

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Coloured pages/
Pages de couleur

Covers damaged/
Couverture endommagée

Pages damaged/
Pages endommagées

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Cover title missing/
Le titre de couverture manque

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Coloured maps/
Cartes géographiques en couleur

Pages detached/
Pages détachées

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/
Transparence

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Quality of print varies/
Qualité inégale de l'impression

Bound with other material/
Relié avec d'autres documents

Continuous pagination/
Pagination continue

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/
Comprend un (des) index

Title on header taken from:/
Le titre de l'en-tête provient:

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments:/
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12X	16X	20X	24X	28X	32X



VOL. XI. No. IV.
(NEW SERIES)

TORONTO, CANADA, FEBRUARY 16, 1874.

\$1.50 PER ANNUM.
SINGLE COPIES 8 CTS.

The Field.

Experiments in Barley-Growing.

In ordinary farm practice, there can be no question that a well-managed rotation of crops is the best system to adopt. It has however, been often and thoroughly demonstrated, that the same crop may be raised year after year, provided a sufficient quantity of plant-food is regularly and constantly supplied. It has also been proved, that quite a respectable yield may be maintained on unmanured land, when thorough tillage and scrupulously clean culture are given. The soil kept porous and open to the sun and air, none of its strength wasted in growing weeds, is productive up to and even beyond the average of common farming.

Messrs. Lawes and Gilbert, prominent English agriculturists, have devoted a large amount of time and money to experiments designed to ascertain the relative productiveness of manured and unmanured land, and also the comparative efficacy of barn-yard and other fertilizers. Their tables of results as to wheat-growing, are well-known, and of great value. They have recently made public the results of twenty years' experiments in raising barley continuously on the same land. Twenty-eight separate plots of ground have been treated in the same manner, year after year, for twenty years, and drilled with barley. Two of the plots have not been manured at all during the term, the remainder have been treated with applications of farm-yard manure and various commercial and mineral fertilizers. All the manurial matter put into the soil, and all the products harvested from it, have been carefully weighed, and much of it analyzed. The results may be briefly summarized as follows:—

The two plots cultivated and sown without manure have produced on an average of twenty years, 21 bushels of barley, weighing 52 lbs. to the bushel, and 12 cwt. of straw. There has been no falling off either in the weight or quality of the grain, since the beginning of the experimental term. A similar course of wheat-growing on unmanured land, gave an average of 16 bushels of grain, and 14 cwt. of straw, during twenty-eight consecutive years.

Twenty bushels of soil and turf ashes, harrowed in annually with the barley, gave returns very little better than those obtained from the unmanured plots.

A yearly dressing of barn yard manure at the rate of 14 tons to the acre, increased the average yield for the twenty years to 43½ bushels of grain, and 25½ cwt. of straw. The yield was proportionately greater during the second term of ten years than during the first, showing a gain in respect to the fertility of the soil, resulting from a constant application of this old-fashioned fertilizer. The manure applied has been three times the weight of the extra grain and straw harvested. On this department of the experiments,

the *North British Agriculturist* makes a few observations well worthy of note.

"Repeated trials appear to indicate that of 200 lbs. weight per acre of nitrogen, furnished by good farm-yard manure, only one-seventh part is appropriated by the wheat, and one-ninth by the barley. Although certain mixtures of artificial manures, such as nitrate of soda and superphosphate, produced on an average of years a heavier produce than the farm-yard dung, the older fashioned fertilizer has several special properties. Its nitrogen and other constituents are in a less available condition, and hence gradually accumulate in the soil. From determinations made the nitrogenous matters are doubled. They are not so readily run off in the drains as the corresponding ingredients of ammoniacal salts and nitrate of soda. The soil fairly well dunged, besides its increased percentage of organic matter, has much greater powers of absorption. Without injury, and probably with advantage, this porosity enables it, sponge-like, to hold much more wet than unmanured or artificially manured land. Messrs. Lawes and Gilbert found that while the pipe drains from every one of the other plots in the experimental wheat field ran freely, perhaps four or five or more times annually, the drain from the dunged plot seldom runs at all more than once a year, and in some seasons not at all. Stated briefly, it was found that the dunged soil when saturated retained within 12 inches from the surface, an excess of water which would be equivalent to about 1½ inch of rain more than that held to the same depth on the unmanured and the artificially manured plots in the same field. Land well dunged becomes less dependent on seasons, and its storehouse of moisture is especially serviceable in a time of protracted drouth."

An annual dressing of rape cake brought an average of 45 bushels of grain.

Mineral manures consisting of salts of potash, soda and magnesia, yielded meagre returns. A mixture of sulphate of potash, 200 lbs. with 100 lbs. each of sulphate of soda and magnesia, applied annually during the twenty years, produced scarcely two bushels more of grain, on the average, more than the unmanured plots, and less than ½ a cwt. more straw.

Superphosphates alone in annual doses of 3½ cwt. had but slight effect. The average yield was only 1½ bushels of grain and 1½ cwt. of straw more than the unmanured plots, and it lessened rather than improved during the second decade of the experimental term.

Another quotation or two from the *North British Agriculturist* may be appropriately introduced here.—

"One of the chief practical lessons of these admirable experiments is the high manurial value of available nitrogen. Indeed, nitrogen within the soil may be regarded as the great condition of fertility. In all ordinary subjects there appears to be a fair store of mineral matters. Even phosphates are seldom entirely exhausted; but nitrogen in a condition suitable for plant growth is the grand desideratum. The barley experiments abundantly prove this. One hundred pounds each of ammonia sulphate and murate, maintained during twenty consecutive crops a good return of 33½ bushels of grain, at 52 lbs. per bushel, and of 25½ cwt. of straw and chaff; 275 lbs. nitrate of soda, from the condition and solubility of the nitrogen, proves even more productive than the ammonia salts, and gives fully 37 bushels of barley and 23 cwt. of straw and chaff. But still better returns are obtainable. None of the experimental plots

stood superior to that which received 275 lbs. nitrate of soda and 3½ cwt. of superphosphate. Here was reaped on an average of the twenty years 49 bushels of barley and 32½ cwt. of straw and chaff. The nitrate and superphosphate together supplied in readily available form the several constituents requisite for a large barley crop, the soil, of course, providing purely mineral materials in continuous supplies for the twenty consecutive crops. Here is an increase of 20 bushels of grain and 15½ cwt. of straw beyond what is grown on the unmanured plots.

Referring to the practicability of raising heavy crops of cereals year after year from the same soil, provided the supply of requisite nutriment is kept up, our able and judicious contemporary says:—

"Such top-dressings give a better return for barley and oats than for wheat; when used in spring than in autumn; when applied whilst the crops are already growing and ready at once to appropriate it, rather than during the dead season, and whilst plant vitality languishes. Where liberal dressings are used they should moreover be put on at several different times.

"An average of about 40 per cent. of ammonia in most manures is recovered by plants. About one-half is made available by barley and oats but only one-third by wheat. According to this the top-dressing of wheat is scarcely so economical as that of barley or of oats."

There is much food for thought in the foregoing facts. They make a startling disclosure as to the enormous waste entailed by the growth of weeds. It would seem that pretty much all the fertility given by manure to land farmed in the common slovenly manner, is consumed by weeds; for the average got by Messrs. Lawes & Gibbot on their unmanured plots, is quite up to that obtained by the generality of Canadian and American farmers. On this point, a correspondent of the *Country Gentleman* says:—

"I have seen an estimate, and I have no doubt it is a correct one, that all the weeds grown on farms in the Union would fill a close line of waggons a ton each, around the whole circumference of the world; and that the rag-weeds alone which grow after harvest in the State of Ohio and Indiana, would fill a similar line two thousand miles long. These two are not worse than some other States. Now, suppose instead growing worse than useless weeds, all the strength of the soil were expended in raising good clover and timothy hay, worth on an average ten dollars a ton; how much money would those long lines of waggons loaded with weeds bring the owners of the land? The two thousand miles of Ohio and Indiana rag-weeds, calling them 300 to a mile, would be 600,000 tons, worth six million dollars! The 25,000 miles of United States weeds would be 7,500,000 tons, worth seventy-five million dollars! All wasted, and worse than wasted every year, by our hard-working, penny-saving, liberty-loving people of these States. I have seen a farmer who would go to law for a disputed strip of land one foot wide next his neighbor's farm and in the very first twenty-acre field allowed at least five tons of rank thistles to grow without hindrance. Now, let's figure a little on these thistles. The five tons, if good hay, would be worth fifty dollars; and fifty dollars wasted every year through forty years of farming, or from thirty to seventy years of age—would be quite a snug sum. At seven per cent. it would amount to \$9,980—enough to buy a good farm in many places."

It is an old proverb, that "tillage is manure," and in view of the scarcity of the literal article, would it not be better policy to obtain the same results by thorough tillage and clean culture, rather than by small doses of manure which go to the support of useless and noxious weeds.

The value of barn-yard manure is not only providing a store of plant-food, but making the soil more retentive of moisture, is a point of no small importance in a country like ours, where summer droughts are so apt to prevail.

The results obtained in the continuous cultivation of the same crop, and that an exhaustive cereal, show the policy and economy of rotations. By alternating other crops, requiring to some extent a different kind of food, the stock and store of nutriment in the soil is more evenly distributed and more completely used than when the same product is grown year after year. The results of these experiments do but confirm the old and time-honored axioms of enlightened agriculture as to stirring the soil, exterminating weeds, applying manure, and rotating crops. Messrs. Lawes & Gilbert have laid the whole civilized world under a fresh and weighty obligation of gratitude, by their recently reported labors of theirs in the field of scientific farming.

Ploughing.

The common reasons given as the object of ploughing are, "to pulverize the soil, to mingle the different portions, to kill weeds, to cover manures, and to keep the surface open and fresh." A still further object, which may perhaps be implied in the foregoing, is to air the soil. Air is essential to preparation of plant food in a soil. It changes a putrefactive process to one of oxidation; and the moment in which putrefaction of organic matter in the soil changes to one of oxidation, the soil changes from an unfertile to a fertile one, or its fertility is immeasurably increased; the oxygen in the soil is no longer employed in converting soluble matter into insoluble, but serves for the formation of carbonic acid, which enters largely into the composition and food of plants. In a soil to which the air has little or no access, animal and vegetable matter do not decay; at most they can only putrefy, which is a strong dioxidizing process. They only decay when air is freely supplied. We thus see that a most important object in ploughing is to freely air the soil, that oxidation and decay may go on; thus preparing and supplying adapted plant food in the soil that may be readily absorbed and taken into the composition of plants.

The ploughing which will accomplish the foregoing objects in the greatest perfection is the best. It will be inferred from what has been already said that pulverization of the soil in ploughing is the most important, and that the system which accomplishes this to the greatest depth the most thoroughly is the best. This is best understood by all those most thorough cultivators who wish to grow the finest, best and greatest product from a given soil. Would all our farmers but adopt this course in ploughing and culture generally with all their lands, we should hear little about poor crops, failure, &c. In this way we may make twenty acres do the duty now performed by thirty or forty. And how much better than to add the increased cost to the farm by doubling its surface area. A saving of the first cost, saving in labor, and saving in every way, are thereby accomplished. The writer is well aware that soils vary, and that they cannot all be ploughed alike; but that there can be a great improvement in the ploughing and working of all soils, there is not the least shadow of doubt.

It has been aptly said that "nearly every farmer in the country has a new farm under the old one." I would add it is as my conviction that nearly every farmer has a new farm lying within the confines of his present cultivated one, and that by performing all his culture in a more thorough, careful manner, he will soon find his reward in the old new farm. It is never advisable, in any soil, to plough so deep as to throw the cold, dead subsoil on the top of the richer, warmer upper soil; but, in many instances, the loosening of the hard and compact subsoil is of the greatest importance—this to be the first step in deepening the surface soil, after which we may begin

to turn up a slight depth of the subsoil, gradually, and as it becomes ameliorated more may be added in the same way. There are several different ways of ploughing soil and fallow ground, but it is not my purpose here to criticize or describe any of them, only to state principles deduced from experience, as well as observation. That way of ploughing which most effectually pulverizes the soil, and still keeps the richest and best at the top, is the best and most economical. The tendency of the feeding-roots of plants is to seek congenial soil near the surface, as here the larger part of pabulum from organic matter is prepared; air, moisture, and warmth of the sun, act more immediately near or at the surface.—*N. Y. Weekly Times.*

Turnips for Seed.

In answer to W. E. L. Sherman, Texas: The turnips should be sown so as to prevent their heating, and to prevent their premature growth; keep the apartment at a low temperature, and delay the planting until the frost at night ceases or becomes very light. But if our Texas friend relishes a good turnip, he should not rely on Texas-grown seed. I have tried raising turnip seed from the choicest specimens, with great care that nothing of its kind was planted near by, but have always failed out West to get the quality in my second crop. There is no bulbous root that will so soon degenerate in a dry climate as the turnip. I have planted nothing but imported (European) turnip seed for many years; would not plant western-grown seed if presented. W. C.—*Des Moines, Iowa.*

I notice a Texas correspondent asks how to manage turnips for seed. In this climate, and I suppose in his it would do as well, when we trim our ruta Lagas, we select the best shaped and finest, cut off the top leaving about two inches of it, and leave all the roots. If the weather is suitable, or whenever it is not frozen, we set them out in rows three feet one way by two the other, manuring with half a handful of bone if we have it, or a shovelful of other manure to the turnip. One hundred will make him ten pounds of seed if they do well—often fifteen. C. H. M.—*Johnstonville, Va.*

Generally the best roots are selected and drawn, tops cut off, not too close, and buried with roots on the same as potatoes. But I should think in Texas they might be planted out at once, if not too large, covering the roots up well with the earth. I have done so here with good success when the winters were not too severe.—*Cor. Country Gentleman.*

Honey Locust Hedges.

Mr. Josiah Hoopes, one of the best pomologists of Pennsylvania, writes to the *New York Tribune* in relation to the honey locust as a hedge plant:

The honey locust differs from the Osage orange, in being a stouter and less branching hedge plant, therefore, to insure a perfectly formed, and what is of the greatest importance, an impervious barrier, trim severely while young and secure a thick growth at the bottom; or, as some of the modern growers insist upon doing, allow the young plants to grow at will for a year or two, and then cut down to the ground, thus obtaining a stronger growth. Knowing so well the benefits of the old system, so long tested and proved satisfactory, I prefer to abide by it for the present. This branching from the ground is the most desirable feature in the work—in fact it is indispensable.

A friend of mine who has boasted for several years that he had the finest hedge in the country around his pear orchard, now wishes to qualify his former statements by saying that it looks well, but near the ground, and shaded by the overhanging branches, it is not sufficiently twiggy, and, as a matter of course, the boys by lying flat can crawl through and help themselves to his fruit. The great fault in all of our hedges is in having the individual plants composing them with small bodies at the base, or as the gardeners term it, "half-standard." In the place of one body we want a half-dozen at least, and the side branches (plenty of them too) starting right at the ground. To do all this we must commence early, and keep it up in the way of trimming.

Hedges of honey locust may be laid, but I prefer the cutting down process, believing it to be much less expensive and quite as effective, although I have seen as beautiful hedges grown on the latter principle as any other. Always bear in mind that we can readily get our hedges high enough, but it is not so easy to make them thick at the bottom in after years.

WHEN a boy is put to farm labor he is given an old hoe, a fork with a broken tine, a round-edged axe, a scythe that nobody else will use, and is expected to work more hours than a hired hand, to do all the chores, to build fires in the morning, to run on all errands, to turn the grindstone and to go to meeting in cowhide boots. With this experience he does not like farming; and lecturers, editors, members of Congress and petty lawyers mourn because so many young men go from the farm to the city.

FRESH MANURE.—Flesh manure is almost exactly identical in quality and effect with guano, and may be used in the same manner. Except on very rich soil it should not be used in larger quantities than 250, or 300 pounds per acre, as it would only stimulate a straggling growth, which could not be kept up in vigor. As a change of manure on rich garden soil, which is heavily cropped, it may be used to advantage. The best way to preserve it is to keep it dry, or mix it with earth. Its value, if free from foreign matter, and dry, is \$50 a ton.—*American Agriculturist.*

WORM-EATEN PEAS.—Prof. Maurice Perkins, Union University, Schenectady, furnishes the following for the *Country Gentleman*. Very often in the spring I have noticed that the peas, beans, &c., for sale in the stores for seed were worm-eaten. In many cases the seeds were so eaten as to be useless for seed. The worm, and even the egg, may be easily destroyed by the bisulphid of carbon, a colorless, volatile liquid. Lay it on the seeds and cover the barrel with an old horse blanket. The vapor of the bisulphid will sink down among the seeds and destroy all animal life. The seeds themselves will not be injured. Two or three ounces will be enough for a half dozen barrels. This liquid is used in Europe to destroy the weevil in wheat. I have not seen the above mentioned in any agricultural paper, and thought that it might prove useful to some of your readers.

LAND WASHING.—One of the greatest objections to our farming operations in this country is the tendency of our rich soil to wash off and rapidly deteriorate in fertility. Another misfortune is the indifference with which many farmers treat this important subject. It is plain to any observing mind that a field of rich, fertile soil will yield double the amount of one that has been thus neglected, and suffered other mispractices. I have in my mind now the case of a so-called farmer who allowed an old roadway, a quarter of a mile in length, to wash so deep that a plough could hardly cross it, when ten minutes work with a spade would have prevented it. And often we see large, impassible ditches form through valuable land, with no effort to stay the fearful waste. This, with fearful force, verifies the old saying, "a stitch in time saves nine." A few hints in regard to remedies are in order. First, the land can be ploughed so as to help the case by running the furrows crosswise of the rills. I prefer to have the water flow in straight rills at regular intervals, and to prevent these from washing deeper, back corn-stalks, large green weeds, fine straight brush etc., in the bottom, and allow the grass and weeds to grow in these ditches. Thus the water has something to wear on, and with a little care much soil can thus be saved. But the best manner to preserve the fertility of the soils is, as any intelligent farmer knows, to seed down to grass, especially clovers, not forgetting the importance of the proper use of manure.—*Western Farmer.*

CLEAN SEED.—As a rule, those farmers who are the most careful in cleaning their seed grains, and the most thorough in their cultivation have the fewest weeds to contend with; and such are the most fully compensated in the end for their pains. One of the most prolific sources of the spread of weeds is sowing directly from the threshing-machine, for however well these machines clean the grain for market purposes—and the better classes of them do it admirably—still there is no power machine that will clean seed in so thorough a manner as to fit it for sowing. This, however may be accomplished by careful cleaning by the more modern fans, having sieves adapted to the various sizes and shapes of seeds, and perfectly controlled by the blast given. With their use we have often secured a large advance over the ordinary market price, on account of the seed being perfectly clean.

Among the most difficult seeds to separate from grain are cockle and ches; and to do so thoroughly, it is necessary to have proper sieves for separating these from the good grain, since the specific gravity of these seeds is very nearly that of barley, rye and wheat. In the case of ches, the peculiar form of the seed being long, like wheat and rye—renders it especially difficult of separation. But with the modern fans, but little difficulty will be experienced in their separation, and the value of the seed will be thereby much enhanced.—*Exchange.*

Grasses and Forage Plants.

Redtop.

The botanical name of this grass is *Agrostis vulgaris*. It is very widely diffused, and is found, in greater or less proportion, in most fields, thriving best in low, moist places. The name *agrostis* is derived from the Greek word *agros*, which signifies a field, and is indicative of the fact just mentioned, of its almost universal presence where grass is to be found. In England, it is commonly called "bent grass," and in some parts of the United States it is known by the name of "herd's grass," though that title is usually given to timothy. Cutlibert W. Johnson says: "There has been much prejudice existing against the different species of *Agrostis* in general; but let the proprietor of a rich, ancient pasture divest a part of it of this grass entirely, and the value of the plant will be demonstrated in the comparative loss of late and early herbage." It is probably of less nutritive value in this country than in England, a rather humid climate, being best adapted to it, and a hot droughty summer being apt to make it dry and wiry. Notwithstanding this drawback, it is an important member of the family of grass and forage plants, and well worthy of cultivation for meadow and pasture uses.

Redtop is probably well enough known to all our readers to render minute description unnecessary, still it may not be amiss to give in brief its botanical characteristics. Flint, in his useful treatise on "Grasses and Forage Plants," enumerates them as follows:—"Stems erect, slender, round, smooth, and polished; roots creeping, panicle oblong, leaves linear, ligule very short; lower palea mostly awnless, and three nerved." There are many varieties of *Agrostis*, closely resembling each other. This grass is rather variable in its botanical qualities, and hence it has received as one of its specific names, that of *Agrostis poly morpha*, to indicate the many forms in which it is prone to appear. There are some twenty-six varieties of *Agrostis*, closely resembling each other, and requiring, in many cases, the practised eye of a scientific botanist to distinguish them. Even the *Agrostis vulgaris* is discriminated into four varieties, the first being awned, the second having awnless and diseased flowers, the third having diseased awned flowers, and the fourth having the flowers viviparous. Differences of soil and available nutriment account to some extent, for these diversities.

Redtop or common bent grass, is one of the earliest of the *Agrostis* family, and in this respect is more valuable, though it is inferior to some of them in the quantity of produce it yields. Hardy, and of prompt growth, it is well suited to our late, short springs, giving the meadows and pastures a green tinge, and affording stock a bite of fresh herbage, very soon after the snow is off the ground. Later in the season, other grasses are preferred to it, but after a long winter's feeding on dry forage. When a taste of green food of any kind is very toothsome, this grass comes into good use. It is the most common grass on natural sandy pastures, and even on heavier soils, is frequent. It is of good, permanent habit, and therefore well suited for pastures, requiring however, to be fed close, as cattle refuse it, if allowed to get old and run to seed, left to its natural course, it flowers from the third week of June till the second week in July, and the seed ripens early in August.

Red top is usually sown with timothy and common red clover. Thus employed, it gradually obtains possession of the soil, in conjunction with various wild grasses, and forms a close sward, the clover and timothy disappearing in due course. It is less valuable for hay than for pasturage, not growing to any great height, except in moist, rich soils, and being apt then to be tough, sapless and wiry. Much, however, depends, as in the case of all the grasses, on the

time of cutting, and the manner of curing. It should be mown while green and juicy, before the maturing of seed has converted the stems into that strawy condition, which is so fatal to the feeding qualities of hay. Over-curing of redtop is a common error, as indeed it is of other grasses. Being a fine, slender-stalked plant, it needs only to be rid of superfluous moisture, and wilted, to be ready to carry. One good hay day is enough to fit it for the stack or mow. It cannot be commended as yielding a sufficiently heavy product to be profitable; but, cut early and nicely saved, horses and cattle will eat it readily and even greedily.

In laying down land to grass, whether for pasturage or mowing, it is desirable to use a greater variety of seeds than is commonly done. Especially is this remark applicable to pasturage. Seasons vary, and are more favorable to certain kinds than to others, as they change in their course. Grasses differ in their periods of starting into growth and coming to maturity. A constant succession of succulent herbage is what is wanted. This is best obtained by sowing a variety of grasses, and in every mixture it is well to have a good proportion of redtop. The practice of equally skilful and experienced farmers differs greatly as to the proportions to be observed in making up a mixture for seeding down, and also as to the quantity per acre, rendering it difficult to give tables for sowing. Mr. Flint states that of two hundred New England farmers who were consulted by letter on the subject, no two recommended the same proportions for mixture, and not one reported the use of more than two species of grass, mixed with one or sometimes two species of clover. Redtop, timothy, and red clover were the prevailing ingredients, and in the majority of cases, the only ingredients, in varying proportions and quantities. The writer just named suggests among others, the following mixture for permanent pastures.

Meadow Foxtail, flowering in May & June	2 lbs.
Orchard Grass, " " "	6 "
Sweet scented Vernal " " April & May	1 "
Meadow Fescue " " May & June	2 "
Redtop " " June & July	2 "
Kentucky Blue Grass " " May & June	4 "
Italian Rye Grass " " June	4 "
Perennial Rye grass " " "	6 "
Timothy " " June & July	3 "
Rough-stalked Meadow " " "	2 "
Perennial Clover " " "	3 "
White Clover " " from May to Sept.	5 "

Total 40 lbs.

A permanent pasture mixture, recommended by the Messrs. Lawson & Sons, very experienced seedsmen of Edinburgh, Scotland, may be quoted here:—

Meadow Foxtail.....	2 lbs.
Orchard Grass.....	4 "
Hard Fescue.....	4 "
Fall Fescue.....	19 "
Meadow Fescue.....	19 "
Redtop.....	19 "
June Grass.....	19 "
Italian Rye Grass.....	6 "
Perennial Rye Grass.....	8 "
Timothy.....	3 "
Wood Meadow Grass.....	19 "
Rough-stalked Meadow Grass.....	19 "
Yellow Oat Grass.....	1 "
Perennial Clover.....	10 "
White Clover.....	5 "

Total 45 lbs

The following is the Messrs. Lawson's mixture for grasses in the rotation of crops:—

Mixture for Mowing in the Rotation.

