten it.

6th. When his horses are brought in reeking with perspiration, he will sponge them all over and wash their legs with cold water, and then leave them to dry, while he fills his own belly and smokes his pipe, in place of instantly stripping his coat and vest, first coaxing his horses to stale, and then wiping them with straw from head to heel, until they are dry, wash out their mouths, give them a lock of the sweetest hay, and then leaving them refresh himself. After which he will return, without loss of time, and complete the grooming, water, feed, bed-down, and leave them to their often much-needed rest.

7th. On mounting his master's saddle-horse for exercise, he will instantly apply the whip or spurs, and tear the reins about, as if the horse's mouth was made of iron; and this will be his readiest means of making the horse restive and unsteady while his master mounts him.

8th. He will invariably spur, check his horse's mouth, and curse him, while at exercise, for any little infirmity, as if it were vice—more especially for shying—whether the cause be a natural timidity, as in human beings, defect in the eyesight, or a display of gaiety, brought about by long confinement in the stable.

9th. He will trim his horses' heels with the scissors, instead of pulling the superfluous hair out, bit by bit, with his fingers dipped in powdered rosin. He will also

crop their tails, to suit his own taste, without his master's orders, trim the hair which naturally protects the inside of their ears, and singe them under the throat, and thus bring on influenza.

10th. He will often deal a little in dogs, and suffer them to lie among the hay, which the horse will not eat with so much relish, if he does not refuse it altogether, when impregnated with the excrement of these animals.

11th. When bedding a horse down, he will strike him on the legs with a pitchfork, just because he does not move quick enough from one side of the stall to the other; and (while grooming him) the more sensitive and ticklish his skin, the more he will torment him, more especially if any one be watching this (to him) interesting exhibition; and he will, from time to time, strike him savagely on the shanks with the sides of his brush, or curry-comb, and thereby raise a permanent blemish, or inflict a cruel injury, and account for it to his master as the result of stable kicking, or, if a new purchase, that it was overlooked, and then the horse is returned for breach of warranty, especially if bought from a dealer who has not allowed him sufficient "tip."

12th. If the horse, by reason of his heavy, unsteady hand, tight curb, and severe bit, attempt to raise his head and fore feet, because he cannot bear the excruciating pain thereby occasioned, he will say he is a "rearer," and, rising in his stirrups, strike him with all his might between the ears, as he will say, "to cure the brute," and thus lay the foundation for a case of poll-evil.

13th. He will irritate and punish a high-couraged horse, merely for the sake of showing himself off as a rider, notwithstanding that the action and capers of the horse are so easy that he would not shake a fly off his back.

14th. He will take especial care to exclude every breath of air from the stable, lest it should make the horse's coat rough, and give him more trouble to groom it.

15th. In harnessing his carriage horses, he will persist in reining them up so tight with the bearing rein that they cannot see to avoid uneven places, or loose stones on the road; and if they make a slight stumble they must of necessity come down, because they have not the free use of their head to assist them in keeping on their legs, and when down they have to struggle hard to get up again, for want of freedom in their neck and head, so necessary to propel their fore-hands forward to stretch out their legs, and so place their fore-feet on the ground as a lever, to raise their hind quarters. No opinion is more erroneous, and none more believed by conceited servants, than that a bearing-rein will prevent a horse from falling.

16th. He will scarcely miss a week without cramming alterative or condition balls down his horses' throats, and made up from his own or his brother chip's prescription, and he would at any time take the opinion of the village blacksmith before that of a qualified V. S., who never allows him any "tip."

17th. If he happens to have a hard-mouthed pulling horse, he will always be on the look-out for new inventions in bits, and fresh tortures, never dreaming that the more these jaw-machines are applied to a horse, the less he will care for them, nor that a light, even hand in a plain snaffle bit, in the absence of punishment and irritating causes, is, after all, the best remedy for a pulling horse.

18th. If a bad coachman's horses appear more fretful and irritable than usual, he will not be at the trouble to get down from his box to examine the harness or curb chains, to see whether the former does not chafe them, or the latter be too tight; or if they appear more dull and sluggish than is their wont, he will never take into consideration that, like himself at times, they may feel a little amiss, without being so bad as to be off their food, but he will continue to whip them without thought or mercy.

19th. He will, after keeping his horses heavily clothed and without fresh air in the stable, stand talking half an hour in the street with some friend, in cold, damp weather exposing his horses to the certainty of a cold.

20th. He will never take advice from an experienced man, because he considers that he knows more than any one else; and even if his master should kindly give him advice relative to the treatment of his horses which he cannot reconcile to his own conceited ideas, he will be sure to ridicule and repeat it to his companions, who will coincide with him that all masters are fools, and advise *him* to do as *they* do—treat their employer's valuable animals in their own particular, stupid way, until they are found out, and very properly sent about their business, to make room for better men.—*BALLINASLOE, in Review (London.)*