

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: / **Wrinkled pages may film slightly out of focus.**
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 checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

LOWER CANADA AGRICULTURIST

MANUFACTURING, COMMERCIAL, AND COLONIZATION INTELLIGNER;

OFFICIAL SERIES OF THE AGRICULTURAL BOARD AND SOCIETIES

PUBLISHED UNDER THE DIRECTION OF

M. J. PERRAULT,

*Member of the Provincial Parliament for the County of Richelieu.
Pupil of the Royal Agricultural College of Cirencester, Gloucestershire, England
and of the Imperial Agricultural School of Grignon, Seine and Oise, France
Member of the Imperial Zoological Society of Paris, &c.*

1864.

ALMANAC.

1864.

JANUARY.							APRIL.							JULY.							OCTOBER.																																																									
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S																																																			
..	..	..	..	1	2	..	..	..	..	..	..	1	2	..	..	..	..	..	..	1	2	..	..	..	..	1	..	..	..	..	..	..	1																													
3	4	5	6	7	8	9	3	4	5	6	7	8	9	3	4	5	6	7	8	9	3	4	5	6	7	8	10	11	12	13	14	15	16	10	11	12	13	14	15	16	10	11	12	13	14	15	16	9	10	11	12	13	14	15	9	10	11	12	13	14	15																	
10	11	12	13	14	15	16	10	11	12	13	14	15	16	10	11	12	13	14	15	16	10	11	12	13	14	15	16	17	18	19	20	21	22	23	17	18	19	20	21	22	23	17	18	19	20	21	22	23	16	17	18	19	20	21	22	16	17	18	19	20	21	22																
17	18	19	20	21	22	23	17	18	19	20	21	22	23	17	18	19	20	21	22	23	17	18	19	20	21	22	23	24	25	26	27	28	29	30	24	25	26	27	28	29	30	24	25	26	27	28	29	30	23	24	25	26	27	28	29	23	24	25	26	27	28	29																
24	25	26	27	28	29	30	24	25	26	27	28	29	30	24	25	26	27	28	29	30	24	25	26	27	28	29	30	31	31	31	31	30	31	30	31	30	31

FEBRUARY.							MAY.							AUGUST.							NOVEMBER.																																																	
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S																																											
..	1	2	3	4	5	6	1	2	3	4	5	6	7	..	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5																			
7	8	9	10	11	12	13	7	8	9	10	11	12	13	14	7	8	9	10	11	12	13	7	8	9	10	11	12	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	13	14	15	16	17	18	19																					
14	15	16	17	18	19	20	14	15	16	17	18	19	20	21	14	15	16	17	18	19	20	14	15	16	17	18	19	20	21	22	23	24	25	26	20	21	22	23	24	25	26	27	20	21	22	23	24	25	26	27	28	29	30	27	28	29	30	27	28	29	30
21	22	23	24	25	26	27	21	22	23	24	25	26	27	28	21	22	23	24	25	26	27	21	22	23	24	25	26	28	29	30	31	28	29	30	31	28	29	30	31	28	29	30	31	28	29	30	31								
28	29	28	29	30	31	28	29	30	31	28	29	30	31															

MARCH.							JUNE.							SEPTEMBER.							DECEMBER.																																															
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S																																									
..	..	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3												
6	7	8	9	10	11	12	6	7	8	9	10	11	12	6	7	8	9	10	11	6	7	8	9	10	11	12	4	5	6	7	8	9	10	4	5	6	7	8	9	10	11	12	13	14	15	16	17	4	5	6	7	8	9	10	4	5	6	7	8	9	10	11	12	13	14	15	16	17
13	14	15	16	17	18	19	13	14	15	16	17	18	19	20	13	14	15	16	17	18	19	20	13	14	15	16	17	18	19	20	21	22	23	24	18	19	20	21	22	23	24	18	19	20	21	22	23	24	18	19	20	21	22	23	24	18	19	20	21	22	23	24						
20	21	22	23	24	25	26	20	21	22	23	24	25	26	27	20	21	22	23	24	25	26	27	20	21	22	23	24	25	26	27	28	29	30	..	25	26	27	28	29	30	..	25	26	27	28	29	30	..	25	26	27	28	29	30	31	25	26	27	28	29	30	31						
27	28	29	30	31	27	28	29	30	27	28	29	30	27	28	29	30													

OFFICE—BOARD OF AGRICULTURE, 108 CRAIG STREET,
MONTREAL.