DESCRIPTION OF SEED.	For one year's hay		
	For one year's hay	For one year's hay & 1 year's pasture	For one year's hay & 2 years' pasture
Redtop	3	3	3
Italian Rye Grass.....	6	6	6
Perennial Rye Grass.....	3	3	3
Orchard Grass.....	4	6	6
Timothy.....	11	9	9
Red Clover.....	8	4	2
Perennial Clover.....	2	2	4
White Clover.....	2	4	4
	27	27	27

Mr. Flint proposes a modification of the above, to suit the climate of this country, which is drier and hotter than that of Scotland, and to include a smaller proportion of Italian Rye Grass, which requires higher culture, and a more liberal application of liquid manure, than the farmers of the American Continent are apt to bestow on their grasses. It is as follows:—

Mixture for Mowing in the Rotation.

DESCRIPTION OF SEED.	For one year's hay		
	For one year's hay	For one year's hay & 1 year's pasture	For one year's hay & 2 years' pasture
Redtop	2	2	3
Italian Rye Grass.....	3	4	6
Perennial Rye Grass.....	3	3	3
Orchard Grass.....	6	8	8
Timothy.....	11	9	4
Rough-stalked Meadow.....	2	2	2
Meadow Fescue.....	2	3	4
Meadow Foxtail.....	2	2	3
Red Clover.....	8	4	2
Perennial Clover.....	2	2	4
White Clover.....	2	4	4
	57 1/2	43	43

Varieties of soil properly studied, will demand modification of such tables as the foregoing, but it would lengthen this article too much to multiply tables to suit all supposable cases and conditions. To account for the apparently small proportions of redtop given, it must be borne in mind, that it is a very light seed, weighing only 12 pounds to the bushel. It may be added, that whether grass seed be bought by weight or measure, it is advisable to sow it by weight. The older the seed, the lighter it is, and if coarse, the more loss is likely to occur from failure to grow. It is well, in all cases, to test the vitality of grass seed before sowing, either between two pieces of thick cloth well moistened, and laid in a saucer, covered with a third piece of cloth, and set in a moderately warm place; or in some other way.

Redtop is an indispensable element in a good mixture for lawns, but alas! these are luxuries in which few Canadian farmers indulge; and their management belongs more properly to the horticultural department of this journal.

Seed Sowing.

I can easily understand why a large quantity of seed sown never grows, and consequently has a tendency to discouragement. The seedsmen generally is blamed; but this is a mistake, for bad as is the seed frequently sold, it must be borne in mind that if one-half germinates, there is more than enough for one's use. The cause of failure is sowing too deep, and actually burying the seed. In a state of nature all seeds germinate on the top of the ground, protected with a slight covering of fallen leaves or blades of grass. There is a golden rule to guide us in sowing seed, and that is, never to cover it with a greater thickness of soil than the diameter of the seed itself. There are, of course, exceptions; but in sowing radishes for instance, the ground should be forked or dug level. The seed should be sown, and if a shower of rain falls, nothing more is required, as it will break down the rough ground sufficiently to cover the seed. In the absence of rain, you may use an ordinary wooden hay-rake to chop the soil—not to rake it as a person would a turnpike road; nor must you confound the wooden rake with the ordinary iron rake. The latter I consider one of the most dangerous tools in a garden, and, as a six-tined fork is now being manufactured, the iron rake ought to be condemned altogether. Now, many amateurs suppose that rakes are for the purpose of clearing the ground of stones, the very pores of the soil by which light, heat and moisture reach the roots of all plants. The consequence is, you have a surface washed flat by the rain and baked hard by the sun, and, as the soil so cultivated is sown, and consequently cannot be disturbed, it becomes an eyesore for months. "But," my friends say, "if I were to adopt your advice, and not cover up the seeds, I would have no crop at all, because

the birds would take them." Now there is only one effectual cure against small birds. You may build up dummies, put cross-lines of feathers, stick feathers in oscillating turnips, resort to stuffed ferrets or cats; and all to no purpose, as the birds after a short consultation, will know that neither of these experiments is any trap at all. But they will never approach black cotton, which must be stretched in lines across the part sown about two inches from the ground, and with all the craft of sparrows, they will never allow themselves to get entangled in cotton.—*Cor. Colonial Farmer.*

Re-seeding old Pastures.

For many years the opinion was most vigorously maintained that pastures should never be ploughed, for if the sward was once broken it would never again become so compact as to form a good grazing turf. But this opinion has been found incorrect. Pastures may be broken, planted to potatoes, the fall the potatoes are harvested ploughed lightly, and the next spring sown to barley and seeded down with a good mixture of grasses well adapted to grazing—and a good sward at once obtained and maintained for many years. The grasses in our old pastures are chiefly wild grasses, and have found their way in by accident rather than design. In re-seeding a pasture it is very important to have a large quantity of seeds of those varieties of grasses that flower successively at different periods, and that are well adapted to grazing. The following mixture has been recommended: Meadow focktail, 2 lbs; orchard grass, 6 lbs; sweet-scented vernal grass, 1 lb; meadow fescue, 2 lbs; red-top, 2 lbs; Kentucky blue grass, 4 lbs; Italian rye grass, 4 lbs; perennial rye grass, 6 lbs; timothy, 3 lbs; rough stalked meadow grass, 2 lbs; perennial clover 3 lbs; white clover, 5 lbs—or a total of 40 pounds of seed per acre which would give the enormous number of 51,000,000 seeds, or eight seeds to every square inch of ground. Who doubts that this would in a favorable season, produce a good thick permanent sward—and that cattle would graze from it in preference to the bound out turf of the old pasture.—*Maine Farmer.*

The editor of *Moore's Rural* speaks of meadows which have not been ploughed in 20 years, and yet they yield not only heavy but first quality hay; they having always been pastured in early fall, never fed close, and occasionally harrowed and top-dressed with fine, well-rotted manure.

YIELD OF ALFALFA SEED—According to a California paper a farmer in the vicinity of Mussel Slough, has three acres of alfalfa, one crop of which was this season allowed to seed. From the three acres, 2,500 pounds of seed were gathered, which were sold for 25 cents per pound, or at the rate of \$205.33 per acre.

Clover and the grasses are the great needed element in our rotation of crops; they are fertilizing and the chief source of profit. No part of the country shows improvement of the soil so much as where grazing is made, not a sole thing, but a large element in farming, and the prosperity of the farmer keeps pace with it. Single branches prosecuted may be made to do well for a time, but these are included in rotation, so that all may be carried, and are carried by the wise, energetic and comprehensive farmer.

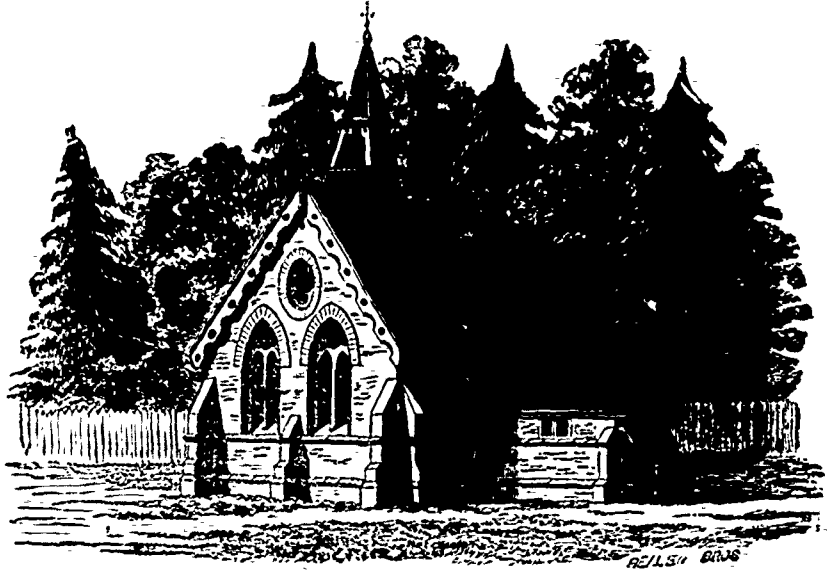
THRASHING TIMOTHY.—The *Country Gentleman* says: The best way to get out timothy seed is to thresh it with a flail—for although a machine will work more rapidly, yet the seed which it cuts and wastes, more than overbalances the advantages. When threshed out, then spread it out on the floor, go over it again thoroughly with the flail—then pass it very slowly through a fanning-mill, so as not to blow out the seed, (which can soon be learned on examination); then pass it through a sieve fine enough for the clear seed to pass, but retaining the chaff-covered seeds, and thresh the latter again—and so on, till all is saved. For home use, all this care is unnecessary, but only to fit it for market.

JOSEPH HARRIS' VIEWS.—I like to say to a young farmer: "It is little use for you and me to try to advance prices. We shall have to take what we can get. Fortunately, there are a good many men willing to try to make a living by buying and selling. There is competition enough, as a rule, to secure us, taking one year with another, all that our articles are worth. Our business is to raise the best article at the least cost. Take such a simple crop as potatoes. I heard a farmer say the other day that no money could be made by raising potatoes at 50 cents a bushel. It never seemed to occur to him that if he raised 200 per acre instead of 100 bushels, that he could make more actual profit from one acre than from five.—*American Agriculturist.*

Rural Architecture.

Design for a School House.

We give herewith a design for a School House for a rural district, illustrated by a plan and perspective sketch. It is planned so as to form one large room when required by removing the partition across the



DESIGN FOR A SCHOOL HOUSE.

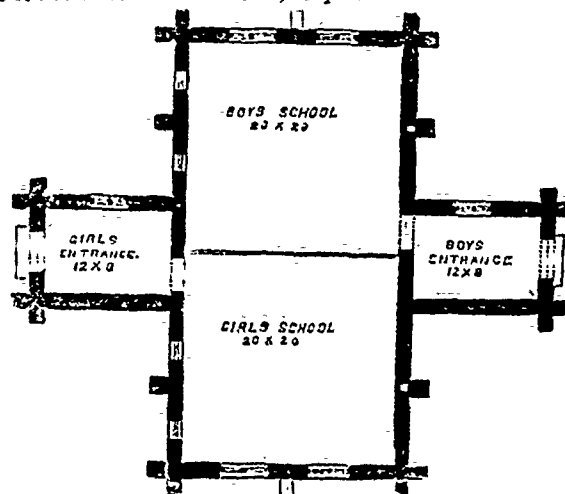
middle. It should be built with 14 inch walls, and lined with tongued sheeting as high as the window sills, above which level the brickwork could be worked fair so as to dispense with all plastering. A brick wall is far better for the teacher in schools; it does not absorb the sound of the voice nearly so much as plastering. The roof should be framed with four principal king trusses with tie beams and rafters 12 x 6, king post 6 x 6, with wrought iron bolts and straps, purlins 8 x 6, and common rafters 6 x 3, about eighteen inches apart. Barge boards to be of 2 inch clean pine carefully cut to pattern. Dressed, tongued and beaded sheeting to be laid on the common rafters,

and the whole of the roof where visible on the inside to be wrought, stained and twice varnished. On the dressed boards lay strips 2 inches by 1 inch over each rafter, and across these lay rough inch boards to receive the shingles. The bell turret to be strongly framed and bolted down to trimmers tenoned into two of the principal rafters, the turret standing in

the middle between two main trusses of roof. A loud toned bell to be properly hung with wheel, &c., and to ring from boys' school. The arches over windows and doors to be formed of rubbed and gauged bricks set in fine mortar and tuck pointed, to be laid in alternate bands of red and white bricks. All the main walls to be of white bricks. The tops of buttresses and quoins to be of red bricks; the whole properly bonded and flushed up every fourth course, and finished with a neat bead joint. The tops of but-

trusses to be raked, and pointed with water lime. The mullions and frames of windows to be 6 x 4, set into brickwork and rebated for lead quarry lights; the lights to be strengthened by square iron bars every eighteen inches in height let into the woodwork. The floors to be laid with 1 1/2 in. narrow tongued flooring, edged, nailed, and with splayed headings, on joists 10 x 2, laid on cedar sleepers, carried by stone piers, not more than 4 feet apart. The foundations to be of rough stone as high as plinth, eighteen inches

wide and to have one course of footings two feet wide. The string course and plinth to be of artificial stone, (unless a good natural stone is to be obtained at reasonable cost) Provide and fix wrought iron hopper ventilators in each window. The circular windows at each end, and the Dormer light in the roof to be made to hang on pivots, and to have proper lines and hooks to hang at pleasure. The partition can be framed or formed of 1 1/2 stuff ledged and braced. It should have a cornice to hold the leaves together, and be strongly fixed to the floor with screws or any other convenient way by which it can be taken down when required.



disadvantage. Very different is the course of the good manager. He looks at all his work—has it mapped out before him—estimates accurately the labor to accomplish each job, and the time when it should be done to prevent loss, and then goes on systematically. It does not require great genius to do this, but common sense, and for the farmer to keep his wits about him. This is what makes a man practical and successful.—*Correspondent of the Country Gentleman.*

A CONTRAST.—I have known two kinds of industrious farmers. One builds a costly barn, and uses up his means for manuring, cultivating, and draining, when cheaper buildings would have answered. Another works a wet field year after year at great cost and inconvenience, and with small results, because he is too busy to under-drain it. He does everything at a

Implements of Husbandry.

An Original Harrow.

Harrows, as usually constructed, that is, toothed harrows, generally have the teeth pointing perpendicularly downwards. The pulverization caused by such may, of course, be carried on to any extent by simply going over the ground again and again, and the oftener the better. In a former article we stated the use of the plough to be two fold, viz. : to stir up the soil for the extension of roots, and also for the admission of air, and moisture. Another use might have been added—to bury all surface vegetation, and convert it into manure. Now, the amount of pulverization afforded by merely turning over the soil with the plough, though certainly better than none at all, is yet not nearly sufficient to meet the full demands of either plant or land. The furrow turned over may be caked, and, therefore, nearly as solid in itself as before it was disturbed at all. The harrow, therefore, comes into requisition here, and much of its use depends on its form, whether it is merely a pulverizer, or that together with a weeder and cleaner. We might here say that the best harrows manufactured are used exclusively for the purpose of pulverizing, and the latest and most approved style of these, for use only on clean, cleared land however, is the chain harrow.

The harrow which this article has reference to is neither the "chain," nor yet the "perpendicular toothed" implement. It is one known pretty generally as the Thomas harrow, and its chief peculiarity is that its teeth slant downwards, and slightly backwards. With the best of toothed harrows, as ordinarily made, the lumps of soil are not by any means broken up as they should be by one or two rakings. Where the teeth slant forwards, their points run under the lumps and only turn them up. Where the teeth are perpendicular they only come against the lumps, and displace without properly breaking them, but, inclining backwards they run into, and break the lumps, pulverizing them to the proper condition for forming a seed bed.

A farmer having purchased one of these for the purpose of testing it, tried its qualities first as a manure spreader. He first scattered the manure with a fork and shovel, and when softened by rain, used the harrow, which completely pulverized, and evenly spread the manure, so that the soil seemed to have absorbed all of it, leaving none of it to be raked up, when gathering the hay for the barn. In fact, the manure was so completely broken, and incorporated with the soil, that after the grass was cut, no one passing over the meadow would have suspected that it had been heavily top-dressed with stable manure. The manuring here spoken of was put in a meadow as a top-dressing during the previous spring, and winter.

In this meadow of about forty acres, the grass had nearly run out. About half of it received four-fifths of the manure from eight cattle, and twelve horses for the year: in short, it was heavily manured.

Being his aim to manure the poorest first, all of which (20 acres) was harrowed, except half an acre; that not manured yielded scarcely one ton to the acre, and taking one ton as the standard, the manured and harrowed portion yielded not less than 2½ tons to the acre; and the half acre manured but not harrowed, yielded about 1½ tons per acre. Also in gathering the hay of this latter a considerable quantity of manure was raked up along with it.

He next used it on 200 acres plowed land, of which about 60 acres were sod, all of which he prepared for seed with the harrow, and a better seed-bed could not be wished. Having planted this with wheat, barley, oats, and corn. After these were up he commenced harrowing, but, having planted near the surface, some of the plants were turned over and covered, so after going over them once he gave up

using the harrow any longer. This, however, he afterwards found to be a mistake, for, at the harvesting, he found that the harrowed strip yielded at least ten per cent. more than that which had not been harrowed.

A writer in the Iowa *Homestead* thus speaks of the Thomas harrow also as a weeder.

As a weeder I think it surpasses any other implement made, provided the seed is planted at a proper depth, and the harrow used before the plants are much grown.

The weed-seeds nearest the surface are the first to start, and if the harrow be promptly and thoroughly applied these weeds may be destroyed while in their infancy, and thus give the growing grain the start of all weeds. Our great trouble has been to keep back the weeds and hasten forward the crop, but if the soil be properly mellowed, so that the seed can be put in deeper than is usually done, then all the crops can, without detriment, be harrowed frequently from the time the seed is first put in until the plant is several inches high, thus keeping back the weeds, constantly stirring the soil, breaking the crust as often as it forms, and hastening the growth of the crop and improving it in every way, all at a very little cost. Thus the harrow becomes also the best kind of a cultivator.

In an adjoining town there is a Mr. Bogardus who has, for many years, made the raising of broom corn a specialty, and has become wealthy in this business. He had tried all sorts of machinery for weeding and cultivating. I advised him (as I did all my friends, to try the Smoothing Harrow. He at once sent for one—I think two—and says they have been worth hundreds of dollars to him the last year. In this section, last season was bad for broom-corn, the weeds getting the start of the plants, which start quite slowly compared with the weeds. He used the harrow as a weeder and cultivator, and assured me that "it was a perfect success," that without it the weeds would have "whipped him;" that with it he "saved his crop." He says, "it both weeded and cultivated his broom-corn with much less expense and far better than he had ever done before." He added, "Money could not buy the harrow if he could not get another;" and his closing remark was, "Mr. Foote, that harrow cannot be beat. I feel greatly obliged to you for calling my attention to it, for it has saved my entire crop."

Now I have no reason to doubt Mr. Bogardus. He is a man of integrity, and would not state the above if not true, but rather would have good reason to think me visionary; as it is he thanks me. I could give you other instances, but this is sufficient. Any person who gives the matter candid thought will see that the Thomas harrow will do for any crop what it did for Mr. B's broom corn; and if the truth has been stated, farmers need ask no further questions. Mr. B. has no acquaintance with the makers, nor interest in this harrow, neither have I beyond enough for my own use and the desire I have to see our farmers benefited by the introduction of this valuable implement. I am convinced by experience and observation that the smoothing harrow is all that Mr. Thomas represents it to be, and that it will prove one of the most useful inventions in decreasing the expenses and increasing the profits of agricultural pursuits.

A New Horse-Yoke.

Various methods have been tried with greater or less success to prevent breachy horses from committing their usual depredations. The ordinary yoke is known to almost every one, viz., a bow to go around the neck, with a pole jutting downwards and forwards, so as to come against some portion of the fence before the animal himself can get ready to spring. This plan may, and generally does succeed for a time, but in nine cases out of ten a breachy horse manages after a while to get around the difficulty and jump fences as he comes at them,—yoke and all. A new invention has lately been placed in the market which is allowed to be the most complete thing of the kind yet introduced. It will be observed in the ordinary yoke already mentioned, that though it does come against the fence, yet there is nothing about it but plain pressure to prevent the animal from crowding onwards. Hence the numerous expedients by means of which he invariably manages to effect his purpose after some experience. In the new one, however, which to outward appearance,

closely resembles the other, there is this difference: "The projecting pole or shaft if crowded onward when it comes against any obstacle, is so adjusted at the lower extremities of the neck-bow, that up in that region it works against a spring, and this spring when it receives a more than ordinary amount of pressure, presses inwards through a cross-stick to which it is attached, three steel sharp-pointed prongs which enter the base of the animal's neck, causing him to draw back. As soon as he draws back of course the elasticity of the spring causes the prongs to be withdrawn, and he is freed from annoyance until he tries to press onwards again. The inventor assures us that he has found this yoke effect perfect cures on what he termed, "case-hardened" animals.

OLD REAPERS.—A farmer had an old Manny reaper, and wishing for a horse power, cut away the platform so that it would lie on the side, chained the tongue to the driving wheel for a sweep, attached a tumbling rod to the gearing, and by adding a band wheel, had a good horse power for shelling corn and doing other work on the farm. "I needed a jack, and having an old Buckeye mower, took off the driving wheels, and the gearing was all there to make as good a jack as I could buy for \$25. —*Prairie Farmer.*

AN IMPROVED HORSE-TROUGH.—There are a great number of horses which have the wasteful habit of throwing their feed out of the trough by means of a side jerk with the nose. This is especially the case with horses that are fed with cut feed, and it is in the search for the loose meal which finds its way to the bottom of the trough that the mischief is done. We have prevented the waste by simply nailing a few bars across the feeding-trough. The horse then finds it impossible to throw his feed out, and must take it as he finds it. The bars should not be more than a foot apart.—*American Agriculturist.*

ZINC FOR DAIRY UTENSILS.—J. Lang Cassels, analytical chemist, warns dairymen and housekeepers, through the columns of the *Ohio Farmer*, that zinc or galvanized iron dairy and household utensils are more or less poisonous. In his report to the trustees of the Cleveland Water Works, he says that salts of zinc are produced by the action of the water of Lake Erie on zinc-lined pipes, the water in twenty-four hours becoming bluish white and tasting distinctly of zinc. Zinc is very easily dissolved, even by the weakest acids, and in situations where no acids are perceptible; all its salts are poisonous, and the effects on the human system cumulative—like arsenic in small doses.

THE PITCHFORK AS AN INDICATOR.—A writer in the *Maine Farmer* says that a good farmer can be told from the way in which he handles the pitchfork. Go into his barn at this season of the year and see if this statement be not true. You will find the barn floor of the good farmer clean and neat—with the different kinds of hay for horses, sheep and cows in snug piles by themselves, the scatterings all raked up, no chaff or dirt to be seen, and no orts in the crib or feed racks. He knows how to handle the pitchfork advantageously, and in his hands it is made to show to all that he is a careful, systematic farmer. How is it with the barn of the careless farmer—the man who is a farmer because he can do nothing else? Don't you find his barn floor from six to eight inches thick with scatterings, with lots of hay wasted and in a confused mass from one end to the other, with cribs full of orts and scatterings covering the yard? And does not his use of the fork betoken his thriftless, thoughtless way of doing things? More than this, in the hands of the careful farmer, the pitchfork is as good as a pair of steel-yards. He knows what each animal needs, and no hay is given to be wasted. In years of a short hay crop, how much can be saved during the foddering season, by a careful attention to the daily use of the fork. And this discipline, while contributing to the good health of the farm stock, is also noticeable in the saving of many dollars worth of hay to the farmer. Besides, the fork handle is the thermometer for many farmers. Not a very good one to be sure, but we know of some farmers who always tell the severity of the weather of a winter morning, by the degree of coldness of the fork handle, and come pretty near right, too! Just now the pitchfork is the reigning implement upon the farm. Use it judiciously and carefully. Keep the floors, and cribs, and yards well cleaned up. Feed regularly and in sufficient amount for the wants of the several animals. Give no food to be wasted; and remember that the pitchfork is never to be used as a good stick,

Horticulture.

EDITOR—D. W. BEADLE, CORRESPONDING MEMBER OF THE
ROYAL HORTICULTURAL SOCIETY, ENGLAND

Planting Evergreens.

In travelling through our happy and prosperous country, and observing the many new substantial and frequently elegant and commodious rural mansions, one cannot fail to observe the great scarcity of evergreens in the grounds surrounding these places. Here, for instance, stands one of those well built mansions, upon a lovely site, commanding a beautiful view of the surrounding country; but there is not a solitary evergreen tree to shelter it from the northern blast of our wintery winds. Oh! what a shudder passes over us as we approach the door of such a place on a cold winter's day. And there is no use denying that the surroundings of many of our country houses are to a great extent the index to what is within. Let us contrast such a dwelling house, with a well built, but smaller and much less expensive one. Here every room is intended to be used at least once or twice through the year, both by the family and their friends. How unlike the larger mansion, whose inmates have never thought of really occupying more than the kitchen and the rooms above and behind it. As we approach the less pretentious dwelling, on that same cold winter's day, we stand on the lee side of a noble evergreen for a few moments previous to entering the door, and instead of shuddering with the cold from without and the anticipated cold within, as in the former case, we begin to feel warmer, and if in a meditative mood, fold our arms and listen to the sweet music of nature as she chants her *Ahlan* strains in the branches of the pine. And when within the house, and looking out of the windows upon what would otherwise appear all dead and dreary, what could be more refreshing to the eye and to the mind than those lovely evergreens. Here almost in front of the window, and near to it, stands a noble Austrian Pine, (the finest of all evergreens for this climate) with its lower branches resting upon the ground, and the whole pyramidal body a dense mass of long, never fading, but at all seasons, refreshing evergreen foliage. A fine wind-break, and beautiful to look at all winter. And in the summer, the mocking bird and the thrush never fail to build their nests in its branches. A short distance from this stands a small clump of Norway Spruce, and on the other side of the house a clump of our native Black and White Spruce and Silver Fir. All these trees are beautiful, both in winter and summer, but especially in winter, with their branches gracefully drooping with festoons of pure white snow. As the above named trees will bid defiance to cold when the thermometer stands thirty-five degrees below zero, I think they may be called hardy. Of course the size of the grounds should determine the number of trees to plant; but, however small, there should be at least one evergreen; and if I had only one evergreen, that one should be an Austrian Pine, perhaps the Norway Spruce comes next. There is no kind of ornamentation to our houses so effectual, nor half so cheap as the planting of trees, and nothing so cheerful to the eye in winter, or has a stronger tendency to cheat winter of its dreariness, than evergreens near to our dwellings.

Paris, Jan. 27th, 1874.

CHARLES ARNOLD.

PROFITABLE CRAB APPLE RAISING—R. C. Field, of Trempealeau Co., Wis., informs us that for several years past he has raised from 300 to 1,000 bushels of Transcendent, Hyslop, and other improved crabs, and has never sold them at less than \$2 00 a bushel—selling at Eau Claire, or any other market in that region. This year his crop will be small, owing to the blight on the trees. Mr. Field is extending his orchard's, expecting to have some thirty acres, mostly crabs, and Russian apples, setting some 300 Tetofski, for instance.—*Western Farmer*.

Fire Blight.

The following is from the report of the committee of the National Pomological Society, appointed to investigate the question of fire blight on pear, and apple trees.

Every observation tends to the conclusion that fire blight is caused by zymotic fungus, whose presence is not detected until life is destroyed in the affected parts. This form offers a wide field for the investigations of microscopists, and from their future labors we hope to arrive one day at the origin of this fungoid growth. We are unable to arrive at a satisfactory conclusion, as to what peculiarities of soil and temperature induce the favorable conditions for the development of this fungoid vegetation.

In the experimental gardens of the Department of Agriculture at Washington, the following mixture is prepared. Place a half bushel of lime, and six pounds of sulphur in a close vessel, pour over it about six gallons of boiling water, adding enough cold water to keep it in a semi-fluid state until cold. It is used as a wash, and applied to the tree and branches as high as can be reached. It should be applied two or three times during the summer. Since this preparation was used, no trees thus treated have been lost, although small limbs not coated with the mixture were attacked and destroyed. Carbolic acid has also been used without any perceptible difference in the result from the lime and sulphur mixture. Poiled linseed oil, applied to the trunk and limbs, has been tried near Norfolk, Va., with marvellous cures, as reported. We mention on this instance of the use of an extraordinary ingredient resulting in good effects, as contrary to what is usually the result when using this application upon the body of trees, its effects being to seriously injure the tree, if it does not destroy it.

Still another form of blight is doubtless caused by mechanical action, by the rupture of tissues consequent on a sudden superabundant flow of sap. This attacks only our most thrifty growing trees, either in early spring, when the vegetation first becomes active, or after a period of drouth, and partial stagnation of vegetation, when abundant rains suddenly force out a luxuriant growth; moderately vigorous trees are never attacked. It is often noticed in very vigorous trees that the bark of the trunk is split longitudinally; whenever this is apparent, such trees are always free from this form of blight, as the pressure upon the vascular tissues has been relieved. From a series of experiments commenced in 1857, it is demonstrated that trees whose bark has been longitudinally incised, and directed, never showed any signs of this form of blight.

Peculiar methods of culture undoubtedly influence the cause of blight, but upon this there exists a wide range of opinion. Clean culture, and repeated stirring of the soil while it may in many instances be conducive to most beneficial results, will often cause the total destruction of a pear orchard. In seasons of zymotic fungoid, or fire blight, highly cultivated trees fall early victims to the scourge, while those cultivated in grass, with an annual top-dressing of manure, usually escape the contagion. The third form of blight caused by mechanical action, is seldom found in orchards where the soil is left undisturbed, but is so common in gardens, or where the trees are thoroughly worked, that it has become a question of time for the entire destruction of one's orchard.—*Farmers' Union*.

The Most Profitable Apples.

At the winter meeting of the New York Horticultural Society the opinion of fruit-growers was sought for on this very important subject.

Mr. Babcock, Lockport, considered Baldwin, Rhode Is. and Greening, and Roxbury Russet most profitable of a varieties. The Twenty Ounce and some summer varieties may pay well in certain localities—but for winter nothing equal to three first named. Dr. Beadle, Ontario, said a friend thinks the Golden Russet more profitable here after year than the Roxbury.

Mr. Huag, Lockport, said that the Mann apple was profitable in Niagara county. Resembles the Rhode Island Greening, very fine, and as long a keeper as Rox-Russet.

Mr. Lyon said that they thought much of the Northern Spy in Michigan. As it originated in Western New York would like to hear how it does here.

Babcock—Does well on some soils, when well cultivated, but is late coming into bearing.

Mr. Lyon, in answer to inquiry, thought highly of Wagener, as an amateur fruit; some value it for market. Does well for a few years, when overbearing affects the tree and they cease to be profitable.

Dr. Beadle spoke of Duchess of Oldenburgh as a hardy, productive tree, and fine showy fruit, well adapted to high latitudes, but should be planted with caution for market, as it ripens in September.

HARDY APPLES—A Minnesota correspondent of the Rochester Post, says that the following kinds of apples are as hardy as a burr oak, and can be classed as double-proof "iron clad." Duchess, Haas, Sax-on, Tetofsky, Wallbridge, Peach, Sweet Baldwin, and Porter.

KEEPING APPLES IN PLASTER.—I have been experimenting the past few year with apples, and find those packed in plaster keep much longer than any other way I have tried. I use flour barrels, and find them preferable to apple barrels, as they are made tighter. I first cover the bottom of the barrel with plaster, then a layer of apples, then cover with plaster, and so on till the barrel is full; then put the head in and drive the hoops tight. The plaster being of a cold nature, keeps the fruit at an even temperature, and being fine and dry, packs so close as to keep the apples airtight. I had Northern Spy and Swaar almost as fresh in May as when picked, and found no decayed ones, and think they would have kept till early apples were ripe, had we not used them. Shall put up several barrels for next spring and summer use, as I am satisfied that our best varieties, such as Steel's Red Winter, Wagener and Seek-no-further, will keep several months longer than putting them up without plaster, and will retain their flavor much better besides.—*Cor. Rural New Yorker*.

THE FRUIT GARDEN:

Peculiarities in Grape Culture.

There are several varieties of grapes which are acknowledged by all who have their individual points and qualities of excellence, but which are very often subject to defects and faults; and we think that a few remarks relative to our experience with these may perhaps prove useful to some of our readers.—The subject cannot be regarded as unimportant, seeing how very popular a fruit the grape has become, and how many, comparatively inexperienced, are now attempting its cultivation.

Gros Guillaume.

In some instances, this showy and excellent grape is rather a shy fruiter, especially when pruned on the spur system; and sometimes it does not color well, and the berries swell unequally. We have found it develop these peculiarities on its own roots. To obviate such defects, some have recommended that it should be grown in poor, sandy borders. We have found that grafting it on the Muscat of Alexandria causes it to fruit as freely as a Black Hamburg when spurred, every berry swells equally, and invariably it has colored to the deepest purple. We consider the bunches more compact on the Muscat than on its own roots; the berries always larger and perfectly regular. Grafted on Black Hamburg, it did splendidly for a couple of years; but each year degenerated in every respect till we cut it out. When calling at Chiswick Gardens, last July, we were informed that there, on Hamburg roots, it manifested the very same tendency. We consider that on Muscat roots, in Muscat heat, Gros Guillaume is one of our grandest grapes. In 1872 we cut six bunches from a graft put on a Muscat in 1870. The largest of the six weighed nine lbs., and the least 5½ lbs. The style of bunch was far superior to those on a vine on its own roots in the same house, and the quality was better.

Muscat Hamburg (Black Muscat).

We have never met with this variety well set on its own roots but at one place, viz. Eccles, in Dumfriesshire, grown in a red sandstone loam. Here every berry stonks like a Hamburg, and there has been produced a bunch 7 lbs. weight; but the defect is that they never color beyond a brownish-black. Grafted on the Black Hamburg it sets perfectly, and colors as well as can be desired if not grown in too high a temperature. Like some other black grapes, I have observed that in Muscat heat it does not color well. The warm end of the Hamburg-house is the place for it. Few grapes can surpass this one either for appearance, flavor, or long-keeping qualities. We have had it 5 lbs. weight on Black Hamburg roots; Mr. Fowler, of Castle Kennedy, has shown it heavier—and its size is its least valuable quality.

Black Lady Downes.

This, as is well-known now, is a strong free-fruited vine, and chiefly esteemed on account of its unsurpassed long keeping quality, and is largely grown for hanging till spring. But like most other grapes, it is not perfect in its behavior. In hot summers it gets sadly decimated by the berries getting scalded; and some of our scientific(?) but impractical men have attributed the affection to some defect in the root action; it is clever, of course, to know this, when it cannot be demonstrated nor seen. The cause of the scalding is more heat than this grape can do with just at the stoning point, and the remedy is simply to give abundance of air till the stoning period is over. We have during the last few years had scalded bunches sent to us to inspect, and have heard from the senders afterwards that increase of ventilation had completely prevented it.

Alicante.

This grape is among the most easily cultivated, and generally finishes well. We have noticed that when it chanced to be planted in the Muscat-house it did not color well in the high temperature. The same applies to another not very desirable but free fruited grape, Burchardt's Prince, which never colors well in a high temperature.

Muscat of Alexandria.

There are varieties of this Grape which set and generally ripen and color better than others. In many instances Muscats do not attain that high color which indicates the best quality, and ensures their hanging well. It is about the best of all keepers. We have known it perfectly ripe in August and hang till the end of March. Some attribute the very high color and quality which this grand Grape sometimes attains to soil and climate; others to bottom-heat. It is generally well colored in the east of Scotland where the climate is dry and the soil rather light. But we have seen it quite as finely finished in the gloomy south-west of Scotland, in heavy soil. We have never failed in coloring Muscats well; and we attribute it chiefly to keeping the soil dry, or, at least, preventing its getting too much wet, and more especially to keeping the foliage rather thin over the bunches, and even tying it aside to let light at the bunches after coloring begins. Badly-ripened green Muscats are about the most worthless of Grapes, yet no one thinks of condemning them *in toto*. It is well worth while continuing to grow them, and to try every means of bringing them to the highest pitch of culture.

Frontignans Grizzly and White.

A few of these should be grown wherever there are a few Vineries. They are fruitful, early, and of exquisite flavor, and do pretty well on their own roots, but much better when grafted either on the Muscat or Alexandria or Black Hamburgh. They give finer bunches and larger berries than on their own roots. They are best in a Muscat temperature, but do very well at the warm end of a Black Hamburgh-house.

Golden Champlon.

The great fault found with this Grape is that it spots. It is so noble-looking and luscious a fruit that it is well worth the time and patience, observation and experiment, which, as in the case of other Grapes, will establish for it a rule of culture that will grow it free from spot. It is a tender-skinned Grape, and, if grown in a Muscat-house—where it ripens before the Muscat—and subject to a high temperature, with moisture, with not enough of ventilation, it is of course spotted. The place for it is the Black Hamburgh-house—grafted on Muscat roots—where it will get abundance of dry air as soon as, or even before, it begins to change color. Managed in this way, it ripens without spotting. It sometimes cracks in wet weather. The first indication of cracking should be the signal for cutting the shoot half through below the bunch, and, if possible, throwing the rain off the roots. It is well worth while to take these simple measures in the case of so noble a Grape as this is. We have never known it figure in the dessert yet, but it was praised as the grandest of Grapes.

Duke of Buccleuch.

Perhaps this may supersede the last-named, and perhaps, also, it is too early in its history to speak of its peculiarities. We have, however, had opportunities of watching some of the finest examples of it that have yet been grown, and the conclusion

we have come to in reference to it is that, though a grand grape, as it proves to be on its own roots, we think it better still grafted on the Muscat of Alexandria. The finest we have seen of it were on the Muscat stock in a Muscat-house. But it ripens so long before the Muscats, that the heat necessary for the Muscats is detrimental to the Duke; consequently, if grown in the Muscat division, it should be at the coldest end. Anywhere in the Hamburgh-house is the place for it, where it hangs for months after it is quite ripe.—*Gardner.*

Keeping Grapes in Winter.

At a recent meeting of the Monroe County, Farmer's Club, Mr. Quimby, of Rochester, exhibited some Isabella and Diana grapes in fine condition. His method of preserving them is as follows:—Pick them when just ripe enough, being careful upon this point, remove defective ones, and pack them in market baskets. Lay a paper upon bottom of basket then a layer of grapes, paper and grapes alternating, and cover the top layer with paper, putting three layers of grapes in a basket. Have the paper between the layers of the grapes, but not at sides, thus give access to the air. He finds that more than three layers causes sweating.

Keep them in out-houses until danger of freezing then put them in dry, cool cellar, where the temperature is uniform. Thinks a furnace in cellar is cause of much fruit of all kinds decaying. When he follows out this method, he succeeds in keeping grapes until April.

Mr. Hinchy had packed Isabella in shallow grape-boxes, keeping them in an out-house until there was danger of their freezing, when he filled in between them with sawdust, and kept them good till mid-winter.

Mr. Hodges had the Salem grape in very good condition on the first of January, which he had kept in a shallow box, three or four bunches deep.

Mr. Hayward had kept Jonas until first of January in fine condition, in his cellar, with out any special care.—*Am. Rural Home.*

Raspberry Cultivation.

A great mistake is made by the inexperienced, and frequently by practical gardeners, in the choice of plants, selecting strong canes, which very often have two or three roots only, while those at a distance from the stool possess a mass of fine fibres, the former seldom producing any fruit the following season, neither yielding any sufficient quantity of young canes to form a good row, whilst the latter possess all the requisites for fruiting and propagation. Another mistake is frequently made in planting—that is, putting manure under the plants, which prevents them taking freely to the soil, which should be as solid and firm as possible; plant in good soil, and top-dress as much as you like.

I do not approve of the old-fashioned plan of bunching together five or six canes from one stool, which is still recommended by some, but make a trench, if possible, due north and south, which will give the fruit a chance to obtain an equalized portion of the influence of the sun. Avoid crowding, let the rows be at least four feet asunder. The crop will be heavier and better flavored. In planting I make it a rule to put alternately a larger and smaller cane; the former is trained to a trellis, the latter is headed down to about ten or twelve inches, and throws out laterals, from which I obtain fruit in long bunches, till the frost takes all the flavor out of it.

Another error is frequently committed by digging between the rows, or near the stools, by which the supply of nourishment is to a great extent cut off; this is very injurious to the plants, as the roots lie very near the surface. Nothing more than hand-weeding, or the scuffle should be used to clean the plantation. My experience teaches me that in retaining the quantity of new canes, one every 10 inches is sufficient to be tied to the trellis, and not to exceed 5 feet in height. Thinning old plantations, and tying should not be delayed beyond November, when a mulching of manure may be given.—*JOSEPH BURGESS, Knutsford.—Journal of Horticulture.*

The Black Raspberry.

Over large sections of our country the black raspberry is more reliable for profits than the red. It is less affected by summer's heat and winter's frosts, and where there are great extremes of temperature, it would be well to plant these almost exclusively. In our plot of five acres, for western New York, we have appropriated one to the Black-Cap. We would give the best two acres to strawberries and red raspberries. Black raspberries will grow on a lighter soil, but to make them profitable, the soil should be in condition to produce 150 bushels of potatoes, or sixty bushels of shelled corn per acre.

If the land is elevated, well drained, not inclined to heave, and can be got in good tillth this fall, we would plant tip-roots of the Black-Cap late in October. You gain something in time by fall planting, and on such land as we have specified, we think that here would be fewer vacancies next summer among those planted in autumn than among those deferred until spring. We would mark out the rows with a well plough, six feet apart, and cross with a light marker, three feet apart, and would set the tips with our hands, covering about two inches above the crown. None of the cane should be left on. Part of a shovelful of fine manure thrown upon the hill will afford some protection against the rigors of winter, and add somewhat to the fertility of the soil. At the distances named above, it would require 2,420 plants to set an acre, and the planter should demand that they all be strong, well-developed roots.

Varieties.

Two varieties of Black-Caps are enough. The one to follow after strawberries—that we should plant—would be Davison's Thornless. Where there is any doubt of the Davison's doing well, Doolittle might be substituted. To follow ten or twelve days after these commence ripening, we would plant Mammoth Cluster, and we would plant two Mammoth clusters to every one of the earlier varieties.—*Am. Rural Home.*

Winter Protection of Raspberries and Blackberries.

At the last meeting of the Western New York Horticultural Society, P. C. Reynolds, Rochester, said that his winter protection of blackberries consisted in abstaining from summer and autumn cultivation. Had found, as long as he gave them mellow culture through the season, the canes did not mature, and they would winter-kill, but when he ceased, after cleaning them out once in the spring, they seldom froze in winter. Blackberries in grass are no more liable to winter-kill than wild ones. Gives black raspberries no winter protection, but the tenderer red varieties he covers with a shovelful of earth on the tips of the canes.

Mr. Jones, Rochester, would never cultivate blackberries except in spring. Had two plantations of Kittanickies, cultivated one by accident all summer, and they all winter-killed; the other was only cultivated in the spring, and went through the winter uninjured.

FRENCH SCHOOL OF HORTICULTURE.—The finest kitchen garden in France, is that of Versailles, which belongs to the State, and brings in a yearly revenue, making good and bad years together, of about 20,000 francs, the produce of the sale of the fruit and vegetables raised in this useful work of La Quintinye, gardener to Louis XIV. The Assembly has determined to apply this valuable property to the formation of a model market-garden and school of horticulture. The details of the institution are not yet arranged, but it is presumed that it will be self-supporting, and that it will render valuable assistance in the development of horticultural science in France. The industry, to the growth of which this school will, doubtless, largely contribute, is greatly on the increase in France. Fifteen or twenty years ago the exports of French fruit and vegetables represented a money value of from eight to ten millions. That figure has now increased to thirty-five or forty millions, a progression which would become even more rapid if market-gardening in France were uniformly conducted on sound principles of horticulture, such as it will be the business of the proposed institution to exemplify and popularize.

THE VEGETABLE GARDEN

Cultivation of Carrots.

These roots are in request every day in the year in all large kitchens, and are also a most valuable root for cattle-feeding and hog-tattening, as no other root that we cultivate produces finer flavored beef and bacon than the Carrots, which I have practically proved. I have grown above thirty tons to the acre of the Long Surrey Red and the Green Top, and considerably more of the White Belgian sort; but, to grow such heavy and clean crops, the soil should be a good sandy open loam, deeply cultivated, thoroughly pulverized, and kept rigidly clean. Sow moderately thin, and timely, on land that was manured the previous year. Never sow Carrots on newly-manured land, as they are sure to become forked and branch rooted, seeking after lumps of manure distributed amongst the soil, and, besides, they are very likely to get attacked with the maggot and canker, are bad keepers, rough and ill-looking, and consequently much reduced in their value. In order to get a heavy clean crop, cultivate the soil deeply in winter, and expose to the influence of the atmosphere the greatest possible surface of rough-laying ridges. Rout it about only in frosty or dry April weather, and, when all is in good order and in readiness for the seed, which should be sown for the main winter-storing crop, the first or second week in April, according to season and conditions, have ready some hot air-slaked fresh lime, of which cast a moderate coat over the land, which should be harrowed well to incorporate the lime with the soil, and also drill in the seed with air-slaked hot lime, and the return will be a heavy crop of clean handsome Carrots, fit for any table or other use. To have young Carrots fit for table, choose the Early Horn and French Early Forcing. In storing large bulks of Carrots for winter use, never place them too thickly together, as the roots are apt to heat and sweat very much, and finish - U' e top in ridge shape, protecting the sides and top with bayans, or rough faggots, or Furze tied in bundles, and thatch the top with straight straw. If severe frost sets in in winter, protect the sides with additional Furze, litter, Fern, or Heath.—James Barnes, in *The Garden*.

Onions.

As grown in our market gardens, the onion crop, consists of those sold in the green state in bunches, and raised from "sets," refuse onions, "acorn onions," &c., and also the larger and main crop, raised from black seed, and sold in the dry state in fall and winter.

To secure the "sets" for the early crop, several methods are pursued. In many sections the top or acorn onions are very popular in private gardens for this purpose, but these are usually too expensive for the market gardener, and moreover, the flavor is so rank that the full grown onion is not popular in the market. The common "set," grown from seed, is raised by sowing on poor soil, about 25 pounds of seed per acre, and pulling and curing the crop as soon as the bulbs are of the size of hazel nuts. These are stored thinly away from frost, in a dry place, or else allowed to freeze in the hay mow, and then covered with sufficient hay to keep them frozen, and not disturbed until the frost is entirely out in the spring.

But a cheaper method than this, is to not thin out your main crop of onions from seed, until the bottoms are a third of an inch or more in diameter. Then as fast as pulled, lay them in the paths between the rows to dry, and turn them in a day or two, and again after a rain, if one occurs. But if the weather be very hot and dry, they had better be cured on racks under cover, where the air circulates freely, and finally stored for winter, as directed for others. Many of these will be very small, but they all contain a perfect germ, and if planted in rich ground, and well tended, every one will produce a fine onion, and not throw a seed stalk.

In sorting our main crop for the market in fall, we usually make three selections or divisions—the perfect ones fit for market, the very small ones sold at four times the usual price for pickles, and the third class is made up of all that will not go into either of the others. Set out early in spring, these last start several seed stalks at once, but if these be pinched off below the swell, the strength and growth go to the bulbs, and it forms several marketable onions for bunching, before those from sets are ready, and constitute the most profitable part of our crop. But if allowed to mature and ripen, they are not marketable as the stiff stub of the seed stalk injures their

appearance, and they are not of good flavor, nor good keepers.

To secure a good crop from sets, the ground is heavily manured—from 50 to 70 large loads, applied broadcast on fall ploughing during the winter, and ploughed and worked fine with harrow and plank, and rows or drills marked out a foot apart. In these drills the "sets" or refuse onions are planted by pressing them down firmly, so they will keep right side up, and dirt heaped over them with rake, hoe, or foot, and then ground rolled with a light roller. As soon as the rows can be traced by the sprouts, they are hoed, and throughout their season of growth, kept clean. The largest of the refuse onions can often be marketed in 20 to 30 days from their setting, and thus a long season for the sale of onions in one form or another secured.

In bunches of four to eight, according to their size, they sell at a uniform price throughout the season—5 cents per bunch at wholesale, or 3 cents at retail. At these prices it is a profitable crop, and though the labor of setting out seems considerable, it is really less than that involved in a single weeding of small onions from seed, and altogether, the labor of the crop is less than that of the field crop of onions from seed, aside from the bunching, which is really laborious.

The crop is usually cleared early enough, and the ground is rich enough for celery, late cabbage, or any of the usual second crops.—*The Fruit Recorder*.

LEERS.—To grow these large, crisp, and of mild flavor, we require good rich land, well trenched, pulverized, and manured. In order to grow them large, and blanched a good length of them, throw out a shallow trench 18 inches wide, and plant them in two rows for the convenience of earthing up, in order to blanch them, and also for a slight protection when severe frost sets in. Fifty years ago they were but little grown in this country, and were only distinguished by the name of "Leek." Of late years, although many varieties have been brought out as new, or under new names, such as Henry's Prize, Large Rouen, Ayton Castle, Giant, &c, the old London-Flag, when well cultivated, would hardly be distinguished from the Giant, or any other kind with a new name.—*J. B. in The Garden*.

THE FLOWER GARDEN.

Plants in Rooms.

We copy the following from *Buist's Flower Garden Directory*:

"As the trying season is not at hand for all plants that are kept in rooms, especially with those that are desired to have a flourishing appearance during the winter, a few general instructions (although they have been previously advanced) will perhaps be desirable, to all those who are engaged in this interesting occupation, which forms a luxury through the retirement hours of the winter season, and with very little attention, many are the beauties of vegetative nature that will be developed, to the gratification of every reflecting mind. The following is a routine of every day culture:

Do not at any time admit air (except for a few moments) while the thermometer is below 35° exposed in the shade.

"In time of very severe frosts, the plants ought to be withdrawn from the window to the centre of the room during the night.

"Never give water until the soil is inclined to become dry, except for hyacinths and other Dutch bulbs that are in a growing state, which must be liberally supplied.

"Destroy all insects as soon as they appear.

"Give a little air every favorable opportunity. (that is when the thermometer is below 35°, exposed in the shade) by putting up the window, one, two, or three inches, according to the state of the weather.

"Clean the foliage with a sponge, and water frequently, to remove all dust &c. The water thus used must not exceed 80°, but 60° is preferable.

"Turn the plants frequently, to prevent them from growing to one side.

"Roses, of the daily sort, may be obtained early, by having them in a warm room that has a south window, and as soon as they begin to grow, admit an in small portions, about once every day that the sun has any effect. Such must be well supplied with water.

"Bulbs in glasses must be supplied with fresh water at least once a week, in which period they will inhale all the nutritive gas that they can derive from that element if they are in a growing state.

Camellias, when in bud and flower, should never be allowed to become the least dry, neither confined

from fresh air. The effects would be, that the bud would become stunted, dry, and drop off.