AGRICULTURAL REVIEW.

JANUARY.

CONTENTS:—Agricultural Review—Official Department.—Meeting of the Board of Agriculture, for Lower Canada, on the 16th December, 1863—Examination of Mr. Schmouh, as professor at the Agricultural school of St. Anne—Regulations for the further examination of professors of Agriculture—Formation of nineteen scholarships: in favour of nineteen pupils to the Agricultural schools of St. Anne and St. Thérèse—Petition to the Legislature praying that a special grant be made for the encouragement of Agricultural education—Circular for the Board of Agriculture for the organization of the Agricultural Board and Societies—**Editorial Department:**—Winter evenings on the farm—Cold weather, and nothing to do—The farmer a manufacturer—Education of the farmer—Scraps from an English farmer—German economy.—**Farm Operations.**—Purchasing and clearing land—Experiments with potatoes—Covering manures—Depth at which it should be applied—Necessity for more barn-yard manure—**Breeder's Department.**—Are pigs profitable—Selecting ewes for the ram—A profitable stock of fowls—Keeping cattle, horses and sheep together—Winter feeding of stock—Product of ten cows—New method for salting cheese—Sheep-stables and sheep-yards—Teaching horses not to kick—Bruised oats for horses.—**Engineering Department.**—Thrashing grain by water power—Stirring the soil—Cultivators vs. Plows—The Roller—Potato digger—New steam carriage—Farm implements and machinery—The farmer's workshop—The grindstone.—**Horticultural Department.**—The garden—Rabbits among fruit trees—Keeping apples—Rearing pear trees from seed—System employed by M. Gregoire-nolis of Jodoigne—Propagating the currant—Apple scions—How to grow big, crisp celery—House plants in Winter—The pleasures of a garden.—**Domestic Economy.**—Smoking meat—To make the best sausages—Plain mince pies—A plain pudding—To roast a turkey—Good way of Cooking Outons—How to polish Shirt bosoms.—**Commercial Review.**—Montreal Markets.

Official Dep't.

BOARD OF AGRICULTURE FOR LOWER CANADA.

Montreal, 16th December, 1863.

Members present:

- Honble L. V. Sicotte, President.
- " P. U. Archambault.
- " P. J. O. Chauveau.
- " U. Tessier.

Rev. F. Pilote.

The President, having been seated, and having explained the object of the meeting, called the attention of the Board to a letter from the Rev. F. Pilote, praying that the Board be pleased to examine the certificates of capacity of Mr. J. Schmouh, as Professor of Agricultural Chemistry.

Mr. Schmouh's Essay being read, the Board declared—

That, from the facts laid before it, Mr. J. Schmouh, Chief Professor of Agriculture and Chemistry at the Agricultural School of Ste. Anne's College (Kamouraska), is entitled to a certificate of capacity as Professor of Agriculture and Chemistry; consequently the Board hereby grant such certificate of capacity, in conformity with an order in Council, bearing date the 11th September, 1863.

Resolved, That the Honble P. J. O. Chauveau and Honble U. Tessier be named to prepare regulations for the examination of professors of Agriculture, and that after the adoption of such regulations, every professor claiming a portion of the public allowance, shall be held to submit himself to such regulations as shall have been passed, notwithstanding any anterior certificate of capacity given by the Board.

Resolved unanimously, That the sincere thanks of the Board be given to Messrs. H. Taylor and D. Torrance for the liberal manner with which they put, at the disposal

of this Board, certain lots of land for holding the Provincial Agricultural Exhibition in this city, and that a copy of this resolution be sent to each of these gentlemen.

The Secretary laid on the table an account for medals ordered by the Board of Arts and Manufactures. The Board decided not to pay the account without further explanations on the subject.

Resolved, That Georges Leclerc, Esq., Secretary of the Board of Agriculture for Lower Canada, be authorized, and is hereby authorized, to appear in Court to answer to certain questions in the case of John E. Lafond et al. vs. Telesphore Chagnon and the Board of Agriculture *tiers-saisie*.

Resolved, That fifty copies of La Revue Agricole and of the Lower Canada Agriculturist be sent to be half-bound, and twenty-five of each to be bound in pasteboard; and that the Secretary be instructed to keep not less than twelve copies for the use of the Board.

Resolved, That the Secretary report at the next meeting on the number of periodicals belonging to the Board, since its formation, he has on hand, and of the means of completing the collection, so as to have twelve of each.

Resolved, That a sum of nine hundred dollars be appropriated towards the encouragement of Agricultural Associations, by means of the formation of nineteen scholarships (*demi-bourses*) of fifty dollars each (\$50), ten of which will be ascribed to the Agricultural School of the College of Ste. Anne's (Kamouraska), and nine to the Agricultural School of Ste. Thérèse, distributed in the following manner, viz.: one scholarship (*demi-bourse*) for each of the nineteen law Districts of Lower Canada; that the choice of the individual who is to

be benefitted by the scholarship (*demi-bourse*) shall be made by the Presidents of the Agricultural Societies in each law District, and in the manner assigned by the Board of Agriculture, before the 15th day of May of each year; and should the Presidents fail in making the said choice between the 1st of January and the 1st of May of each year and report thereon, the choice will then be made by the Board of Agriculture.

The year for instruction for Ste. Anne's College will begin on the eighth of July, and for the College of Ste. Thérèse on the.....

Resolved, That a copy of the preceding resolution be sent to the Directors of each of the Colleges of Ste. Annes and Ste Thérèse.

Resolved, That the Board of Agriculture, through the medium of its President, present an address to Parliament and to the Government for a special grant for the encouragement and maintenance of agricultural education and instruction.

Resolved, That five copies of the *Revue Agricole* for 1862-63 be given to the Rev. F. Pilote for the use of Ste. Anne's College, and two to the Agricultural School of Rimouski; and the Board adjourned.

By order, GEORGES LECLERE,
Sec. B. A., L. C.

BOARD OF AGRICULTURE FOR LOWER CANADA.

Montreal, December, 1863.

To the Secretary of the County Agricultural Society.

SIR,—I am directed by the Board of Agriculture for Lower Canada to acquaint you that your Society will have to elect four persons, to be Members of this Board, in place of those who retire by rotation, namely: Hon. P. U. Archambault, O. E. Casgrain, B. Pomroy, and Dr. J. C. Taché. These gentlemen are nevertheless eligible to be re-elected. The Report of Election of the four Members to this Board is to be sent at once to the Honorable the Minister of Agriculture, Quebec.

I am also directed to remind you that your Society must be re-organized early in the third week of January next, according to Section 4, 20 Vic. Ch. 49. A copy of the proceedings of the re-organization, with the name and address of every office-bearer, must be sent at once to this Board to ensure publication in the Official Journal before the 1st of February.

I have the honor to be, sir, your obedient servant,

GEORGES LECLERE.

EDITORIAL DEPARTMENT.

WINTER EVENINGS ON THE FARM.



HE leisure hours brought by this not altogether unpleasant season of the year, afford abundant opportunities for the intellectual improvement of those who may feel inclined to advance themselves in this direction; and especially should the younger members of every country household advantageously employ the time thus given them, and strive, by their zeal and industry, to make amends for the usually limited advantages they enjoy for mental and social culture. Activity is the normal condition, not only of the body, but of the mind. Very few young persons are of such sluggish, mental temperament, as to be entirely insensible to the pleasures to be derived from the exercise of the intellectual faculties, while the majority of them have a natural and innate desire for such enjoyments.