"Therefore, to have these in perfection, attend strictly to watering. Give frequent auring and wash the leaves occasionally with water. Never keep them in a dry room where there is a strong coal fire. Most of the *Camellias* will bear 3° of frost without the smallest injury, so that they are easier kept than geraniums, except when they are in bloom. In that state, frost will destroy the flowers. The air of a close cellar is also destructive to the buds. The reason that the *Camellia* does not bloom perfectly in parlors or other heated rooms, is owing to their being too warm and arid, destroying the vital vegetative principle of the plant, and it soon perishes.

"There is one way in which these plants can be kept perfect, even in dry places, when the recess in the window is of sufficient depth as to allow plants to stand within it, enclosing them from the apartment by another sash, in such a situation, water could be placed, which would keep the atmosphere between the windows perfectly moist. The verdure would be rich and the flowers brilliant, and they would be completely protected from dust—the whole would have a very pleasing effect. Attention will be requisite to give them air during the mild part of the day.

"It does not appear that any of the scentless products given out by plants, are injurious to human beings, because those who live among accumulated plants are not less healthy than others, but rather enjoy more uninterrupted health, which, of itself, is a sufficient recommendation for all to spend their leisure moments in so healthful and rational an employment."

Monochætums.

The several varieties of *Monochætums* make very showy interesting green-house plants. The lovely color—a mauve purple—of the species *M. ensiferum*, is very beautiful, and as it blooms a long time away into the autumn months proves a very useful plant for bouquets and such other purposes as cut blooms are generally put to.

M. ensiferum, to which I have chanced first to refer, will do well in an ordinary cool green-house, or where *Camellias* and such like plants thrive. The genus likes a little additional warmth and warm sunshine during the process of forming young growths, blooming, &c., however, all the better where it can be afforded. The genus is intimately allied to *Pteronia* and *Malastomas*, they delight in peat, and, as the branches are extremely brittle, they need the constant support of stakes and will not stand hustling about amongst kindred plants in the free way gardeners are accustomed to do. It is a native of Oajaca.

M. tenellum is a lovely object, and might be well likened to a miniature *Myrtic*, with dark purple flowers. This variety is easily grown, and is generally so accommodating as to be easily grown into a handsome specimen of moderate dimensions. It is a native of Guatemala, a part rich in vegetable productions of a high order.

M. demiantherum is a variety possessing blooms of a more rosy color than the latter, and as it blooms very profusely is an exceedingly showy object. The foliage is of a very beautiful Myrtle-like greenness. It was first introduced from Southern America, upon the more immediate elevations of the shores of the Pacific, perhaps upon the eastern ridges of Mount Pichmecha.

M. sericeum multiflorum is a hybrid garden variety of a very meritorious order, and possessing rich mauve-colored flowers. It is of a very compact habit and dwarf, and generally blooms early in the Spring.

M. lemonium is another variety possessing rich rose-colored bloom, and is a very free bloomer.

Another variety is *M. Humboldtianum*, said to be a valuable variety, which I am unacquainted with.

The genus generally delights in a free open peaty soil. Good drainage should always be insured to all alike, and, as with many hard-wooded plants, they should not by any means be permitted to suffer drought at the roots, as this will not alone cause the leaves to drop off prematurely, it will give to the plants a naked appearance, and there is a risk of losing them altogether.—*William Earley*.

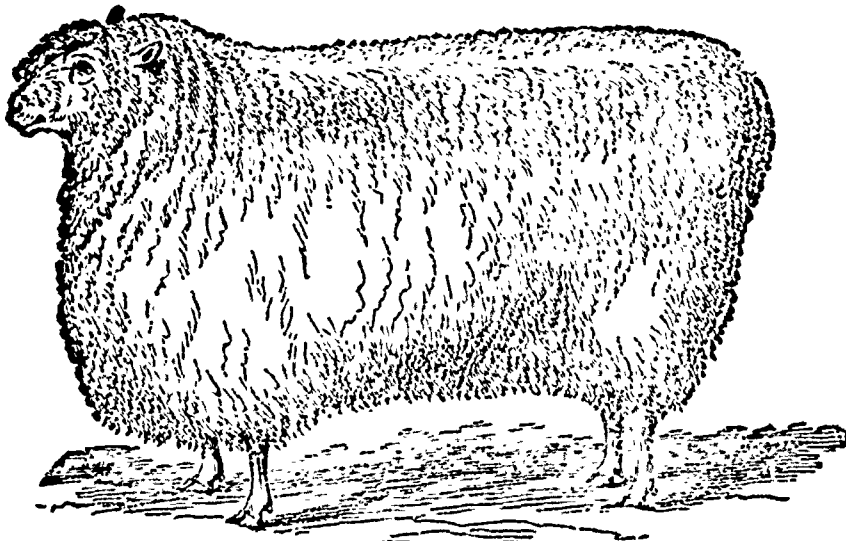
HOUSE PLANTS IN WINTER.—House plants ought to be gently stimulated once or twice a week. Iain water, so refreshing to summer flowers, always contains ammonia, which also abounds in all liquid manures. Take an ounce of pulverized ammonia, dissolved in one gallon of water, it will make spring water even more stimulating to young plants than rain water. Keep the soil in the flower pots loose.—*Field and Factory*.

Breeder and Grazier.

Palmer.

The annexed portrait is that of the imported Cotswold Ram *Palmer*, bred by William Lane, Esq., Broadfield, Gloucestershire, England, and now the property of Messrs. John Snell & Sons, of Edmonton, Ontario.

The prize-taking career of this beautiful animal and indeed of the entire flock of which he is the worthy representative, has been a very brilliant one. At the Provincial Show at London, last year, "*Palmer*" was awarded first prize for "Best Shearling Ram," a distinction that was repeated a short time after at the St. Louis Fair. Referring to this latter trip the Messrs. Snell say:—



THE COTSWOLD RAM "PALMER."

The Property of Messrs. John Snell & Sons, Edmonton, Ont.

"We took 51 Cotswolds to the St. Louis Fair, and they were greatly admired by the people, and especially appreciated by stockmen. There were 12 prizes offered for long-wooled sheep. Of these we took 9, besides the sweepstakes for best long-wooled ewe, the grand sweepstakes of \$50 for the best ram of any age or breed, the \$50 prize for the best flock of sheep of any breed, and three out of four prizes offered for fat sheep. We sold thirty-eight sheep at an average of \$65 each, including about 20 lambs."

Profit of Well Bred Pigs.

No animal on the farm pays as well as a thoroughbred hog. Here "breed tells," as two thoroughbred hogs can be kept and fattened on the same quantity of food that an old-fashioned "razor back race horse" Canadian animal will consume—supposing it attains equal value of one well bred. Thoroughbred hogs feed faster, mature quicker, are more tractable and quite as hardy as the old Canadian aboriginal.

Why then is it so rare to see well bred hogs in Canada. In travelling twenty miles you will notice ten badly bred to one pure blood, and if you remark on this peculiarity to the owners, they will probably tell you that "they had some good hogs once," a few years since, but a neighbor's miserable runt of a boar, that was allowed to run loose, got to their best sows, and spoilt them for that year, and since that time his breed has greatly run down. In all probability a similar reason equally good, will be given for the following years' accidental depreciation, and the wretched lot we see about his homestead is thus accounted for.

Hogs "run down" faster than any other animal on the farm. They are capable of breeding at an early age and of having two litters a year, and directly they appear to be getting "scrubby" they are thought unworthy of care; and food and bad treatment and neglect, soon finishes what accident began. The result is a miserable hunted lot of hogs upon five out of six of our Canadian farms.

Watering Stock in Winter.

We wish our readers would make the following simple experiment. You have a trough or half barrel into which you pump water for stock. There is more or less ice in the water. Your cows and sheep are drinking it. Put a thermometer in this water and you will probably find that it is within a degree or two of the freezing point. Then pump up a pail of water, and if the pump has not been used for a few hours you will find (at least we did) that this water is also down 33° or 34°. Now pump two or three more pailsful of water, or until you are sure you have drawn up all the water that has been standing in the pump and are now drawing it fresh from the well. Let the thermometer stand in this a few minutes and you will find that this water is not far from 50°—or say from 15° to 20° warmer than the first drawn water or than that standing in the trough. In the summer, nearly every farmer when he wants drinking water will pump out the water that has been stand-

ing in the pump because he knows that it is warmer than the water in the well. We should do the same thing for our stock in winter, because this first drawn water is much colder than the water in the well. It has been found very advantageous to artificially warm water for horses and cows. We can not all adopt such a plan, but we can take measures to give our animals water fresh and warm from the well. We can avoid compelling them to drink water in which ice has been floating for some hours. A cow drinks, or ought to drink, not less than 75 lbs. of water per day. This water has to be raised to the temperature of the body—say 100°. The heat required for this purpose is derived from the combustion of corn, hay or other food. Those at the east think it is a sad waste when they hear that western farmers burn corn in their stoves to cook their food or warm their houses. Are they not more to blame for reducing all the water their animals drink from 50° down to 32°, and then burning corn-meal to restore these 15° of heat?—*Am. Agriculturist.*

Facts in Fattening Cattle.

Boussingault estimates that an ox weighing 748 pounds, fed upon forty pounds per diem, will increase in weight about two pounds daily. According to Mr. Low, an ox weighing 770 pounds and consuming 2,223 pounds of turnips per week, if he thrives, will gain in the same time nearly a stone, fourteen pounds, in weight. Allowing 100 pounds of hay worth 676 pounds of turnips, the increase is still about two pounds a day.

Mr. Dubois says the quantity of green fodder consumed by an ox during the eight months when he is fattening, is equivalent to 6,000 pounds of dry hay. The average ration of green forage per diem, he calculates, therefore, as equivalent to about twenty-seven pounds of hay.

Mr. Stephenson estimates that 56 per cent. of the whole animal will be butcher's meat; 8 per cent. tallow; 6 per cent. hide; and 29 per cent. entrails. This of course depends upon the condition of the beef—a fat one will yield a greater per cent. than a lean one. Others give the per cent. of meat at 53 to 62 per cent.—*Rural New-Yorker.*

LARGE STEER.—A Kentuckian recently sold a three years old Grade Short-horn steer which weighed 2,000 pounds after being driven 18 miles to market.

FINE LOT OF HOGS.—The highest price paid for live hogs in Chicago this season, we believe, was \$5.75 per 100 pounds for a lot of 41 averaging 450 pounds, fed at DeKalb, Ill. They were sold Jan. 8.

FAT PIGS IN ENGLAND.—At the recent Smithfield Cattle Show a lot of black pigs, breed not stated, classed as "less than 18 months," weighed about 800 pounds each. They are described as being so fat that it was necessary to place blocks of wood under their snouts to keep them from choking.

REMEDY FOR LOTSY STOCK.—Having seen in the *Rural New-Yorker* various inquiries of what was good to kill lice on calves, cows and horses. I would just say that sour buttermilk will do the work effectually, without any of the deleterious effects of lard and tobacco, Scotch tuff, train oil, &c. Try it. One or two washings is all that is necessary. It does not weaken and debilitate the stock, but rather gives strength.—*Rural New Yorker.*

WORTHLESS WARRANTIES.—The *National Live Stock Journal* explains that the word "warranted," used in the sale of a horse, extends only to soundness, and "warranted sound" goes no further. It is a common practice with dealers to use the terms "warranted all sound and right." As it is uncertain what such an expression would cover in law, it would, to avoid possible controversy and misunderstanding, be best to use forms more definite and comprehensive; for instance, the following:—"Received of A. B. \$200 for bay mare Kate, warranted only six years old sound, free from vice, and quiet to ride and drive." The warranty to be valid, must of course be passed at the time of the sale, and constitute part of the transaction. A warranty after the sale is void, for it is given without a legal consideration.

BERKSHIRES AND POLAND CHINAS.—Not half our farmers are aware that they could make the same amount of pork with the improved breeds on one-half the grain they now feed their common stock. Yet this is the case. One breed of cattle, as the Short-horns, lay on flesh readily, while the Jerseys run to milk; and the Merino sheep are superior wool producers, while the South Downs make good mutton. So, too, with swine. While the common breeds are restless and never satisfied, the Poland Chinas and Berkshires fatten easily at any age and on much less food than it requires to fatten scrubs. Farmers can see improvements in machines and implements, but are slow to recognize the still greater improvements in animals.—*Cor Rural World.*

COLIC IN HORSES.—Every person owning these faithful servants of man should have sufficient intelligence to know how to treat them when well, and also when sick, especially of the most common diseases to which they are subject. The usual symptoms are a disposition to lie down and roll, to turn the head around to the side, and in case of flatulency, the bowels are sometimes very much distended. Instead of procuring a mixture of drugs, as many do, at an expense of one or two dollars for a single dose, which is as likely to kill as cure, take a tablespoonful or more of caraway seed, and, after grinding it through the coffee mill, make tea of it and drench the horse. From one to three doses will generally cure the worst cases. The animal should be blanketed and kept warm at the same time. This seed can be bought for five cents an ounce, and a little of it mixed with the feed once or twice a week will lessen the liability to the disease.—*Ex.*

ATTEND TO COWS' UDDERS.—As my cows are "dying off" at this season of the year, I find their udders require frequent attention. I have failed to notice in the agricultural journals any complaint of such trouble, but in my own dairy, and particularly with such cows as are in the highest condition, clotted milk is very apt to collect in one or perhaps all the quarters of the bag, after milking has been discontinued, and sometimes even much later, after I have supposed the flow of milk to be entirely arrested and the bag quite dry. As this secretion goes on, unless the clotted matter is withdrawn, the teat and udder become more and more distended, inflammation ensues and putrefaction of the contents sets in. I make no question but that neglect of this matter is the cause of permanent mischief to the udder, and particularly of that contracted condition of the muscles which regulate the passage of the milk from the bag into the teat, a condition discovered not unfrequently, and with surprise as well as regret when cows come into milk in the spring, and which ever after renders the milking of such cows very irksome. *Vermont Farmer.*

The Apiary.

How to Begin Bee-Keeping.

A correspondent writes:—"I intend the coming season to commence keeping bees in a small way, and should be glad of a little information as to how I shall proceed, and the best kind of hives and bees to get. I know many working men, like myself, who are readers of the CANADA FARMER, who would be glad to have a word of instruction from you on the rudiments of the art of apiculture."

Though we have repeatedly, in the pages of this journal, descanted on the rudiments of bee-keeping, we are always glad to receive and reply to communications like the above, though at the risk of some repetition. Two things are necessary to successful bee-keeping: a good location and good management. Our correspondent dates his letter from Toronto, and we therefore conclude that he resides in that city. Cities, generally speaking, are not good places for keeping bees for profit, especially a city like Toronto, which is bounded on one side by water. Bees, to do their best, require a wide area on every side for their foraging excursions. A closely built city either restricts their space for honey-gathering, or necessitates long journeys. True, there are many garden flowers and fruit blossoms, and in the outskirts of the city, patches of white clover; still, to keep bees in Toronto is to do so under disadvantages and difficulties. They may, in good seasons, get honey enough to keep themselves, and occasionally, a small surplus for their owner, but they cannot be expected to thrive so as to be very profitable. As a recreation, and an interesting scientific study, a hive or two may be kept, but we cannot recommend bee-keeping, for profit in a city. There are other difficulties and objections which must not be lost sight of. When honey is scarce in the gathering season, bees are apt to be attracted by the sweets in grocery and confectionery shops. Large numbers of them are sure to be lost by getting into shop windows, empty sugar barrels, cellars and other places, whence they cannot find their way back to their hives. They also frighten timid people, sometimes inflict a sting, and are looked upon as a trouble and a nuisance. In the suburbs of the city, back from the lake, they may perhaps prove successful, but we do not advise their being kept in the crowded parts of Toronto, or any similar place.

We recommend our correspondent, and all other intending beginners in apiculture, to obtain and study a good manual of bee-keeping. "The Canadian Bee-keeper's Guide" is an excellent *vade mecum* of this kind. Mr. J. H. Thomas, of Brooklyn, Ont., is the author of the work mentioned, but we believe he sold the stereotype plates, along with the other appurtenances of his bee business, about a year since, to Mr. A. C. Attwood, of Vanneck, Ont. Twenty-eight cents remitted to his address, will pay for the "Guide" and postage thereon. If more full and extended information is desired, "Langstroth on the Honey Bee," or "Quimby's Mysteries of Bee-Keeping," (last edition) will supply it. These works may be had of the Toronto booksellers. We cannot too earnestly dissuade beginners from attempting bee-keeping until they have read up on the subject. We further counsel our correspondent, if he intends to become an apiarian, to subscribe at once for an apicultural periodical. *The American Bee Journal* is undoubtedly the best of its class. It is a monthly, issued by the American Publishing Co., 27 Tribune Block, Chicago, at \$2 (Am. currency) per annum.

It is wisdom for novices to begin bee-keeping in a small way. A person wholly without experience will have enough to do the first season to take proper care of a single hive. Bees, if well managed, multiply rapidly, and will usually increase faster than the beginner's stock of knowledge, and experience. A

single colony obtained early in the season, may, if strong, be divided from one to half-a-dozen times, according to the excellence of the location and season, and the manager's ability to make the best of them. We have known people go largely into bee-keeping, raw in knowledge and experience, to their sorrow. The course of bee-keeping, like that of true love, never did run smooth, and, we suppose, never will. There are sure to be some failures and mistakes. We never yet knew a bee-keeper who did not have to fight with discouragement, and "try, try again." Therefore it is best to commence in a small way, so that loss, if experienced, may not be ruinously severe.

As to the kind of hive it is advisable to use, we would say, by all means, get a movable-frame hive of some sort. Bee-keeping in straw skips, hollow logs, tea chests, and common boxes, is "played out." It is far behind the age. No skilled management, or proper control of an apiary, is practicable, with any but movable frame hives. Especially should beginners make choice of these. They need to get at the interior economy of the colony, study their wonderful ways, and verify what they read in bee-books. All this is impossible with old-fashioned hives. If it is impracticable to get a stock of bees in a hive of the kind recommended, and only an old style hive can be bought, the bees can be transferred to a movable-frame hive. The bee-books give ample directions how to do this. We cannot undertake to recommend any particular hive. Their name is legion, and every maker is confident that his own is best. Any movable-frame hive is infinitely preferable to the old style. The bees are not fastidious, and the bee-keeper need not be, about the particular form of hive. We have kept bees for many years, and tried hives of all sorts, and sizes, but have not yet decided which is best. Only we incline more and more to a simple style. The less complication the better. Eschew all moth traps, fancy fixings, ingenious devices, and gingerbread arrangements. Read the advertisements of the hive men, but in doing so, keep cool, and go into no raptures. Hive men, generally, are excellent performers on the trumpet of self-praise. And often it were well, if the listener to their syren music, could hear a voice exclaiming, "Be watchful, and beware." Possibly the refrain, "He's fooling thee," would sometimes be true, and useful. Any man handy with tools, can make his own hives. They may be "rough and ready," no matter, the bees will build comb, and store honey in them all the same. A hive with a patent right to use it (?) costs from \$5 to \$10, but about half the expenditure is needless. A man who can carpenter a little, will find it to his interest to spend his money on apicultural books and journals, after reading and studying which, he will have no difficulty in constructing a hive that will answer a good purpose. If he adopt this course, he will be a better bee-keeper than if he spent more money on costly patents.

In regard to the kind of bees it is best to keep, we own to a very decided preference for the Italians. The easiest way of getting into them, is to begin by buying a stock of common bees, and afterwards buy one or more Italian queens. How to introduce them, and change the breed, is fully explained in the bee-books, and bee journals. A stock of Italian bees in a movable frame, can be bought at the start, if that course is preferred. It is rather more expensive, but is recommended by some, particularly as the Italians are much more pacific in their disposition, and easier handled by novices. Where Italians are to be got, as well as where hives of various patterns may be had, can be ascertained by consulting the advertising columns of apiarian, and other papers.

No HUMAN workman is skillful enough to do what a crowd of Bees can do—work in a dark hive—make cells of wax of the true form.—*National Bee Journal*.

Hosmer's Management of Bees.

I am asked many questions concerning my method of managing bees. First. I am asked how it is possible that you can winter such small swarms of bees?

In the first place, those that ask such questions should know that I have never recommended anything less than a quart as being the right size to winter. And then, again, that it takes over 5,000 bees to make a quart. Many have the impression that Hosmer's swarms are so very small. To illustrate this point, I was once invited to visit a gentleman's apiary, who said that he was wintering five swarms on my plan of one-quart swarms, and for fear that it would not work well, he had kept two on the strong-swarm rule. They were in a warm room, and on examination I found that the bees went in between two combs, and did not average more than four inches square, and that the whole five swarms did not contain more than one pint of bees. The two strong swarms did not have a quart in both hives. I told the friend that he could successfully winter such swarms he could beat Hosmer all out.

One man tries to ask me a very hard question. He says: "Is it possible to separate the old from the younger bees?" I say, by gently shaking the frames containing them, the old will fall off, while the younger ones will stick to the comb.

One other wants to know why I hold back in the recommendation of sugar syrups to feed bees?

I do not. I recommend it as being the best feed for bees. I have used it for many years, and think as much of it as anyone. It answers two purposes: First. It is good and healthy food. Second. The feeding of it to bees late in the season causes them to rear young bees that can live till spring.—J. W. HOSMER, in *National Bee Journal*.

Correspondence.

Treatment of Milch Cows.

(To the Editor of the CANADA FARMER.)

Mr. John Smith, of Minden, N. Y., is one of our first dairymen. He has fifty cows or upwards, and accommodation for them all of the best kind; he believes in treating a cow well, and the whole herd as one cow. His stalls are the usual stalls with stanchions. His yard is a spacious one with buildings on the east and west sides, and a hill on the north. The south is open to the sun, and the ground slightly inclining that way. This makes a warm, pleasant yard, in which the cows are kept on fair days most of the time. There is running water in the yard. Mr. S. makes it an inflexible rule to keep his cows in good condition; and this uniformly so. This course ensures a steady, full flow of milk, and is a point of great importance, though generally little understood. The cow is domestic in her nature, and hence loves quiet and contentment. Disturb her and she will give less milk,—let down her milk less when milked. But pet and make much of her, she will appreciate it and will seek to repay you with the only thing in her power. *Do not touch her domesticity, and it exalts the lacteal secretion.* This is the secret. It is an instinct of nature, and needs but be encouraged.

Mr. S. does not believe in keeping inferior animals. If any of his cows lack in milk he casts them off. So with unruly members, or cows offensive in any other way. He has therefore a select herd; yet not selected for blood, or for showy appearance. He has an eye for a "likely" cow, as he terms it; milk is the object, and in this he surpasses most dairies. Good treatment then is the first, great prominent consideration. This his cows get, and his feed is superior. In summer it is grass; that alone and abundant. In winter clover and corn stalks are fed. Yearly he has a large piece of corn, which he cuts, the whole stalk, white yet green, the berry just glazed, and cures in stooks in the field. The ears removed, the rest is fed to his cows unchopped. He begins to feed in the fall rather early, so as to give his fields a chance, believing in not denuding his grass lands.

After the cows have come in clover is fed almost exclusively. It is fresh, green and fragrant, and relished exceedingly; and the flesh and is a large milk-producer. It has a similar effect, to grass—the system responds to it as in summer. If, however, the clover has suffered in curing, or, through the rains, has been put back in harvesting, meal is added.

Now, as to the manner of feeding. There are three feeds given during the day; but each is preceded by a little food given half an hour or three-quarters before the regular feed; full time being given to eat what is offered, they eat, of course, clean. Then the main feed. In the two last, the usual amount of an ordinary single feed is given, or perhaps a little more, a full portion being the object. Mr. S. holds that this is consumed the more readily by dividing it. There is less time for breathing over the hay; and the quantity at a time being smaller, it is eaten up clean. There is just enough given to have it all eat up, so that the cow gets all she is capable of consuming. Regularity is the rule here in all things.

F. G.

Pure Water, a Desideratum:

(To the Editor of the CANADA FARMER.)

MR. EDITOR:—A friend has handed me a copy of your excellent journal, which I have perused with great interest; its date of issue was Nov. 29, 1873. I was not a little surprised, on reading two articles, one, a leader, "Water on the Farm"—the other—"Dangers of Well Water," from the "London Lancet,"—in neither of which is any mention made of my favourite mode of supplying water.

I have for many years made the supply of pure water a specialty, and I have not sunk a well during the past 13 years, though I have supplied a large number of places with water in that period.

The cistern, when properly constructed, I consider the most reliable, and the most desirable, everything considered, of all means of supply. Certain precautions are, however, as necessary to observe, in the arrangements for obtaining the water, and for preserving it in purity, and to maintain in it a proper temperature, as other precautions are in obtaining water from other sources of supply. Prominent among the former are the following.

Water should not be collected for drinking, or culinary purposes, from painted, wooden, or painted metal roofs, nor from such as are frequented by birds of any kind. I prefer first the slate roof, next the shingle. Water from a tile roof would no doubt be good, but there are none in use in my field of operation which comprises nine States.

The foliage of trees should not be allowed to collect and remain in gutters of buildings from which the water is to be collected and used.

In localities in which the roof is liable to collect much dust, from excessively travelled earth, or even McAdam roads, the spoutings should be supplied with what I call, a waste shoe, which is an adjustable section of the spouting, near the ground, which is to be set during a drought, so that the first rain-fall succeeding a dusty period, will waste and not flow into the cistern.