Away from the city, the country bar or

store-room is too often the resort of young persons, who might employ their time more profitably than in listening to the rude joke, coarse witticism, and tedious story, which always find attentive appreciators in such places. The fact that they will sit for hours and eagerly hearken to the recital of such things, is evidence that they could interest themselves in something better, were proper influences used to effect such a result. The question then arises, cannot home be made sufficiently attractive to induce them to discontinue their visits to such unprofitable resorts? We think so. If parents (we speak only of the country) would only interest themselves a little more in the educational welfare of the children, provide them with books, newspapers, periodicals, &c., and encourage them to read them, a desire for knowledge would gradually grow upon them, till at last their minds would become engrossed in the new and substantial delights of learning, and their

former associates be denounced as unfit companions for social intercourse.

The fires of knowledge once lighted are not easily quenched; as the flame grew stronger, heavier fuel would be required. The long evenings of winter would be devoted to study and improvement, everything not perfectly understood would be investigated, nature's acquaintance would be more closely cultivated, her beautiful processes of growth and decay would be watched and wondered at, and farm life regarded as something more than mere manual drudgery. Agriculture would be known as a *scienza* worthy the attention of the weightiest minds. But are these things so? We fear not. Here then is a wide field for reform. It has even now, we are happy to say, many noble workers in it. But the harvest is very, *very* heavy, which makes the reapers seem fewer.

COLD WEATHER AND NOTHING TO DO.

OMETIMES we hear persons who follow farming for a living (I cannot call them farmers) say that they have nothing to do in the winter but fodder their cattle and feed their horses, but much more frequently we see them practice it; and this is the reason why farming don't pay, though not the only "Nothing to do!" I have seen farms where this is the rule, and I hope there are not many like them. No preparation for another year, as if this were the last one we had to live. No caring for the stock, as if they were to be of no value when winter was over.

This will not pay. I do not wonder that some farmers have a hard time in making all things meet, to say nothing of saving anything. Winter is just the time when a farmer should be busy. In summer he has to be and in winter he ought to be always at work. If he has a tool-house he will find work for much of his time in repairing or renewing rakes, forks, hoes and sundry farm tools, or fixing his plows or harrows, repairing harness, and setting all to rights generally, so that he will be ready to start work as soon as the weather is ready for him. Again, winter is the time to make and save manure. Keep the cattle well littered and well fed, and take good care of them, and do not turn them out to shift for themselves by the fodder stack, or even throw fodder about the field for them to stand in the cold wind or storm to eat.

Cattle fed in this style do not show much on the profit side of the account. Give the barnyard a plentiful coat of straw whenever needed, and feed in good racks under cover, and I know it will pay. Do not think all the grain fed on the farm is lost because you do not realize money for it by selling it. Next year's crop will pay for it if the animals that eat it do not. Let a farmer attend to all these things, and he will have no time to waste at the village store or tavern, nor will his hours at home hang heavy on his hands. Keep all things neat about the barn and stable, and above all things let them be clean. I have known some farmers not to clean out their stable entries during the whole winter, but throw down hay, use what they need and let the rest lay for the chickens to scratch over and soil, and at next feed time throw more down and scrape up all together and feed to their horses or cows. This is slovenly and wasteful. Animals, unless half starved, will not eat hay which poultry have been much among, without wasting a great deal; and a much less quantity of good clean hay, fresh from the mow will be more acceptable to them.

A farmer's character shows in his barn and yard. A sloven in practice, there is generally a sloven everywhere else. Carelessness there shadows forth the same in house and on the land, and that man will not get rich, or even live in comfort. He will be a grumbler and continually telling you "farming don't pay."

But farming will pay, and does pay, but the only way to make it pay is to mind the little things, that, taken all together, keep adding to the farm as well as the purse. Let there be no idle time, therefore, winter or summer, in *sunshine or storm*; for the old proverb, that

"Satan finds work for idle hands to do,"

will apply to farmers as well as other people.

It is a saving of money to have a tool-house and a few good useful tools in it. A farmer can make so many little things he is constantly in need of, instead of having to get them made, and taking the time when it cannot well be spared. Rakes, fork handles, swingletrees, &c., often break, but tools at home will keep a full supply on hand ready for accident. I know farmers that do all these things; and what one man does another may do.—*Germantown Telegraph.*

THE FARMER A MANUFACTURER.

FVERY farmer, great or small, is a manufacturer. In the manufactory which he superintends, is made butter, cheese, beef, pork, corn, wheat and potatoes—in fact, all the real necessities of life. No other manufacturer is engaged in a work of so much importance. We could get along without manufactories of silk, cotton, or woollen goods, but let the factories that make our bread and meat cease to work, and ruin—death in its most horrid form—would stare us in the face. There is no work that requires more thought and care—none that makes greater calls for the exercise of the highest faculties of the mind, than farming. To no man, in any position of life, is a general knowledge of the wonderful lays of nature of more importance than it is to the farmer. Cotton, it is well known, can be made into cotton cloth, and wool into blankets and broadcloths; but the great question with the manufacturer, is, how this can be done by a judicious selection of materials, and skill in their manufacture, as to afford a profit over cost. On his wisdom in this respect, depends the all-important question, whether his business is a success or a failure. Manure and labor will manufacture crops to an almost unlimited extent; but on the cost of this manure, and the way and purpose for which it is used, depends the success or failure of the farmer—the fact whether or not he makes these crops at a profit over cost.

The farmer, like the manufacturer, pursues his business to earn a livelihood for himself and family, and to accumulate a small store for a rainy day. No manufacturer would boast of his large productions, or think that he was doing a business that he had reason to be proud of, if what he made, cost all it was worth in its production. The farmer may grow sixty or seventy bushels of wheat to the acre, and proclaim the fact all over the country—obtain the first premium for the largest crop grown in the State or nation, and the wonderful performance be heralded through all the papers in the land; yet, this large crop cost more in its manufacture than it would bring in the market, what has been gained, and who would like to follow such an example for a living? The farmer that raises thirty bushels, at a price that would allow him a fair profit over cost, would be far more worthy of praise and imitation. He that can make corn and wheat at the lowest possible price, and meat and butter cheaper than his neigh-

bors, is the best farmer; it being always understood that he is not using up his capital—the fertility of his soil.—*Rural New-Yorker.*

EDUCATION OF THE FARMER.

WE propose, in a free and easy way, to express some of our views on this important subject. And we respectfully ask our brethren of the plow to give the considerations we shall present, their candid and earnest attention. We promise to keep within the bounds of propriety as we understand them, and to say nothing that shall do our friends any hurt. We may amuse, if we do no other good—we shall try to do more. Will our readers do us the favor—and may it be a favor to them also—to walk along with us in this discussion, and hear what we have to say.

The first and leading idea in the word Education, is to *draw out* the powers of the mind, and thus invigorate them, give them form and shape, and ability for accomplishing any mental labor to which the mind may be called. The business of education therefore, is properly not to impart a knowledge of facts, but to teach men to think, to investigate, to reason. A man may treasure up facts on any and every subject, till his mind becomes a perfect storehouse of materials for thought and investigation, and yet be a perfect baby in real useful knowledge, because his facts are unclassified, undigested, and therefore unavailable. He is like a man who would gather up tools of every art, profession, and business, and lay them in a promiscuous heap, or scatter them around without order or system. He has the tools to work with, but they are useless, for he never knows where to find them, whether they are in order, or how to use them. For all practical, useful ends, he might as well be without them.

A man possessed of such a storehouse of facts, may astonish the ignorant, with what seems to them marvellous displays of learning, while his mind is a perfect chaos of ambiguity, uncertainty and error. He makes a good story teller, but a worthless reasoner.

This discipline of mind—which is almost the sum total of education, without which, most of what is called education nearly amounts to just nothing at all.