I have, however, some, among my numerous patrons, who may be considered rather fastidious, who will have the filter.

There are circumstances where the filter is necessary, and in such cases I supply them of my favorite kind, in fact, the only kind I build of late.

As it may interest some of the readers of the "FARMER" I will briefly describe my filter. I build up in cement mortar, a brick wall, of soft, or "salmon bricks," the width of a brick in thickness, which bisects the cistern, and is securely stayed in place. Neither face of the filter wall is plastered with cement, as the principle of the filter consists in causing all the water to flow through the brick wall which it will do, if the surface is that of a cross section of an ordinary cistern, with a rapidity, equal to the amount drawn in a given time, by an ordinary pump. A filter more perfect is not desirable.

J. W., Baltimore, Md.

THE CANADA FARMER

IS PUBLISHED

ON THE 1st AND 15th OF EACH MONTH,

AT

One Dollar and Fifty Cents Per Annum,

FREE OF POSTAGE.

It is sent to Great Britain and Ireland by mail, for six shillings sterling, per annum.

No subscription received for a less term than one year, commencing from the month of January.

THE CANADA FARMER is stereotyped, so that copies of back numbers can always be had.

A limited number of advertisements are inserted at twenty cents per line for each insertion. There are twelve lines in one inch of space. Advertisements under ten lines are charged as ten line advertisements.

All letters and money orders are addressed to

THE GLOBE PRINTING CO.,
TORONTO.

Agents wanted in every town and village in the Dominion to canvass for subscribers. Liberal commission allowed. Send for circular stating terms.

The Canada Farmer.

TORONTO, CANADA, FEBRUARY 16, 1874.

The Recuperation of Exhausted Farms.

One of the most difficult problems the majority of Canadian farmers are called upon to solve, is "How to maintain their farms in a high state of cultivation, and at the same time receive the greatest possible immediate pecuniary results!" The capitalist can afford to be lavish in his expenditure in putting into practice those principles which universally govern successful agriculture, and if he reaps no benefit from them one year, he is able to "bide his time," knowing that ultimately, he will be amply rewarded for his outlay. Not so with the farmer of limited means. Whether his harvests prove bountiful or the contrary, accounts will be presented when due, and must be paid, and consequently he is compelled, by his necessities, to raise the crops that will render him the quickest cash returns wherewith to meet his liabilities; the system of cultivation most suitable to the character and situation of his farm, and that which is best calculated to preserve its fertility and yield him satisfactory crops is treated as a matter of purely secondary importance. This has led to the wasteful system (or rather lack of system) prevailing so extensively of taking from the soil successive crops of wheat, without returning to it the manure necessary to maintain its fertility; the result being that many once splendid farms are now almost worthless, which under rational treatment would equal in productiveness the best in the country. So great and widespread is this evil, that any means calculated to mitigate it merits the earnest consideration of Canadian agriculturists.

The raising and keeping of stock will doubtless eventually prove an adequate remedy, but will require a long time and large capital to be successful. The great desideratum of the present is a root crop to alternate with grains, clover and grasses, capable of yielding a certain cash return, and at the same time, clear the land of weeds, promote good tilth, and counteract the evils resulting from overcropping. The only root which answers all these requirements is that of the beet; it is easily grown; requires only ordinary care; yields large returns; can without serious diffi-

culty be made into an article of commercial value commanding a ready sale, and what is of far greater importance, its cultivation exerts a highly beneficial influence upon the soil in which it grows. Large districts of country which are now among the best and most valuable arable lands in Europe, were 20 or 30 years ago so poor as to yield only a bare subsistence to a poverty-stricken peasantry—the cultivation of the beet being the primary cause of this marvellous change. That which has turned barren wastes into fertile lands in the old country, can perform a similar service upon the exhausted farms of Canada, and maintain in all their virgin richness the lands being yearly occupied by our enterprising backwoodsmen and settlers. Nor are these the only benefits to be derived from the culture of the beet—the refuse remaining after the saccharine matter is extracted is first-rate food for cattle, summer and winter, upon which they thrive well, and eat with relish; the solid matter being finally returned to the land as manure.

The success which has attended the introduction of the factory and co-operative systems into our rural districts, as applied to the manufacture of cheese and butter, warrants the belief that the application of similar principles and enterprise in the manufacture of a concentrated extract of beet-root, fit for the sugar refiner's use, and which would consequently command a ready and profitable sale, would prove equally successful. There is nothing in the manufacture of such an article that any person of ordinary intelligence could not successfully accomplish; but far better results would be obtained by a number of farmers uniting their means to purchase the necessary plant, which is by no means expensive, and engaging a trustworthy man to superintend the process of manufacture; such a course would ensure a more uniform, better and higher-priced article than could be generally produced by private enterprise. The advantages that would result from the general culture of the sugar beet—both agricultural and commercial—it would be difficult to over-estimate. The land would be greatly improved; farmers would be the richer, and would not be so dependent upon their grain crops as they are at present; new branches of trade and industry would be opened, and thus the whole country would be benefited.

According to the last parliamentary blue-book upon Trade and Navigation, we paid \$4,615,235 for sugar imported into the Dominion, and for the wheat and flour we exported, received the sum of \$6,679,306, so that it required more than two-thirds of the surplus of our staple crop to furnish us with this one article of domestic use. These figures tell their own story, and we will not insult the common sense of our readers by further comment upon them.

We trust our agricultural friends will give this important matter their earnest consideration. There are perhaps many difficulties of detail to be overcome before the sugar beet becomes one of our staple crops—but has there anything of moment ever been accomplished in the world without difficulties being conquered? We believe that in this instance they are not so insurmountable that the sound practical common sense and energy of our Canadian farmers cannot easily master them.

CANADA SHORT-HORN HERD BOOK.—From a prospectus recently issued by the Agricultural and Arts Association of Ontario, we learn that it is the intention of the Council to publish the Third Volume of the Herd Book, as early this summer as possible. Pedigrees of Short-horn bulls, cows, heifers, and their produce will be received for insertion up to the 1st of March prox. The fee for the insertion of each Pedigree, including certificate of Registry, is 50 cents, payable when the pedigree is handed in. The time during which entries can still be made is short, and it behoves those who have hitherto neglected or postponed the matter, to early bestir themselves.

Notes from the Ontario Free Grant Lands.

I live in the Muskoka Free Grant District of Ontario in the township of Ryerson. This is a township set apart by the government to try the experiment of building houses and clearing land for settlers. Twenty thousand dollars has already been expended for that purpose. A house is built and four acres of land cleared on lots of 100 acres, the settler to pay the cost, \$200, by instalments in five years. The scheme is good but can hardly be called a success; owing partly to its not being properly carried out. The lots selected are said to contain seventy-five per cent. of land fit for cultivation.

The soil is generally a clay loam covered with hard wood, with considerable pine in places. It is well watered and has the navigable river, Maganetawan, running almost through the centre of the township. There are several good mill sites within twenty or thirty miles, but no mills yet.

This has been the first year of farming, and crops promised well, but the grasshopper did a great deal of injury in places, clearing off wheat, oats and potatoes—everything but peas. Where the grasshoppers were less numerous, crops were excellent, the new soil especially suiting potatoes, some truly astonishing yields being reported.

Wheat, none in market; oats, sixty-five and seventy cents; potatoes, fifty and sixty cents, peas \$1.00. Prices will be higher in the spring when more settlers come in. Fall wheat looks well. Weather very mild, with very little snow up to date.—*Cor. Western Rural.*

An Agricultural Education.

Extract from Paper Read before the Onslow Farmers Club, by Major Wm. Blair.

What the farmer needs is the scientific education which the mechanic, the manufacturer, and the artisan receives, to enable him to become master of his calling. He must understand the processes of the vegetable kingdom, by what agents they are conducted, by what laws they are regulated, and how the whole may be turned to the best account with the least labor and expense; and for this knowledge of his art he must depend on the light of science. The thrift, industry, and intelligence of other classes have been conspicuous for the last quarter of a century; yet the tillers of the soil, not a whit behind any other class in natural talent and virtue, great in everything which pertains to personal worth, are left to toil on without receiving their proper share of scientific aid, and as if the *All Wise One* who has promised that seed-time and harvest, shall not fail, had prescribed no laws for them to study, no rules to govern their practice, and as though the fulfilment of this promise did not depend upon compliance with His unchangeable laws; for if there are scientific principles upon which successful cultivation is based, then no effort can be well directed unless founded on these principles.

There is no department of human industry in which the aid of science is more absolutely necessary, but the impression has too frequently been that farming is purely mechanical requiring muscular rather than mental power to ensure success, and this opinion has so greatly prevailed, that if a man attempted to educate himself for the duties and responsibilities of a farmer, he has been styled a "book farmer," or "a man of zeal, without knowledge." But what is an agricultural education? It is that system of training which teaches the application of science to the art of agriculture. And what is the science of agriculture? It relates to the principles of successful cultivation. For instance, it teaches that all "plants live and grow by eating;" what their proper food is, where it may be found, in what quantity, and how it shall be applied.

But how shall this be attained? By guessing? By long and doubtful experiments? By the clear, light of science, which can solve these problems at once! Science says to her chemist, tell me of what that plant is composed—then analyze that soil and tell me if that plant will flourish in it. If it will not, tell me what ingredients are wanting for its healthy development, tell me whether that soil is best adapted to the growth of grains, hay or vegetables. Tell me what ingredients the growth of these will abstract, and what kind and quantity of manure must be supplied to restore the productive energies of the soil.

The analysis of the chemist may settle all these points as satisfactorily as the longest and best practical experience of the farmer, and by which knowledge he may ascertain the proper food for his crops and for his stock.

Education increases power, and this is as true in agriculture as in any other pursuit or profession, and

reflection will convince any one that such is the necessity for science in this vocation, that a long life of study and experience would leave the most intelligent far short of perfection. In fact there is no pursuit which requires more intelligence, simply because the principles on which it depends, are more difficult to understand than almost any other. The farmer should have a scientific knowledge of his soils, and their adaptation to the growth of his crops, the preparation and nature of the different parts of the fertilizers he applies, the influence of his crops on the soil, and if exhausting, how its reproductive energies may be restored. He should also understand the laws of the various changes which take place in manures and soils, and their influence on vegetation, from the germination of the seed to the maturity of the crop, the nature and remedy of the diseases of animals and vegetables, the breeding and raising of stock, the habits of insects, and how their ravages may be prevented.—*N. S. Journal of Agriculture.*

Farm Life in Germany.

In a recent issue of *The Evangelist* a correspondent gives an interesting description of farm life in Germany, from which we make an extract:

As we proceed on our way we pass through several villages, in which the houses are pretty close together, in no way resembling the bright, neat farm-houses of our New England States. Here the buildings consist of a frame skeleton filled in with brick or clay, and generally whitewashed. The other ones have thatched roofs with a rich growth of beautiful moss upon them, and often a stork's nest at the gable end, which the peasant considers as a sign of good luck. When the Spring comes, and all nature begins to show signs of a new life, the children anxiously watch the return of the stork, who has spent the winter under a summer's sky. The more modern houses are covered with red tile, but even they have in front of them the disgusting manure heap, suggesting bad drainage and disease.

Over the double front door, which is large enough to admit entrance to a loaded waggon, is carved in large letters the name of the owner of the house, his wife and some appropriate verse from the Bible. The spacious hall, with its hard-trodden clay floor, forms the main part of the house, while from it right and left lead the doors into the stables. At the end we find a small sitting-room, with low ceiling and projecting beams, and the pine floor covered with white sand. Narrow wooden benches are stationary against the wall, a deal table stands in the centre and a few wooden chairs and perhaps an old clock in the corner, complete the furniture of the modest apartment. The bedrooms and kitchen are adjoining and in the former the mountainous feather beds, under which the people sleep Summer and Winter, attract our attention, as also the small windows, which allow of but scanty ventilation. There is no sign of book or newspaper, or anything that indicates taste or education. It is a life of toil which the poor peasant leads, relieved by very few pleasures, and which in no way compares with that of our commonest laborer in the country.

Land here yields barely three per cent., and while in our Eastern and Middle States every village can boast of a paper, an occasional lecture or concert, there is nothing here to change the dull monotony of daily drudgery. The men are drafted into the army for three years of their life, which, though it relieves them of their awkward, clumsy ways and revives the rudiments of their learning, makes labor scarce, and is the cause that so many women have to do hard field work, and appear more ignorant than the men.—*Western Rural.*

A Clerk's Success on a Farm.

An enterprising farmer in Vermont, once a clerk, relates his experience in the following communication to the *New England Farmer*:

Seven years ago I bought a farm of 350 acres for \$12,000, the stock and tools cost me \$3,000 more. I had \$2,000 to pay down, which left me in debt \$13,000. The first year I kept a cash account and found my receipts \$200 per month and my expenses about \$100, including interest and help. The first year I paid two notes, both before they were due, and in each succeeding year I paid my notes before they became due, and got some discount by doing so. I should have said in the first place that I had a dairy of forty cows, and a sugar bush of 1,600 trees. From these two sources I received most of my money, though I sold a few tons of hay, a few bushels of oats, corn, beans, potatoes and apples. I also

raised some pork to sell each year, and occasionally a fat cow or a yoke of oxen, when they were no longer useful for the dairy or the yoke. From seven colonies of bees I received a steady income and increased my stock each year.

But without going into details, I will say that at the end of six years I sold my farm back to the man of whom I bought it. He had been west, and came back thoroughly homesick, and wanted his old home. In no one of the six years did I clear less than \$500. Now, take my \$2,000 and my age, thirty years, and suppose that I should live to the allotted age of man, (three score years and ten,) and each year add \$500 and interest at six per cent., and I think it will compare favorably with the profits of any of the professions. I do not say I do not have not made more than \$500 any year; but I do say that this is the least I made in any one of the six years. At the same time I have had an experience which is worth more to me than all the rest. I have helped build one railroad by taking one share of its stock and paying for it, and I have endeavored to do my share toward the support of society, and toward encouraging every enterprise which is for the public good. I take and read at least five papers, and find money to pay for the same in advance.

Some of the glitter and show of our city and village cousins, which has so long dazed the country youth, has been sadly dimmed by recent events in our commercial cities and manufacturing towns, and some journeymen, clerks, &c., who have for years had large salaries or wages, are now looking forward to a hard winter without employment or work, with fear and trembling. The price of the farmer's produce may be somewhat lessened by these business crashes, but he knows nothing of the dread of being "out of work" for weeks and months, with empty cellars, store rooms and wood-sheds.

Agriculture vs. other Occupations.

Though agriculture is one of the most independent and ennobling employments in which any one can engage, yet there exists a strong desire among the young men of Canada to abandon it for other occupations. They regard farming as a monotonous drudgery, and they are, therefore, leaving the "bright old homesteads" in which their fathers acquired competence and wealth, to enter the "learned professions," or follow some "genteel calling." They could not in the commencement of life commit a greater blunder. In Europe, practical agriculture is regarded as one of the most aristocratic pursuits, and the highest nobles are engaged in it. No doubt other occupations require less physical labor, but they are vastly more wearisome and unhealthy than farming. As a class, the farmers are happier than those who follow the "trades and professions," and, as to competence and independence, there is no calling in which they can be more certainly attained than in agriculture. The well cultivated fields, the well stocked farms, and the handsome mansions, to be seen in every part of the country, afford evidence of this fact; and why should it not be so? Is not agriculture the most primitive of all occupations, and is it not also the true foundation of all national prosperity? In it men do not require to crowd each other as in the "professions," for between the sons of the soil there need be no undue competition. Let all young men, then, think of this, and stick to their farms; for, of the many who abandon agriculture, and enter the professions, or engage in business, nine out of every ten fail, and are often ruined for life. Instead, therefore, of turning their attention to other pursuits—beset with cares and anxieties, often ending in bitter disappointments, and frequently, in hopeless bankruptcy—let our young men apply themselves to practical agriculture, and by employing their energies of mind and body in the cultivation of their broad acres, and the improvement of their stock and farms, they will, in the end, secure the happiness, as well as the independence, of themselves and their families.—*Orangeville Sun.*

AMERICAN DAIRYMEN'S ASSOCIATION.—Officers for the ensuing year. Hon. Horatio Seymour, President; Prof. L. B. Arnold, Rochester, N. Y., Secretary; Hon. Harris Lewis, Treasurer; and thirty-one Vice-Presidents from various states.

COLLEGE-MADE FARMERS.—The Michigan Agricultural College reports its graduates previous to 1873, as thus employed: 21 farmers, 7 fruit growers, 4 engineers, 4 druggists, 2 mechanics, 7 business agents, 6 lawyers, 1 clergyman, 1 physician, 1 editor, 12 professors and teachers, most of whom are connected with agricultural colleges, several of whom have charge of farms and gardens.—*Live Stock Journal.*

Agricultural Intelligence.

Agricultural and Horticultural Societies' Officers elect for 1874.

(Continued from page 52.)

ADDINGTON.—Charles Shibley, President; Robt. Caldwell, Vice-President; J. B. Aylsworth, Secretary-Treasurer.

ALDBOROUGH.—Albert Humphrey; President; John D. McArthur, Vice-President; Samuel Kirkpatrick, Secretary-Treasurer.

AMALANTH.—Mr. R. Bowsfield, President; James K. Decatur, Vice-President; D. McNaughton, Secretary.

BLANSHARD.—W. Roger, President; P. Kerr, Vice-President.

BROCKVILLE AND ELIZABETHTOWN.—Dr. G. W. Edwards, President; Bethuel Lovern, Secretary.

CARDWELL.—James Henry, Esq., President; John Moffatt, Vice-President; John Allan, Secretary.

CALEDON.—Mr. J. Dodds, President; Mr. T. Harrison, Vice-President; Mr. D. Kirkwood, Secretary.

CARLETON.—Mr. John Dawson, Nepean, President; Mr. Thos. Clark, Vice-President; Wm. Arnold, Secretary.

CARTWRIGHT.—Mr. R. B. Spinks, President; Mr. T. Whitfield, Vice-President; Mr. James Parr, Secretary.

CAVAN.—Robert Sanderson, President; Richard Thexton, Vice-President; John Hunter, Secretary-Treasurer.

DERHAM.—John Hodgson, President; Job James, Vice-President; R. T. Williams, Secretary-Treasurer.

DUNVILLE.—John A. Whitmore, President; J. Amsden, Vice-President; F. J. Ramsey, Secretary-Treasurer.

EAST DURHAM.—Mr. Isaac Gardiner, President; Mr. N. Choate, Vice-President; Mr. John Foot, Secretary-Treasurer.

EAST GWILLIMBURY.—Benjamin Leppard, President; Charles Traviss, Vice-President; A. J. Hughes, Secretary-Treasurer.

EAST HASTINGS.—W. Beatty, President; Thomas McCready, Vice-President; P. R. Palmer, Secretary.

ELMA AND WALLACE.—J. Alexander, President; James Dixon, Vice-President; Jas. Trail, Secretary.

ELMA.—James Robb, President; Samuel Rose, Vice-President; John Morrison, Secretary-Treasurer.

ENNISKILLEN.—John L. Wilson, President; T. Steadman, Vice-President; John Hendra, Secretary-Treasurer.

ERNESTOWN.—John Johnson, Esq., President; Arnold P. Booth, Esq., Vice-President; S. D. Clark, Esq., Secretary.

ESSEX.—David McGregor, President; J. Morgan, Vice-President; Henry Botsford, Secretary.

FRONTENAC.—Robert Gibson, President; Peter Graham, Vice-President; Isaac Simpson, Secretary-Treasurer.

GEORGINA AND NORTH GWILLIMBURY.—J. R. Boucher, President; R. Anderson, Vice-President; John Gibson, Secretary-Treasurer.

HALDIMAND.—D. Thomson, President; Hiram Gee, Vice-President; Jacob Young, Secretary-Treasurer.

HARVICH.—Jos. Wixson, President; Wm. Clark, Vice-President; W. D. Sheldon, Secretary.

HAMILTON TOWNSHIP.—Mr. James Russell, President; Mr. Samuel Philp, Vice-President; Mr. Alex. McDonald, Secretary.

HAY.—Robert Ferguson, President; John B. Geiger, Vice-President; Robert Brown, Secretary-Treasurer.

KENT.—John Van Horn, President; Stephen White, 1st Vice-President; William Clark, 2nd Vice-President; John Tissiman, Secretary.

KING.—Samuel Machell, President; Calvin Davis, Vice-President; Jos. Stokes, Secretary-Treasurer.

LAMBTON.—Mr. Cole, President; A. Rawlings, Vice-President; Mr. Mowbray, Secretary.

LUTHER.—James Davey, President; Jacob Scott, Vice-President; John Gordon, Secretary; Geo. Bristow, Treasurer.

MEDORA AND WOOD.—J. D. Cockburn, President; Wm. Davidson, Vice-President; B. H. Johnson, Secretary.

NORFOLK.—J. W. Langs, President; Jno. Kitchen, Jas. Cowan, Vice-Presidents; J. T. Murphy, Secretary.

NORTH BRANT.—Christopher Barker, President; John Brockbank, Vice-President; D. R. Dickson, Secretary-Treasurer.

NORTH LANARK.—Dr. Mostyn, President; David Shelden, Vice-President; Thos. Coulter, Secretary.

NORTH ONTARIO.—Mr. C. Marsh, President; I. J. Gould, Vice-President; R. P. Harman, Secretary.

NORTH PERTH.—Jos. Salkeld, President; Jas. C. McPherson, Vice-President; Stewart Campbell, Secretary-Treasurer.

NORTH YORK.—John Randall, President; Silas Lundy, Vice-President; E. Jackson, Secretary-Treasurer.

PEEL.—J. C. Snell, President; Sheriff Brody, Vice-President; D. L. Scott, Secretary-Treasurer.

PILKINGTON.—John Street, President; A. Gordon, Vice-President; R. Cronar, Secretary-Treasurer.

PRINCE EDWARD.—J. H. Allen, President; Hugh Brodie, Vice-President; R. S. Roblin, Secretary-Treasurer.

RALEIGH.—Malcolm McNeil, President; John P. Hughson, Vice-President; A. H. White, Secretary.

RAMA.—James McPherson, President; J. Smith, Vice-President; Thos. Kelly, Secretary-Treasurer.

SANDWICH EAST AND WEST, AND SANDWICH AND WINDSOR.—Luc. Montreuil, President; Thos. Volans, Vice-President; Alex. Bartlet, Secretary-Treasurer.

SCARBORO'.—G. R. Secor, President; I. L. L. Vice-President; John Crawford, Secretary-Treasurer.

SEYMOUR.—Alex. Donald, President; R. Duwoodie, Vice-President; J. Clark, Secretary.

SOUTH BRUCE.—James Fraser, President; James Tolton, Rich'd. Rivers, Vice-Presidents.

SOUTH HURON.—Geo. Anderson, President; Arch Bishop, Vice-President; Hugh Love, Sen., Secretary.

SOUTH RIDING OF LEEDS.—W. Beatty, President; H. S. Davison, Vice-President; J. Ormiston, Secretary.

SOUTH OXFORD.—Jas. Park, President; G. N. Cook, Vice-President; R. T. Williams, Secretary-Treasurer.

SOUTH PERTH.—John Adair, President; Thomas Steele, Vice-President; W. N. Ford, Secretary.

SOUTH WATERLOO.—Angus McBean, Esq., President; John Marshall, Esq., Vice-President; Alex. Macgregor, Secretary-Treasurer.

STANLEY.—Charles Tough, President; Edmund Westlake, Vice-President; James Armstrong, Secretary-Treasurer.

STEPHEN AND USBORNE.—W. Hodgson, President; John Hunter, Vice-President; John Macdonald, Secretary.

THORAH.—Charles Galloway, President; John Ritchie, Vice-President; George Smith, Secretary.

THORNHURV.—Mr. E. Clark, President; Mr. J. Arthur, Vice-President; Mr. John Albery, Secretary.

TUDOR, WOLLASTON, LIMERICK AND CASHEL.—John Ray, President; Geo. Merrill, Vice-President; William Harper, Secretary-Treasurer.

VAUGHAN.—John Abell, Esq., President; Frances Bunt, Vice-President; Joel Reaman, Secretary.

WELLINGTON CENTRE.—W. Tindale, President; Jas. Hunter, Vice-President; John Beattie, Secretary-Treasurer.

WEST DURHAM.—Mr. M. Jones, President; Mr. Geo. S. Shaw, Vice-President; Mr. R. Windatt, Secretary.

WEST MIDDLESEX.—W. H. Armstrong, President; R. Brown, Vice-President; H. McColl, Secretary-Treasurer.

WEST YORK.—John Abell, Esq., President; John Akrow, Vice-President; John Brown, Jr., Secretary.

WHITCHURCH.—Jared Lloyd, President; Mr. John Irwin, Vice-President; M. Jones, Secretary-Treasurer.

WILMOT.—Mr. Frederick Merner, President; Mr. Wm. D. Smith, Vice-President; Mr. Robert C. Tye, Secretary-Treasurer.

GAIL BORDEN, the inventor of the process for condensing milk, died at Bordenville, Texas, on the 11th of January.