These remarks apply not merely to farmers, but to every body. They are as true of one class as of another. That man can

be most useful, to himself or others, in any profession or business, who has most of this discipline of mind. But let us not be misunderstood. We do not say a farmer should spend all his time in the study of books—or half of it. He cannot do it, unless he is able to live and carry on his business without much personal labor. But he must learn to think. He must study nature as well as books. He must not be

“The wretch who holds it heresy to think,
Who loves no music but the dollar’s clink,
Who, gazing where Niagara’s torrents thrill,
Exclaims, ‘Oh what a stream to turn a mill!’”

He must love nature, study her, and learn from her; and the “almighty dollar” must not be the highest object of his worship.—
Grand Haven Union.

SCRAPS FROM AN ENGLISH FARMER.



NE of the best farmers in England is Alderman Mechi, of London, who owns a large estate near that city. Here are a few good hints from his pen:

—The history of prejudices (in agriculture as elsewhere) has always been the same, viz.: resistance to innovation and disbelief of progress; but that is no justification of despair; on the contrary, the evidence of all time shows that we must fight manfully against the old enemy, and that we shall overcome him by degrees.

—The want of drainage on clays is ruinous.

—The quantity of meat made on a farm per acre determines the quantity of grain grown. It has often been remarked that amidst miserable land and wretched farming the laborer’s cottage garden is like an oasis, but it receives, independently of deeper cultivation, 32 times the farmer’s quantity of manure, for he knows that on his eighth of an acre of land he cannot expect a crop unless he keeps a pig to make manure.

—On well laid out land, with few fences, good drainage, and good roads, there is actually much less cost of labor, than on a poor, undrained farm, with wide and irregular hedges, green lanes, and choked up ditches; as most of my work is done by the piece, I can estimate the difference with accuracy.

—Let him who enters on farming make up his mind to great vicissitudes in price, and in some degree to quantity and quality.

It is the history of the past, and will be of the future. If the average is remunerative, it is all we can expect.

—If you buy five per cent. too dear, and sell five per cent. too cheap, your farming profit is gone. Bear in mind that there are in every market men who are keen and thorough judges of every article. If you are not so, you must find some judge to act for you, otherwise you will soon fall a victim to superior power.

IRON AS MANURE—A farmer once told me he manured his land with iron, and explained that it was the plow which furnished his manure. This is literally true, for there is a love between the air and the soil, which ends in a fructifying attachment if you will but expose them to each other’s influence.

—The advantage of deep cultivation is particularly shown immediately over the drains, where the earth has been deeply disturbed; many people fancy that it is because it drains quicker, but the truth is that the air has more ready access to the soil.

—Management is a comprehensive term; it implies the right man in the right place, and the right thing done at the right time. In every undertaking, warlike or peaceful, it is alike essential, but particularly, so in agriculture, where the fluctuations in weather render forethought and promptitude an essential for profit.

—Let agriculture form an honorable portion of our general education—why should it not? Let Tull and Tusser range side by side with Homer and Virgil. Agricultural education and apprenticeships for our young farmers are imperative.

—The question of what *may* be profitably produced from an acre of land, is a very important one. Professor Playfair, (a first-rate authority,) has, I believe, stated that £250 can be and has been produced from one acre of market garden in one year; and we all know full well that in all gardens the produce is abundant compared with field culture. Why it is so, needs no reply. “At blithesome morn and dewy eve,” the crowds of men, women, and children issuing from market gardens are living solutions of the problem, and stand in charming relief to the solitary farm laborer, alone in a twenty acre field, or scattered here and there over an extensive district, like plums in a school pudding.

—Starvation, to either man, beast or plants, will reduce them to mere skeletons; abundance of suitable food, with cleanliness

and warmth, will make them comparative giants. The concentration of manure and its consequences, are plainly exemplified at our flower shows, where enormous masses of flowers and foliage are produced by one solid foot of prepared earth. In a state of nature forty times the quantity of soil would fail to produce similar results. No doubt the frequent application of moisture, when requisite, assists in producing this effect; but a knowledge of this fact should stimulate us to study irrigation, and apply our liquid manure to the roots when the plant is in vigorous growth, instead of wasting it in our horse-ponds. I know and can appreciate practically the effects of such applications.

—The necessity for diminishing the fixed expense by an increased produce, is illustrated by the statement of a first-rate north county farmer, who says that if he spends £1 per acre, or £600 per year, for artificial manures, he makes a profit—if he omits it he makes a loss. If stock is too dear, or you are short of capital, plow in green and root crops—particularly on heavy land.

—I may be asked why I attach so much importance to drainage. Why, you might as well ask me, why I attach importance to circulation, vital or momentary. Stagnated water, or stagnated air, are as ruinous to the plants as they would be to our own vitality. Fix a cork in the drainage-hole of your flower pot, and you will soon have a practical illustration of my meaning.

Essential Preliminaries to Profitable Farming.

A thorough knowledge of your business, practical and theoretical.

Ability to buy in the cheapest, and sell in the dearest market.

—To select the most able workmen of industrious and honest habits.

—To apportion rightly your land and capital.

—To maintain in economical efficiency the motive power, whether horse or steam.

Deep, frequent and clean cultivation.

Drainage of land not naturally filtrative.

Shelter for stock.

Efficient machinery and farm implements.

Ample (and judicious) use of purchased food and manure.

Rigidly correct farm accounts, posted daily from the cash book and journal.

Estimates of the cost and return of each crop in detail.

—Before I hired a farm I would take with me a laborer, and dig a hole in every field, to the depth of two or three feet, that I might know the character of the subsoil, for herein lies the prospect of your success or failure. The agricultural pie-crust, or plowed soil, to the depth of five inches, always looks pleasant enough and dark, but inside the pie you will too often find a most miserable contrast, inconceivably at variance with the deceptive surface which has been so long cultivated and aerated. There is nothing more instructive than the contents of a 5-foot drain cut through a field. Mere contents, when exposed to day-light, appeal forcibly to agricultural common sense with reproachful truth. It is in that five feet of subterraneity that you must look for your agricultural profit or loss; and yet I have seen many farms hired without a spadeful of earth being moved or examined; and I have seen many farmers, in a very brief period, leave farms so hired, minus their capital.

GERMAN ECONOMY.



LATE tourist in Germany describes the economy practised by the peasants as follows:—

“Each German has his house, his orchard, his roadside trees so laden with fruit that did he not carefully prop them up and tie together, and in many places hold the boughs together by wooden clamps, they would be torn asunder by their own weight. He has his corn plot, his plot for mangel wurzel or hay, for potatoes for hemp, etc. He is his own master, and therefore he and his family have the strongest motive for exertion. You see the effects of this in his industry and economy. In Germany nothing is lost. The produce of the trees and the cows is carried to market. Much fruit is dried for winter use. You see wooden trays of plums, cherries and sliced apples laying in the sun to dry. You see strings of them hanging from the windows in the sun. The cows are kept up in the greater part of the year, and every green thing is collected for them. Every little nook where the grass grows, by the roadside, river and brook, is carefully cut by the sickle, and carried home, on the heads of women and children, in baskets, or tied in large cloths. Nothing of the kind is lost that can possibly be made of any use. Weeds, nettles, nay the very goose-grass which covers the waste places, is cut up and taken for the cows. You see

the little children standing in the streets of the villages, and in the streams which generally run down them, busy washing these weeds before they are given to the cattle.

They carefully collect the leaves of the marsh-grass, carefully cut their potato tops for them, and even, if other things fail, gather green leaves from the woodlands.

FARM OPERATIONS.

PURCHASING AND CLEARING LAND.

THOSE who decide upon purchasing wild land should be exceedingly cautious in every stage of the business. Everything depends upon making a good selection. The intending purchaser should not be in too great a hurry to get settled. Although it is desirable that he get a home as early as practicable, and begin his arduous labors, it is poor policy to purchase without much consideration. It is of the very highest importance that he see the land before purchasing it. On this point we cannot be too urgent. As a general rule, it is unsafe to buy land on the strength of a glowing advertisement, or the representations of ordinary land agents. We repeat, buy no land until you have seen and carefully examined it.