AT THE recent sale by Mr John Tateson, of timber grown on the estate of H. R. Bouchere, Esq., an ash, estimated to be 100 years old and containing 250 feet of carpenter's timber, was sold for \$178.

THERE has been a heavy snowstorm in the north of Scotland. In Caithness the roads in some parts are impassable, and the snowfall has been the heaviest for several years.

FOREIGN POTATOES.—The consumption of potatoes imported into Great Britain must be very large. The declared value imported in the last twelve months was \$10,606,175; in the preceding year \$8,271,200.

A MAN was recently summoned before the Birmingham magistrates recently for cruelly ill-treating a rat. The case was dismissed on the ground that a rat is not a domestic animal.

Preston Great Horse Fair.

This fair, one of the most celebrated in the north of England, commenced on Monday the 5th ult., and was continued during the week. Little business was done on Monday, the principal days of the fair being Tuesday and Wednesday. On Tuesday there was a large number of animals of all classes shown, with the exception of draught hobs. Really good carriage horses were scarce, but some were disposed of at from \$365 to \$475, and others fetched from \$235 to \$365, and ponies from \$130 to \$155. Mr. Hesmondhugh, of Fulwood, sold a pair of fine, brown, high-stepping carriage horses for \$1,250, to Mr. Marshall, of Leeds. On Wednesday, about the same prices ruled in the classes above mentioned, and draught horses, which had come in pretty well during the previous evening, realized almost fabulous prices. Mr. Hothersall, of Shire Farm, Broughton, showed two splendid brown draught horses, for which he demanded \$750 and \$700 respectively. Any good animal in this class could not be had for less than from \$300 to \$400. On the whole the show of animals has been inferior in every class, and milking qualities fetched from 15 to 20 per cent. less than the prices obtained last year. It was a noticeable fact that the great majority of the animals in the better classes were of inferior breed. —*N. B. Agriculturist.*

It is essentially an agricultural country, and we are sorry to hear of a bad harvest, the crops being decidedly below the average. As nine-tenths of the population are dependent upon the produce of the soil, this is serious news.

THE CATTLE PLAGUE.—Continental advices state that the milderpest has become extinct in Prussia. The military surveillance established by the German authorities with a view to the suppression of the disease was very severe and has proved efficient.

THE Michigan Farmer says that the farm of the State Agricultural College has done well the past year. The cash proceeds of the farm department have been upward of \$3,600. As there are about 200 acres in a cropping condition, this will give a result equal to \$19 per acre.

THE mildness of the season in England is shown by the fact that several robins' nests have been found with eggs in hatched sheds, and on Monday a nest of thrushes was taken from a holly-tree in Holwood Park, Keston, Kent. In the woodbanks violets and primroses are in full bloom in many parts of that county.

A DAY'S DEALINGS.—The year 1873 was the first in which the imports of foreign and colonial merchandise into the United Kingdom exceeded the value of \$5,000,000 a day. The total is stated at \$1,851,303,710. The exports of British and Irish produce and manufactures averaged nearly \$35,000,000 a day, the total being \$1,275,366,680.

FRESH MEAT FOR ENGLAND.—When noticing the extract from the London Times a few days ago as to sending fresh meat from Canada to England, we did not think that Guelph, would soon share in that important trade. Such is the fact, however. One of our foremost produce dealers has, we learn, shipped to England 500 dressed hogs, sewn up in canvass. This is of course the first shipment of fresh meat from Guelph to the Old Country, and we shall wait with interest to hear the result of the experiment, we suppose it may be called. —*Mercury.*

THE PROSPECTS OF THE EUROPEAN GRAIN TRADE.—In a review of the prospects and position of the grain trade, Mr. H. Kains-Jackson points out that the European harvest, excepting in France and England, is in no way seriously deficient in wheat and other staples, so that no unusual requirements exist, save for rye, which, as the earliest crop, was the most injured by frost. Luckily, several Russian districts are considered fully able to supply this deficiency, and generally the German corn crops and the French crops of barley and potatoes supply an abundance of food that should keep the price of wheat within moderate limits on the Continent; and if this be the case, value in England cannot be excessive. "The actual tone of the grain trade is very stiff and confident in the future, owing to the shortness of granary stocks. At the same time opinions are unanimously exaggerating the difficulties of the short period—two, perhaps three months—during which there are chances of a 3s further rise in wheat, and 2s to 3s on maize, barley, and oats, should the winter be severe; so that the situation is becoming one of feverish anxiety, as a long fore-knowledge exists that present gains are weighed against future losses—in evitable when prices are running much above the ordinary level, to which they will return under ordinary circumstances, such as are promised by the present season. —*N. B. Agriculturist of Jan'y, 14th.*

The Dairy.

Dairymen's Association of Ontario.

Annual Convention at Belleville.

The seventh annual convocation of the Dairymen's Association of Ontario opened at Belleville on Wednesday the 11th. At the time for commencing business, neither President nor Vice-President being present, Wm. S. Yates, Belleville, took the chair temporarily.

On motion, the Chairman nominated the usual Standing Committees on Order of Business, Finance and Nominations.

In a few minutes the Committee reported the Order of Business for the afternoon, which was adopted. The Convention then adjourned until 1 30 p. m.

Afternoon Session

Upon resuming, Mr. Yates stated that neither the President nor Vice-President had yet appeared, and he would, therefore, have to continue to occupy the chair for a time. A communication had been received from Mr. Graham, stating that he did not expect to be able to be present until to-morrow. Nothing had yet been heard from the President, Mr. Ballantyne, but it was to be hoped he would be with them in the evening.

Professor Bell, of Albert College, Belleville, was then called upon, and proceeded to deliver

The Annual Address

In the course of which he stated that at the close of the past year there were twenty cheese factories at work in the county of Hastings, four more were ready to commence in the spring, and several more would soon be ready, so that in 1874 there would be about forty factories in operation in this county alone. Besides these, there were in this part of the Province several in Prince Edward, Lennox, Northumberland, and Frontenac. There were also a number about Brockville. Add to all these those in the west, and they might fairly assume that this year there would be 200 in operation in this Province. The cheese shipped from Belleville alone during the past year amounted to 153,714 boxes, containing a net weight of 3,935,111 pounds of cheese, which, at the average price of 1 1/2 cents per pound, represented a value of \$442,760. Of this total quantity, Hastings county shipped 50,378 boxes, weighing 3,425,221 pounds net; Lennox, 5,377 boxes, weighing 314,516 pounds; Prince Edward, 1,080 boxes, weighing 66,877 pounds; Northumberland, 1,573 boxes, weighing 128,608 pounds. The money value of the cheese shipped from Hastings was \$385,337, so that the farmers of this county who had entered into the cheese movement had received among them at the rate of \$1,050 for each and every day of the past year, Sundays included. Add to this the value of all cheese shipped at all stations on the Great Western and Grand Trunk Railways, which could not be less than four times that sum, and they had \$5,000 a day or \$1,825,000 a year coming from this single article of produce, and this over and above the value of the whey and other adjuncts, and of the cheese sold to retail dealers for home consumption. He did not think there was any danger of

A Glut in the Cheese Market,

at least for generations to come. The consumption in England alone was stated to be 500,000,000 pounds every year. He read from a trade circular, to show that the demand for American cheese in England was very great, and that the amount produced last year in England was less than in 1872. The falling off was not very large on the whole, but was particularly marked in Cheshire. Canada might be said to have improved in her cheese-making, and she now had factories which would compare well with the best of those of the United States. The demand for her cheese in England would depend to a great extent on its quality. The lecturer quoted from another document to the effect that some Canadian cheese that was

Exhibited in Great Britain,

alongside some of the best English cheese, was esteemed almost as highly as the latter. He congratulated Canadian cheese-makers on the fact that they were able not only to compete with their neighbors across the line, but also with the most famous cheese-makers in the world. He pointed out that the cheese sent to Great Britain from Canada last year was only one-eighth of the British demand. He considered our cheese to be well adapted to the British taste, and asserted that Canadian cheese makers were in a position to undersell the British producer in his own market. The lecturer dwelt on the importance of dairy farming as

A Means of Improving Land

which has been worked out, giving some valuable hints in regard thereto. He remarked that, according to the articles of constitutions of our cheese factories, they were established for the purpose of

Making Butter as well as Cheese.

but he had yet to hear of the first pound of butter being manufactured in any of them. Yet there was as much demand for good butter in Canada as for cheese. Butter produced in this section was of all qualities but the best, and that exported had anything but a favorable reputation. The reason of this was not, however, inability to make good butter in this country. Farmers' wives, as any one would find who went into the Belleville market, often had three or four different qualities of butter in one basket. He thought that a butter factory would be found as profitable an establishment as a cheese factory. A business connected with dairying, which was carried on in England, but totally ignored here, was that of

Making Butter out of Whey.

This butter, though not equal to milk-made butter in flavor, was little less so, and was much preferable to lard for cooking. The lecturer went on to show that whey would yield sufficient butter to make the production of it fairly profitable. One objection that he said had been urged to using whey in this way was, that it would be ruinous to pork raising. This, he showed, by an English work, from which he quoted, to be a mistaken idea. Another objection was, that the work would involve considerable increase in the labor employed in factories. To obviate this, he suggested the use of a steam engine, whose factory was large, but where it was not, the employment of horse, or wind-power. The lecturer proceeded next to give a short history of the rise and progress of The Cheese Factory Business in Canada.

He said, that in 1865, Hon. Robert Reid, in order to encourage an enterprise which would in some measure compensate our farmers for the loss they sustained by the abrogation of the Reciprocity Treaty, which occurred in that year, offered, after visiting the United States,

A Bonus of \$100

to every one who would start a cheese factory on the American plan in the county of Hastings. Subsequently he and Mr. Ketchum Graham made another trip to the United States and inspected a number of cheese factories. Thereafter returning, they started a factory themselves on a modest scale—the Front of Sidney factory, which went into operation in 1866. After this, cheese factories sprang up all over, and all, with the exception of one whose constitution was faulty, had succeeded well. The lecturer mentioned as one of the notable events in this movement during the past year the union and consolidation of the Eastern and Western Associations.

Professor Bell received the thanks of the Convention for his able lecture.

The Chairman then announced the first topic for discussion, namely,

The Cause and Prevention of Floating Curds.

Mr. Peter Frederick was the first speaker. He stated that he had been engaged in the manufacture of cheese for seven years past, and as the result of his experience he was of opinion that the chief cause of floating curds arose from cows eating while in pasture, buck wheat, which was known to be of a heating nature. This, however, was only one cause. No doubt another was to be found in cattle feeding on marshy grass. Some said that the cause of the evil was the unwholesome state of the factories. He did not think it was this, for he had worked in factories about which there were pigs, and which had stagnant water under the floor, and yet had made good cheese in them. The manner in which he treated milk which he thought would cause floating curds was:—To cool it down at night to about 78 degrees, and add about one quart of salt to 1,500 lbs. of milk, which prevented the cream rising, and let it remain till morning, when he added his morning's milk. He only put rennets enough to cause it to coagulate in about fifty minutes or an hour, and then it was necessary to use great care in cutting the curds.

In the discussion that followed, other speakers agreed with Mr. Frederick as to the care it was necessary to use in the treatment of tainted milk, but they attributed the cause in most cases to the impure state of the milk consequent upon uncleanness in the dairy utensils.

The next subject for discussion was the method of Handling Milk at the Farm and House,

and hauling to the factory.

Mr. S. T. Wilmot thought the principal point was the cleanliness of the utensils, and that the only way to clean them properly was to use boiling water, not

simply warm or cold water, and further, that the milking should be done in a clean place, and that care should be taken to prevent dirt falling into the pail. He condemned the habit of wetting the hands while milking, and suggested that milk should stand some time in the can before removal to the factory, but with the cans uncovered, in cases where the milk was only taken to the factory once a day. His experience was that inserting a cooler filled with water into each can aided materially in preserving the milk; but he found that if this water was not changed the result was worse than if nothing had been done, as the tepid temperature of the water seemed to drive the animal heat into the milk and left it in a worse state than before. He thought milk should, in every case, be conveyed to the factory as early as possible, especially the morning's milk. He thought that if the milk-waggons were provided with coverings, so as to keep the sun's rays off the cans, it would serve to keep the milk in a better condition than if it were conveyed in open waggons.

In the course of the discussion on this question a good deal of conversation took place as to the best time for

Manufacturing Saturday Night's Milk.

One gentleman asserted that he could manufacture it into good cheese before midnight. Some held that if it were kept over until Monday the cheese would be of a very inferior quality, and that Sunday work in this case was work of necessity. Others maintained from their own experience that it might be allowed to stand until Monday without detriment. The majority seemed to favor the latter practice.

The Convention then adjourned at 5.30 until 7.30.

Evening Session

Upon resuming in the evening, after receiving a report of the Committee on Business.

The Hon. N. A. Willard, of Utica, N. Y., proceeded, by invitation, to address the Convention. He dilated on the fact that large numbers of men could be brought together, and got to remain in session for days discussing matters relating to the manufacture of cheese, but regretted that there was not as much spirit shown among those who supplied them with milk. He showed the importance of greater attention being paid to the drink, and food, and health of cattle, and to the state of the utensils in which the milk is kept, by citing instances in which neglect in these particulars had been most prejudicial to human life and health. Farmers should consider it their duty, not only to the public, but to themselves, to weed out of their herds all diseased cattle, and also to see that their cows were never milked until the milker had well washed his hands with soap and water. He spoke of the importance of

Good food for Milk Cattle,

and gave it as his opinion that plenty of salt should always be within their reach, as nature was the best regulator of the quantity that they should eat. Another thing which was of paramount importance, but which was commonly overlooked, was that cattle should be supplied with

Plenty of Good, Clean Water.

There was a law both here, and in the United States, against men putting water into their milk, but there was none in either country against a man allowing his milk to be poisoned by bad water drunk by his cows, because he provided none other for them. When good water was supplied, it should be so close to the cattle that they would not have far to go for it. He suggested as a means of correcting existing evils connected with the production of milk, the printing and distribution among the patrons of factories of

Circulars

containing such questions as:—Do your cattle feed on marshy or swampy grass? Have you good running water for them to drink? Have you shade trees in your pastures? Do you use dogs and stones to hurry your cows from pasture at milking time, thus heating their blood and bruising their udders? Do you clean their udders before milking by washing them with their milk, and then do you allow it to run into pails, &c. He held that answers to such questions as these should be required in writing from all the patrons. He went on to say that it seemed to be the general impression that the quality of the milk could be improved by feeding better, but experiment which had been made with a view to settling the question had proved this to be a fallacy. By giving cattle richer food the quantity of milk was increased, but the amount of butter in it remained about the same.

Richer Milk

must be sought for in different breeds of cattle. A sufficient quantity of good food must be given, however, or the fatty element of the milk was in part supplied by the flesh of the animal. The lecturer

stated the results of some interesting experiments which had been made on milk of different breeds of cattle for the purpose of ascertaining the properties of the butter-globules contained therein. He remarked that, of English cheese, about 34 per cent. was water, while in American cheese the quantity was about six per cent. less. Our standard of excellence was a first-class Cheshire cheese.

The Complaint Against our Cheese

was that it was too dry, and this was true. He did not doubt that experiments would be turned in this direction, and that we would soon have curing rooms so constructed that in hot weather cheese would be improved both in taste and texture. He referred to and described the manufacture of butter from beef suet, which he said was now carried on in a number of different cities in the United States, and said that all he had tasted of it did not equal in flavor the best quality of the genuine article. He also adverted to another similar manufacture, namely.

The Making of Rancid Butter into Cheese.

He remarked on the gradual advance in the price of butter all over the world, but especially in England, where, during the past few years, Canadian had advanced from 100 to 136 shillings. The best butter sent to England from the Continent brought, he said, 160 shillings, and it was a question whether Canada could not make it profitable to improve her butter. The quantity of

Cheese Arriving in England.

from America during 1873, was 1,736,495 boxes, which, allowing 60 pounds to the box, amounted to 104,189,700 pounds. The quantity exported from New York city during that time was 1,569,570 boxes, or 94,674,200 pounds. From eight to ten millions of pounds of that went to other countries than Great Britain, and 20,000,000 pounds went to England from Canada. In 1872 the exports of American and Canadian cheese to England amounted to 73,691,040 pounds, showing an increase of 30,498,666 on the previous year. The receipts in New York city in 1873, were about 120,000,000 pounds, while in 1872 they were only about 92,964,200 pounds. England has taken more American cheese last year than all made in the United States in 1860, the amount produced that year being only 10,366,927 pounds. He also showed that the prices of good cheese were continually advancing, while cheese of poor quality was year by year becoming less marketable. Before concluding his address, which lasted nearly two hours, Mr. Willard exhibited an ingenious instrument for testing the acidity of curds before dipping. A hearty vote of thanks, moved by Hon. D. Reesor, seconded by Hon. Robert Reed, was tendered the lecturer for his able address.

SECOND DAY.

The Convention re-assembled at ten o'clock A. M., Mr. Yates in the chair.

Election of Officers:

The Chairman of the Committee on Nominations submitted the report recommending a number of gentlemen as office-bearers for 1874. After a slight amendment it was adopted, with the names as follows:—President, K. Graham; Vice-President, A. Oliver; Secretary, J. C. Hegler; Treasurer, T. B. Daly; Directors, J. Ballantyne, W. S. Yates, Lewis Richardson, Henry Ostrom, T. D. Miller, D. Vandewater, Allan McLean, George Morton, and Thomas Brown; Auditors, Charles H. Sorley, and Thomas Wills.

Coloring Cheese.

The next topic for discussion was "To what extent is it desirable to color cheese, and what annatto is best?"

Mr. E. Casswell, of Ingersoll, said he found that highly colored cheese was preferred in the London market, and pale in Manchester, though the highest price he obtained for highly colored was in the Manchester markets. His correspondents asked, as a general thing, for a well-colored cheese, but once in a while they asked for pale. In every order he ever got, of any extent, eight-tenths of the cheese asked for was to be well colored. He spoke of Nichol's and Mitchell's annatto as both being good.

Mr. Watkins considered coloring the cheese a necessary evil. It would be a great advantage if they could persuade the people of England to take pale cheese, but the greater portion of the cheese sold in that country would have to be colored. There were parts of England—Staffordshire and all through the Black Country, for instance—where the people had been in the habit of using white cheese for many years, and preferred it to colored. In his opinion, the sale of cheese depended to a much greater extent on its quality than on its color. If they colored at all they should make full colored cheese, but not color

too highly, as it was possible to over do the thing. From all he could learn Canada would be perfectly safe in making about one-fifth of her cheese pale. He was strongly of opinion that liquid annatos were much preferable to the cake or any other kind. By using the former they got a better mixture and a brighter color than if they used the latter. There would be no mistake made in choosing either Nichol's or Mitchell's annatto.

Hon. David Reesor remarked that almost everything, according to his experience, depended on the quality, but if they had a cheese of good quality, a good color would help to sell it. He was satisfied that annatto did not improve the flavor of cheese at all, and he was not aware that it injured it at all. It might, perhaps, be detrimental to the flavor to an infinitesimally small extent.

Mr. Burrell, of Little Falls, N. Y., said it was the impression where he lived that it was better to dispense, if possible, with the use of annatto. He thought, however, that to meet the demands of the market, about two-thirds or three-fourths of all the cheese manufactured should be colored. He considered annatto perfectly harmless. They used as a coloring matter in New York a liquid called annatomo, which he thought the least objectionable they could employ. Cheese which had been colored with it had been kept two years, and the color had not faded.

Mr. Casswell said the reason coloring was liked in cheese was that it hid, to a great extent, its faults. The fading of cheese depended, to a great extent, on the state of the atmosphere in which it was kept, and cheese which decomposed easiest, was that which faded most quickly. He thought it would be difficult to educate the English up to liking white cheese as well as colored. When he first began the business in this country, however, Canadians would scarcely buy colored cheese, while to-day, as the result of their education, dealers could not sell white cheese on their counters. They might depend upon it that the more people got of colored cheese the better they would like it.

Mr. Walkins said he was always willing to pay as much for white cheese as for colored, provided the quality was as good. He asserted that there was no trouble in selling good white cheese in England as readily as colored.

Mr. Peter Frederick said he had tried experiments in one of his factories of making white cheese entirely, and had been able to sell it as well as he could colored. He believed by the united action of all the cheese factories, the system of coloring could be done away with.

After a little further discussion the matter dropped.

The Auditors' Report

was next presented, and showed the total receipts of the Association last year to have been \$1,317 71, including a balance of \$14 55 from the previous year; the disbursements were \$1,204 95, leaving a balance on hand of \$112 76.

The Convention then entered upon the discussion of the question as to the

Best Method of Marketing Cheese.

Mr. Casswell was of opinion that cheese should be marketed as early as possible. He was in favor of holding cheese fairs every two weeks, not oftener. By holding their summer cheese back until the fall they were virtually competing against themselves in the market; whereas, if they sent it to market early, they, to a certain extent, controlled the prices.

Mr. Burrell remarked that one reason why cheese should be marketed early, was that during June, July and August, it would ripen in this country in thirty or forty days. It was then in its best condition, and when in that condition it should be sent to market. They had increased the home consumption in New York by selling the cheese when it was that old. Another reason for selling early was, that the expense of holding cheese over beyond thirty or forty days, and the loss by shrinkage after that period amounted to a deduction of five or six per cent. from the manufacturer's profit.

Mr. Walkins observed that American cheese is just about as ripe when thirty days old as English when five months' old; and then it was to be recollected that the former was curing while on its way to England. He believed, from all he could learn, that this county had realized as much last year from cheese as any county in Canada, and that simply because it had marketed early. In England, the best dairies were never sent to market, but buyers went to the farms for them, and paid the highest prices for the cheese there.

Mr. Casswell said that it was customary to keep Saturday night's cheese for home consumption, but if they were to send better cheese to our own dealers the result would be to increase the consumption of it in the country.

Mr. Walkins explained that he was not opposed to markets, but he held that when cheese or butter was sold in the market it should not be by sample, but the whole quality to be sold, or a considerable proportion of it, should be sent to the market as in England.

The matter then dropped, and the Convention then adjourned till half-past one.

AFTERNOON SESSION.

Address by Prof. Arnold.

The Convention re-assembled at a quarter past two.

Professor Arnold, Secretary of the American Dairy-men's Association, Rochester, proceeded to address the Convention. He remarked that Canadian cheese excelled in its keeping qualities, and American in its flavor and texture. He suggested, as a means of posting factorymen as to the quality their goods should show, that buyers should go about among them more and discuss with them matters relating to cheese making. Another good idea would be to exhibit at dairy-men's conventions samples of standard cheese. He also recommended the holding of cheese fairs. He went on to say that good cheese could not be made from bad milk, but less depended upon the quality of the milk than was generally supposed. The important thing was to have it free from objectionable taints and in a healthy condition. Tainted milk was generally identified with hot weather, which caused the cow to become febrile, but this was not the only cause of fever. Scarce or bad water and too rich food were also among the causes. In taint he did not mean to include the deviation from its natural flavor occasioned by the use of turneps or cabbage or other strong smelling or tasting foods that carry their odors or flavors into the milk. He only meant that peculiar smell which in its extreme development produced floating curds. To keep cows in good health he recommended the planting of shade trees in their pastures, and the supplying of them with plenty of good water. He asserted that not a drop of cream which had been taken from hay milk should ever be used in making cheese. Indeed it would be well if factories could entirely suspend the making of cheese for a time, while cattle were feeding on hay. Milk from cattle pastured on dry ground did not cure as easily as that from cattle pastured on moist ground, but would keep longer. Land in the cheese producing districts of Canada was of a dry nature, hence the reputation of the cheese for its keeping qualities as compared with that manufactured in the State. The cause of this dryness of soil was the continual ploughing it had undergone for a long time in its preparation for the growing of grain. Owing to this quality of the ground our cheese would not bear the same amount of acid as cheese manufactured in Herkimer County, N. Y., where the pastures were more moist.

A member asked if the cream which rises on milk at night could not be manufactured into cheese.

Prof. Arnold said that depended on the manner in which it was worked up. If the cream were put into the strainer before the the morning's milk was strained and washed through by the latter, and then the whole well stirred up when the rennet was put in, and only a very few minutes allowed for coagulation, it might be so used. He also said that the cream which was on the milk at the houses of patrons when it was called for could be used in that way. In reply to other questions he said that hard curd required less salting than the other, and that in order to get rid of the taint in impure milk, it was necessary to heat it above 60 degrees, but if the milk was liable to sour he would cool it down to 50 degrees. He considered that good cheese could be made from Saturday night's milk immediately it was brought in, by first heating it up to about 188 or perhaps 196, then using only a small quantity of rennet but a pretty strong acid and afterwards cooling it thoroughly and salting it pretty well. If milk was tainted it would be best to skim it because the taint would be chiefly in the cream. If the cheese made was naturally hard, however, and it was difficult to give it a good texture, as in Canada, skimming would be the worst thing that could be done. He was satisfied there would be no difficulty in keeping Saturday night's milk over until Monday if plenty of cold water was available.

A vote of thanks was then tendered to Prof. Arnold for his address.

The next business was the reception of an unimportant report from the Finance Committee, after which the contents of a

Question Drawer.

which had been open during the Convention, were taken out and answered.

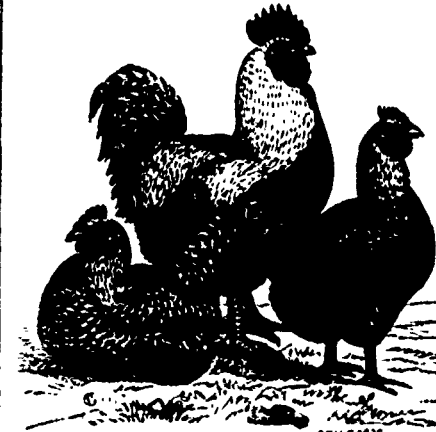
This business over, a vote of thanks was passed to the Chairman, and the Convention, at five o'clock adjourned *sine die*.

Poultry Yard.

Plymouth Rocks.

The first notice of the Plymouth Rock as a distinct variety of fowl, is in Dr. Bennett's work on poultry, published over twenty years ago. He states that he produced these birds himself by crossing a Cochon cockerel with a half bred Malay-Dorking hen, but it is quite evident if such a bird really did exist in Dr. Bennett's yard, it has long since become extinct, and the fowl known as the Plymouth Rock of to-day must have been produced from other parentage. Nothing definite has been published about the Plymouth Rock, except an occasional reference to Dr. Bennett's Book, from his mention of it until 1871, when it is again noticed in *Standard of Excellence*, published by the New York Poultry Society, and the description there given is "dark or light steel-gray" color in the cocks, and in the hens, "dark stool, mottled black and white, black and white bars well defined across each feather." The editor adds in a note that he considers it wrong, and that the plumage should be described same as Dominiques. Mr. William Simpson, jr., in writing to Mr. Wright, quoted in his book on poultry, says: "If bred with care they will make a fine variety. They are an improved Dominique, being just like them except in comb and size; they have a single comb and are larger, as they have a touch of Asiatic in them. They do not breed very straight yet." Writing again, at a more recent date, Mr. Simpson says: "After a little careful breeding I think the Plymouth Rock will be a grand fowl, and second to none for all purposes. As yet they do not breed quite true always, and then eggs are all colors and sizes. They are handsome, good sitters, and good for table, and I intend myself to stick to them and try and get them right. They were produced from single-combed Dominiques, crossed with Asiatics. Dominique fowls are the same in color, and are a useful variety, but twenty years ago, when the Shanghai made their appearance, these took their place in the estimation of the public, and the Dominiques were much neglected by fanciers, so they do not breed straighter now than the Plymouth Rocks." In an article from the pen of H. S. Ramsdell, in the *Poultry Bulletin*, on the origin of the "Modern Plymouth Rock Fowl" He says: "Our modern Plymouth Rock fowl is in no way whatever connected with the Plymouth Rock produced by Dr. Bennett, some twenty-five years since, from a cross with the Asiatic fowls. Dr. Bennett's, we are told, were the result of a cross of Cochon, China, fawn colored Dorking, Malay and Wild Indian. None of this blood enters into the composition of the present stock, unless there be a little of the Malay, flowing through the Black Java. They are a different bird altogether, and were produced on the farm of the late Joseph Spaulding, of Putnam, Connecticut, which is situated about one mile from my own. I was intimately acquainted with Mr. Spaulding while he lived, and I was thus given an opportunity of knowing the facts of which I speak. Some thirty years since, John Gales, Esq., (well known in the poultry world), introduced a fowl into this vicinity called Black Java, its plumage was black and glossy, its size large (Mr. Gales said the pullets had sometimes reached eleven lbs.). They were an unusually hardy bird, with a dark slate-colored, smooth leg, and the bottom of the foot yellow. They proved good layers, and extra quality for the table, not coarse like most of the large sized birds, but fine and juicy. I sold a few of these birds to a Mr. Thayer, of Pomfret, of whom Mr. George Clark, of Woodstock, Conn., purchased some—he supposed the same. Mr. Clark, passing Mr. Spaulding's yard one day, noticed his fine flock of Dominiques, and proposed bringing a few of his Javas over to cross with them to increase the size. Mr. Spaulding

accepted the offer, and when the chickens were grown, rejected the black ones, and those with double combs; reserving to breed from only the single combed birds which retained the Dominique color, or near it. They were usually of darker plumage than the Dominique; the legs sometimes resembled the Java, dark with yellow feet, but were mostly yellow, or yellow with a slight streak of dark on the front of the leg, which, with the feet, are free from feathers. We received some eggs of this cross from Mr. Spaulding as a present, and purchased some fowls of him. Of the first produced, one hen weighed over eight lbs., and another reached nine and three quarters. We soon had a fine flock of them. The fowls were spread around the neighborhood, and were much sought after, but had as yet no name. A gentleman asked



Plymouth Rocks.

me what I called them? Not knowing that any of Bennett's were now in existence—I had not seen any of them for years—I said "Plymouth Rocks." The name passed from one to another and they were soon generally known by that name. One of the members of the New England Poultry Club was here a few years since to see my flock, and I was invited to send up some to their show. Last spring I sent up seven or eight, and entered two pullets, which took the first premium; one hatched in July weighed nine lbs. two ozs, and one eight lbs. three ozs. Our opinion of the fowl is that when bred pure, as it came from the hands of Mr. Spaulding, it has few equals and less superiors. True, they will now and then throw a black chick, resembling those we had twenty-five years since, but we find they grow fewer each year, and doubtless will soon disappear altogether."

The Black Java fowl alluded to by the writer of the extract quoted would seem to be an Asiatic, produced by crossing the Malay with some of the other Asiatic breeds. One thing, however, appears quite clear, that in producing our new made fowl, the Plymouth Rock, one of the parents employed was the Dominique fowl, and therefore, with safety, it may be said to be half Dominique and half Asiatic.

The illustration which heads this article, represents the Plymouth Rock as bred at present, and bears a strong resemblance to the Cuckoo Cochon in general shape, but particularly so in head and comb, while the smooth legs, large tail and very prominent breast proclaim its Dominique ancestry. Its flesh is said to be very juicy and good for the table; is a moderate siter; an excellent layer and fast grower; as regards incubation, it is not over troublesome, is an active forager, and in this respect resembles the Brahma, not, however, staying away from roost nearly so late as does the latter fowl. The Plymouth Rock may therefore be pronounced a capital fowl, giving all the good qualities of the Cochon, the economic qualities of the Brahma, and without the principal drawbacks of either. It is a noble looking bird, with color well adapted to wear, and to those whose taste does not incline to the feather legs and fluffy proportions of the Asiatics, will be a very suitable fowl. In breed;

ing the Plymouth Rock the chief point to preserve is the pure bluish grey color, and carefully to avoid pure white, or pure black, and especially red feathers. Careful mating will enable the breeder to succeed in this, nothing is easier to breed "true" than this Dominique marking, care will also have to be exercised in producing combs perfectly straight and evenly serrated.

Poultry Notes.—No 4.

Mating for Exhibition Birds.

The fancier who would be successful in breeding prize poultry knows full well that two things are essentially necessary towards the attainment of his desired object, proper mating of the parent birds, and rearing to proper size and condition the chickens. This paper will be devoted to the first of these objects. We have already stated that cocks and hens in their second year breed well together, but, as there is no universal rule, other ages, for reasons which will appear presently are frequently chosen. A little close observation of the marking of any breed of fowls will make it apparent that the colors are very differently arranged in both sexes; in the hens the light and dark are generally broken into small markings, whilst that in the cocks is more modified in tone; the darker color usually going to the lower, and the lighter to the upper part of the body. It follows therefore, that the most striking cocks for exhibition will be those which develop the masses of color with the greatest purity and sharpness, while the points which produce this may be quite different from those which breed in perfection the smaller markings of the female sex. It is the knowledge of this very essential point that has led good breeders to "make up" two yards, one a cockerel, the other a pullet yard. He will divide his hens and pullets into two classes, those with the most perfect and solid markings he will mate with the male birds which have the densest hackles with a view to producing pullets chiefly; whilst others, fine in form and size, and fairly good in general color, but wanting in marking, may probably breed him some magnificent cockerels. Another point, too, which must be kept in view, is, that the preponderance of cockerels in a brood chiefly resemble the father, while the pullets take after the mother. In some few breeds, it is well known that the birds required to breed cockerels cannot themselves be shown, instance that of wheaten hens in Game and Game Bantams; so also in Silver Spangled Hamburgs, which until late years, and even in some instances at present, the best exhibition cocks had to be procured by cross-breeding.

It is generally admitted that the strongest and best chickens are produced from a cockerel mated with two year old hens, but if only a few hens are put with him, there is almost sure to be a preponderance of cockerels; and therefore it is, that some breeders prefer a two year old cock bird to mate with pullets full grown. This rule is however not imperative in other cases, there are exceptions to both, and good chickens may be produced from cocks and hens all of the same age. One thing however, ought not to be forgotten, that in mating young fowls of less than a year old together, their chickens will always be backward in fledging; neither is it well to breed from birds after they have passed the third year. A valuable hen, may of course, for breeding purposes, be kept as long as she lays, but except in rare cases a cock is of little or no value for breeding after he is four years old; unless indeed it be for exhibition purposes, and we have it on record that cock birds up to seven years old and more, have been preserved for the show pen, all cocks after four years ought to be got rid of. There will of course be exceptions and productive vigor may be maintained until a later period, in which case birds of proved value ought not to be discarded. The color, and what are known as the "fancy points," in any breed are most influenced

in the progeny by the male bird, whilst the form size and useful qualities are principally derived from the hen. Some control may also be exercised over the sexes of his produce by the breeder, by strictly adhering to ordinary rules, although numerous exceptions will occur. We will note a few of the more important cases. A large preponderance of cockerels may always be looked for in early broods, if a vigorous cockerel be mated with three adult hens; an adult cock mated with three pullets will produce very uncertain results, the preponderance may be on either side, but are rarely equal.

Five or more pullets placed with an adult cock will generally give an excess of pullets. Young birds and adult birds mated together, are very uncertain; but the fewer hens, and more vigorous the stock, the greater is the proportion of cockerels, which are always more numerous in the earlier eggs of a season than the later. It is also a curious fact that chickens hatched late in the season are often perceptibly more short legged than the earlier birds. From these facts it may be gathered that the breeder possesses considerable power of obtaining such results as are desired, although nothing like absolute certainty can be obtained.

Having pointed out some of the most useful points which should govern fanciers in the selection of birds for breeding purposes, let us now consider the still more difficult question of color, form, shape of marking, &c., in the respective breeds. Mr. Wright, to whom we are already largely indebted for information on this very critical subject, says: "That careful breeders spend hours and hours over this matter. Each hen is to be carefully looked over, point by point, both her merits and her defects being carefully taken into consideration. Whatever faults the hens may have, must in the cock be carefully compensated, or at least be absent, otherwise they will be sure to be aggravated by the double influence. Again, when put together, the scrutiny is to be repeated, and the probable result which will be produced by each bird thus mated most carefully considered, and even after mating, some hitherto unlooked for feature will strike the eye, and necessitate mating with quite another bird to that originally intended. If the pen be made up of adult birds, what they have already bred with the same or other mates, must be taken into consideration, and where disappointment has been the result of former mating, the causes of such must be traced up, and the birds differently paired, so as to counteract any anomalies which the produce of such previous mating may have shown. When fresh blood is needed, no pains are too great to ascertain what the intended purchase is likely to breed, especially if a cock. As a rule, however, it is better when purchasing entirely strange blood, to procure hens in preference to cocks, inasmuch as they have less influence on the fancy points generally. It would also be well, if possible, to view some of the progeny of the birds intended to be purchased, so that one may judge for himself the defects produced. Two birds, as already stated, possessing the same defect must never be mated for fear of aggravating the fault, in which case we must reject the bad birds and retain the good ones. It sometimes happens that the choice will have to be made between different faults, one of which must be tolerated in next year's stock birds; in such case it will be a safe rule to prefer a fault which appears accidental, or unusual in the strain, if not too glaring, to even a lesser defect which may seem as if it were hereditary or common to it." Within the scope of these papers, it would be impossible to be other than general in our remarks; but to illustrate more clearly the view set out, we will take one example, say the Buff Cochin, which will serve for other breeds as well. Suppose it is found necessary to breed from one or other of two birds, eligible in almost every respect, but one of which has a slight suspicion of white in the tail, while the other is free from that fault, but is greatly

deficient in leg-feathering; the majority of beginners would reason that the fault in the first bird being but slight, it would be far better to choose him than the one with so serious a fault as want of leg-feather.— But the experienced breeder would think differently, either from personal knowledge or diligent investigation, he finds the strain has a distinct tendency to white tail, as yet but partially overcome by careful breeding, and requires yet more to banish it altogether; on the other hand profuse feathering had in particular remarkably distinguished both parents of the bird which is wanting in this respect, and therefore would rather put up with such a deficiency, which in all probability would appear only in a very few of the progeny, rather than have to undergo a year's work in order to banish the fault to which there was the hereditary predisposition.

"WHAT do you sell those fowls for?" inquired a person of a man attempting to dispose of some chickens of questionable appearance. "I sell them for profits," was the answer. "Thank you for the information that they are prophets," responded the querist; "I took them to be patriarchs."

THE Norfolk (Eng.) Chronicle states that turkeys have been "adulterated" by some ingenious poulterers in the country this year. A gentleman who had ordered a quantity of turkeys for distribution among his friends, had one also sent to his house, when it was found to contain more than 4 lbs. of pork fat.

Agricultural Chemistry.

Formation of Fat.

Animal fat is a compound of several substances which chemists have shown to be the result of combination of various acids with a base which is now well known under the name of *glycerine*. The most important of the acids above named are *stearic*, *margaric* and *oleic*; and their compounds with the above base are called respectively, *stearine*, *margarine* and *oleine*. All of these latter substances may be converted by the action of potash or soda into soap which has the alkali as a base instead of glycerine. Fat belongs to the non-nitrogenous class of bodies, called by Liebig, the respiratory elements, among which are included starch, gum and sugar. The same chemist holds that the formation of fat takes place when the above substances are supplied to the body in greater quantity than is required to combine with the oxygen consumed during respiration. He affirms that the substances classed as nitrogenous are those which can alone go to form animal tissue, such as bone, muscle, nerve, &c. Other authorities assert that animals can obtain nitrogen from the air, and consequently can be supported by the assimilation of what Liebig terms *respiratory* elements. But life can only be said to be prolonged by such food, for where the animal is subjected to exertion the consequent waste is not supplied. It has been shown conclusively that starch and sugar are both converted into fat in the animal body, if at the same time the waste be supplied by nitrogenous food, more especially if that waste is reduced to a minimum by a state of repose, and consequently a diminished consumption of oxygen. The latter condition is also secured by affording artificial warmth to the animal, thus reducing the quantity of non-nitrogenous food necessary for the production of animal heat, which is partly derived from the oxidation of these elements in the blood.

Now, there are two questions of great importance to the agriculturist relative to the subject of this article.

1. What is the safest, most speedy, and economical plan of fattening the various animals on the farm?

2. Does such fattening necessarily produce deterioration in the quality of bone and muscle, and diminution in the power of reproduction?

In the fluid provided by nature for the young of

animals, namely, milk, we are furnished with the type of food adapted to the system in a state of repose, and while subjected to a moderately elevated temperature. Under these conditions such a type of food furnishes all the elements necessary for a proper development and growth of bone, muscle, and nervous tissue, as well as for the formation of fat. It is a well established fact that this type cannot be replaced by another, containing different proportions of the nitrogenous, and non-nitrogenous constituents, with safety.

On analyzing the contents of the fowl's egg, we find also a combination of the two classes of food, namely, *plastic* and *respiratory*; the white representing the former, the yolk, the latter.

Chemical investigation has shown that milk contains one part of nitrogenous to every four of non-nitrogenous matter. The following table gives a comparative statement of the proportions of these constituents in a few of the substances used as food:

	Nitrogenous parts.	Non-nitrogenous.
Cow's milk contains for	10	30
Beans, " "	10	22
Peas, " "	10	23
Wheat flour, " "	10	46
Oatmeal, " "	10	50
Rye flour, " "	10	57
Barley, " "	10	57
Potatoes, " "	10	86
Rice, " "	10	123
Buckwheat flour " "	10	130

A change in the condition of the animal with respect to exercise or external temperature allows a corresponding change in the character of the food, but such change must always be limited. If the waste of tissue be increased by an extra amount of exercise, the quantity of nitrogenous or plastic food must be increased, but if at the same time the animal be subjected to a colder temperature, the respiratory elements must also be furnished in greater abundance. On the other hand, if the animal be kept warm, the increased quantity of non-nitrogenous food, instead of being consumed within the body in order to furnish a necessary degree of heat, is stored up in the form of fat.

The necessity of a proper supply of both classes of food is more especially marked when the animal is kept in a state of quietude.

In the case of the pig which is remarkable for its fat producing qualities, we find an appetite which corresponds with its requirements under the above condition.

Boussingault found that this animal when fed exclusively on potatoes, did not increase in weight; although, as shown in the foregoing table, these vegetables contain a large amount of fat producing substance.

When the diet consisted in addition of butter-milk, whey and kitchen refuse, the animal gained in weight. The greatest increase took place when ground corn, rye-flour and peas were added to the mixed feed. The latter mixture contained 10 parts of nitrogenous to 55 of non-nitrogenous food, whereas, potatoes alone contain 86 parts of respiratory elements to 10 of nitrogenous.

Thus we see that the increase in the weight of the body in fattening stock (as is the case with the supply of milk from milk-cows) depends on the amount of plastic constituents containing nitrogen in the daily feed.

In Germany the proportion of plastic elements in the potato is increased by converting the starchy respiratory portion into spirits, and employing the dregs as food.

Fat is usually contained in minute cells, composed of a substance which forms the chief part of other membranes. If the food of the animal contains an insufficient quantity of the elements necessary for the formation of these cells, while at the same time it contains an excess of fat-producing elements, the muscular fibre is appropriated, and the animal gains

in fat and loses in muscular flesh. Beyond this point the fat accumulates in the blood, causing disease. It follows, therefore, that a proper fattening fodder must contain at least from one-fourth to one-fifth of nitrogenous substances; also, that comfortable housing, and a minimum amount of exercise will serve the same purpose as an increased supply of such elements as starch, sugar, and oil. As we have seen above, an animal may be fattened at the expense of other tissues of the body, the plastic portion of the food being consumed in the formation of fat-cells, in which the fat may be stored. Such a state of things is often induced by having subjected the beast for a length of time to almost absolute repose, and at the same time to a diet containing an excess of starch, saccharine, or oily constituents, as for instance, oil-cake, &c. The balance of life and death in such an animal may, as it were, be turned by a feather. The proud possessor of such an animal may find himself within an hour or two ruefully contemplating its dead body; such a catastrophe having been brought about by a slight change in diet, perhaps, or it may be, by a journey of a few miles, either on foot, or in a crowded car.

It is almost sure death to expose an animal burdened with fat around its heart, and kidneys, and throughout the body, to an atmosphere loaded with carbonic acid from the lungs of itself along with others confined in a close place. In the same way, a sudden rise of temperature, even if it be but a few degrees, tends to fill the blood with oily particles, thus throwing an additional burden on the already overloaded liver, and lungs; for it seems to be part of the office of the former organ to secrete sugar and fat from the blood, the first being oxidized by respiration, the second being carried with the bile into the bowels.

If, moreover, the owner of stock has fed his animals on an excess of food containing sugar, starch, and oily matter, the muscular tissue is replaced by fat, and the beast is liable to sudden, and unexpected death from failure of the heart's action.

Numerous instances have happened of animals dying on the very morning of the day to which the owner had looked forward for months, perhaps, for a realization of profit on his investment. These cases have generally been the result of feeding in the manner above mentioned.

It has long been a practice with the directors of our Provincial and County Exhibitions to attach too much importance to the amount of fat existing on the different varieties of stock shown. But the agricultural community are beginning to perceive that a covering of fat is often an excellent cloak for hiding serious defects in other respects.

The condition in which the majority of animals are shown at the exhibitions is far beyond that point consistent with health, or with the important functions of breeding, wool-bearing, production of milk, &c.

It would be well for intending purchasers to become acquainted with the mode of treatment and character of food which have been employed in producing the monsters of fat so often exhibited.

If he finds that the food used has been one containing an undue proportion of starch, sugar or oil, he will be running a great risk in purchasing, especially if he purports to employ the animal for breeding or for ordinary labor. But on the other hand, if the animal has formed its fat out of food containing from one-fourth to one-fifth of nitrogenous food, it is then an evidence of what is called good feeding qualities, and he may rest assured that the muscular, bony, and nervous tissues are sound, although they may just at the time be unable to withstand any extraordinary or sudden demand on them.

Judges often look on the stock brought before them in the same way as if they were butchers, and seem to overlook the fact that there are other purposes to be fulfilled by the lower creatures besides affording the material for a jolly good dinner.

DR. C. M. SMITH.

Miscellaneous.

Oysters Growing on Trees.

Mr C. H. Williams, a fellow of the Geographical Society, tells us in the *Hertford Times*, how oysters inhabit the Mangrove woods in Cuba. "For several years," he says, "I resided in that island, and travelled there more than the ordinary run of foreigners, and have several times come across scenes and objects which many people would consider great curiosities—one in particular. No doubt the reader will open his eyes at oysters growing on trees. Often have I seen the sneer of unbelief on the face of the ignoramus when the fact has been mentioned; but grow they do, and in immense quantities, especially in the southern part of the island. I have seen miles of trees, the lower stems and branches of which were literally covered with them, and many a good meal have I enjoyed with very little trouble of procuring, and not quite so expensive as they are in London at the present time. I simply placed the branches over a fire, and when opened I picked them out with a fork or pointed stick. These peculiar shell-fish are indigenous in lagoons and swamps on the coast, and as far as the tide will rise and the spray fly, so will they cling to the lower parts of the Mangrove trees, sometimes four or five deep, the Mangrove being one of the very few trees that flourish in salt water. Woe to the man who loses himself or attempts to penetrate one of these lagoons, boots and clothes being cut through by the sharp edges of the oysters! I have known more than one man who has been laid up for weeks from the lacerations received; one poor fellow in particular who fell out of my boat, and, in endeavoring to clamber out of the water amongst the roots, had his feet and legs so dreadfully cut that in a few minutes he fainted, and it was with great difficulty we stopped the hemorrhage. The oysters are about the size of our natives, and are equal to them in flavor."

Table of the Comparative Value of Bushels and Cents.

The following table taken from a late issue of the *Galt Reflector*, shows at a glance the price per cental of the different kinds of produce when the rate per bushel is given, and vice versa. The bushel rates are given in the left hand columns, and directly opposite is the proportionate rate per cental.

WHEAT		BARLEY		PEAS		OATS	
Bush 45lb	Cental 100lb	Bush 45lb	Cental 100lb	Bush 45lb	Cental 100lb	Bush 45lb	Cental 100lb
1.00	1.67	50	1.04	50	.85	25	.74
1.01	1.68	51	1.06	51	.85	25	.70
1.02	1.70	52	1.08	52	.87	27	.79
1.03	1.71	53	1.10	53	.88	28	.82
1.04	1.73	54	1.12	54	.90	29	.85
1.05	1.75	55	1.15	55	.92	30	.88
1.06	1.76	56	1.17	56	.94	31	.91
1.07	1.78	57	1.19	57	.95	32	.94
1.08	1.80	58	1.21	58	.97	33	.97
1.09	1.81	59	1.23	59	.98	34	1.00
1.10	1.83	60	1.25	60	1.00	35	1.03
1.11	1.85	61	1.27	61	1.02	36	1.06
1.12	1.86	62	1.29	62	1.03	37	1.09
1.13	1.88	63	1.31	63	1.05	38	1.12
1.14	1.90	64	1.33	64	1.07	39	1.15
1.15	1.91	65	1.35	65	1.10	40	1.18
1.16	1.93	66	1.37	66	1.12	41	1.21
1.17	1.95	67	1.40	67	1.12	42	1.24
1.18	1.96	68	1.42	68	1.13	43	1.26
1.19	1.98	69	1.44	69	1.15	44	1.29
1.20	2.00	70	1.46	70	1.17	45	1.32
1.21	2.01	71	1.48	71	1.18	46	1.35
1.22	2.03	72	1.50	72	1.20	47	1.38
1.23	2.05	73	1.52	73	1.22	48	1.41
1.24	2.08	74	1.54	74	1.23	49	1.44
1.25	2.09	75	1.56	75	1.25	50	1.47
1.26	2.10	76	1.58	76	1.27		
1.27	2.11	77	1.60	77	1.28		
1.28	2.13	78	1.62	78	1.30		
1.29	2.15	79	1.65	79	1.32		
1.30	2.16	80	1.67	80	1.33		
1.31	2.18	81	1.69	81	1.35		
1.32	2.20	82	1.71	82	1.37		
1.33	2.21	83	1.73	83	1.38		
1.34	2.23	84	1.75	84	1.40		
1.35	2.25	85	1.77	85	1.42		
1.36	2.26	86	1.79	86	1.43		
1.37	2.28	87	1.81	87	1.45		
1.38	2.30	88	1.83	88	1.47		
1.39	2.31	89	1.85	89	1.49		
1.40	2.33	90	1.87	90	1.50		
1.41	2.35	91	1.90	91	1.52		
1.42	2.36	92	1.92	92	1.53		
1.43	2.38	93	1.94	93	1.55		
1.44	2.40	94	1.96	94	1.57		
1.45	2.41	95	1.98	95	1.58		
1.46	2.43	96	2.00	96	1.60		
1.47	2.45	97	2.02	97	1.62		
1.48	2.46	98	2.04	98	1.63		
1.49	2.48	99	2.06	99	1.65		
1.50	2.50	100	2.08	100	1.67		

Large Profits on Small Farms.

We have received from the corresponding secretary of the Farmers' Club, at Farmingdale, Queen's County, New York, a copy of a paper read before it by its President, J. W. DeLee Reo, the design of which is to show "how a living is made on a twenty-acre farm on Long Island." The steps by which the conclusion is reached are here given in a condensed form. It being promised that small farms prevail on the island, thirty acres being considered enough for a farmer to carry on, with the help of one or two boys, and that the larger farms prove to be less profitable than the smaller in proportion to the acreage, it is represented that ordinarily farms of twenty acres, in the central part of the island, thirty to forty miles from New York, are worked in the manner, and with the results following. When practicable, such a farm is divided into seven parts, six of which are three-acre lots for tillage, and the seventh is occupied with the buildings, poultry yard, kitchen-garden, and an orchard of about one hundred and fifty apple and pear trees. Other fruit-trees, such as cherry, are planted by the road-side, and so answer the triple purpose of ornament, shade, and fruit. Grass being the great desideratum, a good farmer does not rest satisfied until he makes his fields yield at the rate of two tons to the acre the first year, without much shrinkage for the next two years. With this view rotation is practiced, and usually a six-year course, in the following order. The first year, corn is planted on the sod ground, with manure in the hill; the second, roots, sufficiently manured to be followed by wheat the third, and by grass the three succeeding. Half the eighteen acres are thus kept in grass, three being broken up each spring, and three seeded down each fall. But, if one acre is planted with (say early rose) potatoes, they can be harvested in season to sow the same by the first of August with turnips yielding four hundred to six hundred bushels. If the farm contains twenty-three acres, another lot and another year is added, corn being planted two years in succession; if twenty-six acres, grass-seed is sown when the corn receives its last dressing the second year; the field is grazed one year, then roots, wheat, and grass follow. On a twenty-acre farm, tilled as above described, the crops well cared for, will average about as follows: three acres of corn, 55 bushels per acre at 90 cents per bushel, \$148.50; three acres of potatoes (or an equivalent in roots), 200 bushels per acre, at 65 cents per bushel, \$390; three acres of wheat, 25 bushels per acre, at \$1.75 per bushel, \$131.25; nine acres of grass, 14 tons per acre, at \$20 per ton, \$300; profit on 200 hens kept for eggs, \$1.50 each, \$300; on two cows, \$75 each, \$150; on orchard, \$2 per tree, \$300; total, \$1,719.75. Outgoes: for board of team, at \$1 per day, \$365; for manure purchased, \$200; interest on farm and buildings, valued at \$3,000, and stock and tools, valued at \$1,000, at 7 per cent, \$280; taxes, \$20; total, \$865. This deducted from \$1,719.75 leaves a net profit of \$854.75. Add to this the profits from the garden, the bees, the pigs, &c., and it will give a clear income of about \$18 per week the year round. That is, the judicious and industrious cultivator of a twenty-acre farm receives a salary equal to that of a first-class mechanic, besides the advantages of outdoor instead of indoor labor, of great variety, instead of monotonous uniformity in his work, and especially of being his own master, which to a person of independent, self-reliant spirit, is of no small account. It may be thought that, all the hay being reckoned at market value, the profit on the cows is put too high; but the straw, and corn fodder (or their avails), and what turnips can be raised after a crop of new potatoes, will afford abundant feed for two cows through the winter. There is no cheaper way to keep cows in first rate order than to raise turnips enough to feed one bushel per day to each through the winter. On some small farms as many as five cows are kept. In that case less hay is cut, and what is, is chiefly fed out. Consequently more manure is made, and less bought. But the more cows the more work in the house, and as the usual aim is to get along without outside help, the sources from which profits are sought on the farm are often regulated by the state of the family in respect to the relative amount of outdoor and indoor help it affords. The fact is not overlooked that all small farms do not yield a profit equal to the above estimate; while some are made to exceed it, others are made only to yield a bare subsistence. But, in the latter case, the failure can always be traced either to a soil poorer than the average quality, or to a lack of intelligence and aptitude for acquiring it, or a lack of sound judgment, or of industry, or some similar cause.—Department of Agriculture Report.

Canadian Slate.

Among our ever-increasing industrial establishments none ought to be more welcome than those using the economic materials which nature has so bountifully scattered throughout the Dominion. By economic materials, we mean those substances which are susceptible of economic application, such as metals, and their ores, minerals, and inorganic, or in chemical manufactures, materials for bricks, pottery, glass, cements, mortars, or for brilliant, and ornamental purposes. Slate is one of the most important of these. Of it there is an abundant supply, and we are glad now to note an increased energy displayed in the roofing slate industry amongst us.

The permanency of the dark blue color, and other good qualities of the Canadian roofing slate, have been fully attested during the past few years by every roofer in the Dominion. The blocks we have seen are uniform in color, and are capable of being split into thin plates, which have considerable flexibility, and are not liable to break in the process of punching, and laying on.

For roofing purposes, slates are in many ways preferable to ordinary shingles; chiefly because of their safety from the action of fire, their great durability, and their retaining a uniform color, and that one in harmony with the bricks and stone with which the generality of our buildings—ecclesiastic and domestic—are constructed.

Again, when contrasted with tin, or galvanized iron, they are more durable than either, because they are not affected by the action of the weather, and, besides, are more economical, as they can be laid on at far less cost.

The great strength, smoothness, and perfectly non-absorbent qualities of slate, render it, in the form of slabs, well adapted for basement walls, for hall, conservatory, and basement floors, and railway station paving; for shelving, for dairies, and larders, and for refrigerators, cattle troughs, and numerous similar purposes. As a flooring material it is preferable to any cement, particularly where dampness is prevalent.

In the manufacture of billiard tables, it has now entirely superseded all other material. Again, it can be enamelled in permanent colors in imitation of the costly variegated marbles of Italy, Germany, and Spain; the granites, porphyries, Jaspers, and Serpentes of Great Britain; the Malachite, of Russia; the Mosiacs of pietra-dura, of Florence; and may thus be used for chimney pieces, pedestals, for statuary, pilasters, table tops, aquaria, fern cases, jardinières, etc. There is no reason, with the growing wealth of the Dominion, why all these articles should not be manufactured here. Each new industry is in its way helping to increase our commercial greatness as a country.—*W. G. C.*

Farmers' Troubles.

The grasping disposition of our people probably has much to do with their unhappiness. The farmer purchases more land than he can either cultivate with profit, or pay for, even if there are no failures in his crops. The idea that cash capital is required to work a farm with profit, even after it is paid for, seldom enters into the calculation of our farmers. If a man has a thousand dollars, or ten thousand, and desires to purchase a farm with it, he expends the entire amount in land, reserving nothing for working capital. This is about on a par with a man who would invest all his capital in paying rent in advance on a store, and have nothing left with which to purchase goods. Many farmers are at this time heavily in debt, and why? Simply because they have invested too much in land. They have done, and are doing just what the gamblers in stock are doing every day—betting on a rise, or fall, and putting up a small margin to enable them to control a certain amount for a certain time. Pleasures must be uncertain in any business liable to be affected by the fluctuations in the markets, whether the articles to be sold are stocks or farm produce. But if a man owns all that he has in his possession, the rise or fall in prices seldom brings disastrous results.

Now, the farmer who is in debt must get out; better sell one-half, or two-thirds of his farm, and have the remainder clear of all encumbrance, than continue this gambling system of betting on the weather, and future price of grain. Reduce expenses by cutting off interest on mortgages, labor, and implements required to raise crops, the price of which is an uncertainty, and then commence putting what is left in order, taking pleasure in the abundance of good things which surrounds us. Let quality become the standard instead of quantity.—*N. Y. Sun.*

Wages in Europe.

After reading such statements as the following, the wonder is, not that emigration is not more rapid, but that so many people in European countries manage to scrape enough money together with which to seek more profitable fields of labor:—

“Sixty cents a day is considered good wages for a working man in any of the European countries, except Great Britain, where the wages are somewhat higher. In the Tyrol silk region and in Italy, they often do not get more than ten cents. In Sweden, men often work from four o'clock in the morning till nine in the evening, and do not get any more.

“During the late war many poor women in Berlin were hired to knit stockings for the soldiers for five cents. The profits of the poor who keep petty shops, sell trinkets in the streets or act as sutlers, do not average more than three or four per cent. Barbers, since the raising of their prices, get five cents for hair-cutting and two and a half cents for shaving. Servants at hotels get from three to eight dollars a month.—Servant girls in private families often get but ten dollars a year. Sometimes these classes cannot get work at any price.”—*E. C.*

Mind your Business

That economic philosopher, Benjamin Franklin proposed for one of our national coins the legend which forms the heading of this article. For the people of this country then and now, it had and still possesses a peculiar significance, and its value is not impaired by the circumstances of loyalty or time. Its observance would remove one great hindrance to progress, and aid in the development of individual exertion. Yet no man can undertake any new enterprise without being overburdened with, and nearly overwhelmed by gratuitous advice.

If a man invents a machine or improves on any mechanical device, straightway he has a number of advisers who can tell him where he has failed and how he may perfect. If one is ailing it is a curious fact that every friend to whom he reveals his annoyance is a medical adviser and can tell him exactly what to do to find relief. If an accident occurs demanding prompt action and amendment, all the bystanders assume to become directors of the job, and are profuse with advice, but very chary of help.

Probably this disposition to offer unasked advice is shown nowhere so prominently as in the workshop. If a workman has a difficult job to perform he finds plenty of advisers, mainly those who, having had no similar experience can use conjecture instead of fact for a guide. The objects for this gratuitous advice are usually singled from green apprentices, or journeymen new to the ways of the shop. They are considered fair game—proper subjects for experiments—and are tormented, annoyed, and bothered by repeated, antagonistic, and foolish counsel. In mechanics, and in any trade or vocation, it is a matter of pride to the workman to compass his deliverance from an annoying position by his own exertions. A proper pride impels him to prefer his own unaided exertions to the assistance of voluntary teachers, when he needs counsel—the riper experience of his seniors—if he is not foolishly independent and self-willed he will ask it. When desired is the time when it is valuable to him. But every man knows that he achieves a greater triumph and more solid and enduring knowledge by “working out his own salvation” than by depending upon others for assistance.

Undoubtedly the profusers of assistance are often incited by a pure desire to aid; but aid is not appreciated if the recipient does not see his need of it; yet it is always welcome when wanted, and then it will be asked for. If every one attended strictly to his own business, not only would there be more harmony among workers but greater progress would be made in all the improvements designed to aid the race.—*Scientific American.*

Capacity of Cisterns for Every Ten Inches in Depth.

Feet in diameter	Gallons
2	19 1/2
2 1/2	30 1/2
3	42 1/2
3 1/2	60
4	78 1/2
4 1/2	99 1/2
5	122 1/2
5 1/2	148 1/2
6	176 1/2
6 1/2	206 1/2
7	238 1/2

Cultivating the White Ash.

The value of the white ash for timber is so well known that it may seem almost superfluous to name it. There is scarcely a farm implement, from a rake handle to a reaper or mower, of which the tough white ash does not form a part. But the cultivation of this valuable tree has been, and is still, sadly neglected, in regions where good timber for the purpose named is, and ever will be needed. The time must soon come when the implements required for agricultural purposes on the far western prairies will be manufactured there, and good timber must be had; therefore it requires no great stretch of imagination to see that a profitable market will soon exist far away from the present source of supply. The cultivation of such timber is like money put out at compound interest, and a man investing a very small sum at first will soon find himself the possessor of large and constantly increasing capital. The white ash is a tree easily grown from seed, which may be obtained in unlimited quantities and very cheaply. The seedlings may be easily transplanted without fear of loss, and they will succeed in almost any good rich soil. At first the seedlings appear to make slow progress in comparison with cottonwoods and willows, but when fairly established their growth is rapid and in every way satisfactory. As soon as the trees are a few inches in diameter, the timber is ready for use, and thenceforward continues to increase with age. Farmers who are in need, or liable to be, of good timber, should not neglect the cultivation of this most valuable tree.—*Andrew S. Fuller.*

“How fast they build houses now!” said M.; “they began that building last week, and now they are putting in the lights.” “Yes,” answered his friend, “and next week they will put in the liver.”

“WHAT large chickens these are!” Landlady—“Yes, chickens are larger than they used to be; ten years ago we could not pretend to get chickens as large as these.” Boarder—with an innocent air, “No, I suppose not; these must have grown a good deal in that time.” Landlady looks as though she had been misunderstood.

FORESTS AND FOREST CULTURE.—As an instance of the increased value of land when planted in forest, Mr. Rosenstell, of Freeport, Ill., one of the members of the Illinois Board of Agriculture, at the late meeting of the Board, related an instance of the sowing by his father in Germany of a tract of worthless blowing sand with the seeds of various pines and other evergreens, and that now, this was the most valuable portion of the estate. In North Germany, the conservation of forests is allotted to a carefully-organized body of officers whose chief is a forest-director. In Prussia nearly a quarter of the soil is in forest. In Thuringia and the Hartz mountains a most perfect system of forestry is carried out. In Hanover, 900,000 acres of forest are under the State management.—*Western Rural.*

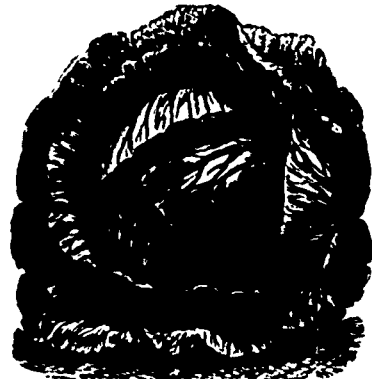
According to an article in the *Buffalo Commercial Advertiser*, the quantity of grain shipped by canal from that city during the past season, notwithstanding it only continued 189 days—being the shortest on record—was larger than in any preceding year, with the single exception of 1862. In 1862, the aggregate amount of grain shipped by canal reached 53,258,873 bushels; this year, when the Erie Canal had to compete with rival routes, leading in every direction, the aggregate has reached 50,796,676 bush. The movement of wheat has been remarkably heavy, aggregating 21,593,112 bushels, against 10,828,530 bushels last year, and 18,972,756 bush. in 1871. The shipments of corn, however, show a large falling off as compared with 1872. They reach only 21,767,171 bushels, against 30,833,333 bushels in 1872, and 20,663,515 bushels in the year preceding.

TO PRESERVE GREEN TOMATOES.—The following receipt is so generally liked that I consider it well worth the trouble: Take two fresh lemons to every three pounds of small green tomatoes, pare the rinds very thin, so as not to get any of the white part, and squeeze out the juice. I first boil the tomatoes gently until they begin to get tender, in water sufficient to cover them well, then add the lemon, and a few peach leaves, and powdered ginger tied in thin muslin bags, boil together until the tomatoes are tender, take them out carefully, strain the liquor, and put to it one and one-fourth pounds of white sugar for each pound of tomatoes; put the tomatoes into the syrup, and boil gently until they appear to be done. In the course of a week, pour the syrup from the tomatoes, heat it scalding hot, and pour it over them. They resemble the West India sweatmeats.—*Central Union Ag.*

A certain lawyer had his portrait taken in his favorite attitude—standing with one hand in his pocket. His friends and clients all went to see it, and everybody exclaimed, "Oh, how like! It's the very picture of him." An old farmer only dissented—"Taint like!" exclaimed everybody, "Just shew us where 'tain't like." "'Taint—no, 'tain't" responded the old farmer. "Don't you see he has got his hand in his own pocket; 'twould be as like again if he had it in somebody else's."

AGRICULTURAL PARTNERSHIP.—More than a year ago the Right Hon. Henry Brand, M. P., proposed to the laborers on his estate in Sussex that they should become partners in his farming projects. Lord George Manners, the brother of the Duke of Rutland, and senior member for Cambridgeshire has since, Michelmas, 1872, taken the laborers on his Ditton Lodge farm into partnership. He does not expect his agricultural laborers to contribute anything during years in which he may farm at a loss, but he is satisfied with 5 per cent. as profit, dividing the surplus amongst the laborers and himself in two equal proportions. The share of the laborers for the year ending Michelmas last is \$184, which will be about \$15 a head. Lord George has paid the laborers their ordinary wages, the item for labor being \$9,377.—*V.B. Agriculturalist.*

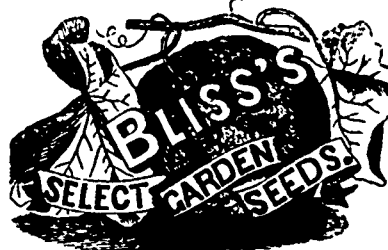
WATER IN THE HOUSE.—A prominent writer says: "Let nobody be deterred from bringing water in the house by any fears of failure and perplexity. You might just as well stop the circulation of blood in the body because it is subject to derangement, as to refuse the circulation of water in the house because now and then a pipe overflows, and your frescoes are rained. Good workmen will prevent any such accident, but if they cannot, give up your frescoes; do not give up your life blood. When I see the farm-houses, the dairies, the kitchens, whose only source of supply is the well in the yard, or the hoghead at the back door, how life would be lengthened and sweetened if all this heavy, and hard and slow water-bringing could be supplanted by a turn of a screw, I wonder that we do not introduce it somehow into our marriage contracts. What an increase of vital force would ensue; what a diminished demand for divorce, what a strengthening and upbuilding of the family bond, if a girl should refuse to marry until there was an inexhaustible supply of water, at least in the kitchen. A house without water works ought to be considered as incomplete as a house without doors, and as incomplete in the country as in the city."



Fottler's Early Drumhead.

Farmers and Gardeners you all need this Cabbage for two reasons. 1st, because it is the earliest of all the drumhead varieties; 2nd, because every plant on an acre will make a large and solid head. Seed of my own growing sent postpaid by me for 15 cents per package, 75 cents per doz. \$6.00 per lb. My Seed Catalogue free to all applicants. v11 414. JAMES J. H. GREGORY, Marblehead, Mass.

GLASS CARDS Red, Blue, White, Clear and Transparent. Your name beautifully printed in GOLD, on 1 doz. for 50c., post paid, 3 doz. \$1; sample, 10c. Must have Agents cr. yachere. Outfits, 25 cts. v11 444. T. K. SMITH, Bangor, Maine.



THE NINETEENTH ANNUAL EDITION of our celebrated Seed Catalogue and Amateur's Guide to the Flower and Kitchen Garden, containing upward of 200 pages including several hundred finely-executed engravings of favorite flowers and vegetables, and a beautifully-colored Chromo, with a Supplement for 1874, will be mailed to all applicants upon receipt of 25 cents. An edition, elegantly bound in cloth, \$1 00.

BLISS'S GARDENERS' ALMANAC

and ABRIDGED CATALOGUE contains upwards of 100 pages, and embraces a monthly calendar of operations and a price list of all the leading Garden, Field and Flower Seeds, with brief directions for their culture. A copy will be mailed to all applicants enclosing to three cent stamps. Address

B. K. BLISS & SONS,

Nos. 23 Park Place and 20 Murray Street, P. O. Box 5742. NEW YORK.

v11 424.

The Sugar Maker's Friend



Agents wanted to convey and sell 1874's PATENT GALVANIZED METALIC ICEBERG NAP SPOON and BUCKET HANGER. Samples, Circulars and Terms sent on receipt of 20 cts. to pay postage. Address C. C. POST, Manufacturer and Patentee, Burlington, Vt. v10 23-1f

COTTON YARN,

WHITE, BLUE, RED, AND ORANGE. CARPET WARPS, BEAM WARPS FOR WOOLLEN MILLS.

Warranted the very best quality. None genuine without our label. **WILLIAM PARKS & SON,** NEW BRUNSWICK COUNTY, N.C.

v10 23-1f. St. John, N. B.

CONTENTS OF THIS NUMBER.

THE FIELD:

- Experiments in Barley Growing..... 61
- Ploughing..... 62
- Turnips for Seed..... 61
- Honey Locust Hedges..... 62
- Land Washing..... 62
- Clean Seed..... 62
- Items..... 62

GRASSES AND FORAGE PLANTS:

- Redtop..... 63
- Seed Sowing..... 63
- Re seeding old pasture..... 64
- Timothy..... 64
- Items..... 61

RURAL ARCHITECTURE:

- Design for a School House (Ill.)..... 64
- A Contrast..... 64

IMPLEMENTS OF HUSBANDRY:

- An Original Harrow..... 65
- A New Horse Yoke..... 65
- Old Peajors..... 65
- An Improved Horse-Trough..... 65
- The Pitchfork as an Indicator..... 65

HORTICULTURE:

- Planting Evergreen..... 63
- Fine Dilight..... 63
- The Most Profitable Apples..... 66
- Hardy Apples..... 66

THE FRUIT GARDEN:

- Essentials in Grape Culture..... 66
- Keeping Grapes in Winter..... 67
- Raspberry Cultivation..... 67
- The Black Raspberry..... 67
- Items..... 67

THE VEGETABLE GARDEN:

- Cultivation of Carrots..... 63
- Onions..... 68
- Leeks..... 63

THE FLOWER GARDEN:

- Plants in Rooms..... 68
- Monochromes..... 63
- Items..... 68

BREEDER AND GRAZIER:

- Cotswold Ram "Palmer" (Ill.)..... 69
- Profit of well-bred Pigs..... 69
- Watering Stock in Winter..... 69
- Facts in Fatstock Cattle..... 69
- Berkshire and Poland Chinas..... 69
- Worthless Warrantices..... 69
- Items..... 69

THE APIARY:

- How to Begin Bee-Keeping..... 70
- Hosmer's Management of Bees..... 70

CORRESPONDENTS:

- Treatment of Milk Cows..... 70
- Pure Water, a Desideratum..... 71

EDITORIAL:

- Recuperation of Exhausted Farms..... 71
- Canada Short-horn Herd Book..... 71
- Notes from the Ontario Free Grant Lands..... 72
- An Agricultural Education..... 72
- Farm Life in Germany..... 72
- A Clerk's Success on a Farm..... 72
- Agriculture vs. Other Occupations..... 72
- American Dairymen's Association..... 72
- College made Farmers..... 72

AGRICULTURAL INTELLIGENCE:

- Agricultural and Horticultural Societies' Officers for 1874 (Con.)..... 73
- Freston Great Horse Fair..... 73
- Prospects of the European Grain Trade..... 73
- Fresh Meat for England..... 73
- Items..... 73

THE DAIRY:

- Ontario Dairymen's Association..... 71

POULTRY YARD:

- Plymouth Rocks (Ill.)..... 76
- Poultry Notes—No. 4..... 76

AGRICULTURAL CHEMISTRY:

- Formation of Fat..... 77

MISCELLANEOUS:

- Oysters Growing on Trees..... 73
- Table of the Comparative Value of Bushels and Centals..... 78
- Large Profits on Small Farms..... 78
- Canadian Slate..... 79
- Farmers Troubles..... 79
- Wages in Europe..... 79
- Blind Your Business..... 79
- Capacity of Cisterns..... 79
- Cultivation of the White Ash..... 79
- Items..... 79
- Advertisements, &c..... 80

Advertisements.

SEEDS!

SPOONER'S

Prize Flower Seeds.

SEEDS!

12 varieties Splendid Aster Seeds, mailed to applicants upon receipt of \$1.00. New Illustrated Seed Catalogue, free. Address Wm. H. Spooner, 4 Beacon St., Boston 1m-11-1-St.

SEEDS!



My business is to supply what every farmer of experience is most anxious to get, perfectly reliable Vegetable and Flower Seeds. With this object in view, besides importing many varieties from reliable growers in France, England, and Germany, I grow a hundred and fifty kinds of vegetable seed on my four seed farms, right under my own eye. Around all of these I throw the protection of the three warrants of my Catalogue. Of new vegetables I make a specialty, having been the first to introduce the Hubbard and Marblehead Squashes, the Marblehead Cabbages, and a score of others. My Catalogue containing numerous fine engravings, taken from photographs, sent free to all. 11-5-44 JAMES J. H. GREGORY, Marblehead, Mass.

NOW READY CROSSMAN BROS'S

Illustrated CATALOGUE and GUIDE to the Flower and Vegetable Garden, for 1874, beautifully illustrated, and containing a magnificent Colored Plate of screen new and popular flowers. Sent FREE upon receipt of stamp.

Address, Crossman Bros., Rochester, N.Y. 1m-11-1-Mt.

THE CANADA FARMER is printed and published by the LEO PATERSON COMPANY, at 26 & 28 King Street East, TORONTO, ONTARIO, on the 1st and 15th of each month. Price one dollar and fifty cents per annum, free of postage.