Before giving a few hints, which the purchaser will find useful in deciding upon the quality of land, it may be well to notice a few points which should claim his attention. The very first inquiry should be concerning the healthfulness of the proposed purchase. If it be in an unhealthy region, refuse to have anything to do with it. Of what avail will be rich land, abundant harvests, numerous flocks and herds, if, with them all, there is a constant liability to bilious and other diseases, which prevail in certain localities? A bare subsistence, with ruddy health, is far preferable; and this the settler will learn by sad experience, if he sit himself down beside some sluggish stream, or on some fever-breeding marsh. See to it, that the general character of the country for health is good. It cannot be expected that the new and rich regions of the West will be as healthful as the poorer and better settled ones of the East.

It is also desirable that the settler make his location as near a good market as possible. There will be less difficulty on this point than might be supposed. The numerous rivers, lakes, and canals, which are to be found in the various places to which the purchaser's attention will be likely to be directed, render access to markets tolerably convenient. During the three or four

months in which the snow lies on the ground, the farmer is furnished with a beautiful natural turnpike, better than any macadamized road in the world; and this occurs at a season when he has leisure to take his produce to market and visit his friends at a distance.

It is important, also, in making a choice of a location, to have an eye to the convenience of churches, schools, medical men, a post-office, and the like. All these things are very desirable, and to secure them it were better to pay a higher price for the land. Let the settler make particular inquiries on these points. It is not difficult to find locations with all these advantages; but as land may be offered where they do not exist, it is well that proper inquiries be made. The reader should not take it for granted that they are to be found in every place to which his attention may be directed.

The convenience of a grist-mill should not be overlooked. We have known of great hardships endured in some places from the want of means of getting bread-stuffs properly ground. It will be well to make particular inquiries on this point before purchasing.

In short, let the settler consider the various conveniences which will render his life and that of his children comfortable; and in the outset secure as many of them as he can. It is far better to buy a small quantity of land with good advantages, than a large quantity without them. Your children will need instruction, and you should not place yourself beyond the reach of schools, or the prospect of schools at an early day; the time of sickness will come, and you will want medical attendance; the hour of mourning and serious reflection may arrive, and the consolations of religion from the lips of a Christian minister will be truly welcome. See, therefore, that there be a prospect of having all these things at no distant day in your new home.

The quality of land may be judged of by the following general rules: Throughout Canada, land which is timbered should have growing upon it tall and strong hard tim-

ber, such as maple, elm, beech, bass-wood, cherry, hickory, white-ash, butternut, and the like. If the land on which any of these kinds of timber is found be dry, as it usually is, it is good. The trees should, as a general rule, be tall, and branching only near the top. A large hemlock occasionally among the timber is no bad sign. Land which bears the timber we have now named, or some kinds of it, is sure to be good. If the trees be low in size, and scraggy, the soil is clayey and cold, and inclined to be too wet for cultivation. The trees which grow on wet and swampy lands are the oak, pine, hemlock, spruce, balsam, tamarack, black-ash, and cedar; but the pine and hemlock are often found on dry soil, and so is the oak.

Some people judge by the surface of the land also. This is not always a safe criterion. If the land appears uneven, rising into little knolls or knobs, they reject it, thinking that the knolls are caused by rocks and large stones beneath the surface. This is not right. In Canada, the old settlers do not reject a piece of land because of its uneven surface. Quite the contrary; for they know that the more uneven the land appears with these small heights and hollows, the better the soil probably is. We have known really sagacious purchasers to take a small iron rod, a ramrod for instance, into the woods with them, and run the rod into the knobs and knolls to ascertain what they were composed of. This is a very good plan. The end of the rod should be sharpened. By this means you can tell whether the subsoil be clayey or the reverse, which you could not otherwise so readily determine, as the top of all soils is usually covered with a black mould of decayed vegetable matter.

A lot should not be rejected if a corner of it is covered with black-ash, pine or cedar. For fencing the cleared fields, black-ash and cedar are invaluable. For boards and shingles, the pine is of great value.

Having entered into contract for such a quantity of land as you have reason to believe you can pay for, have it surveyed. Do not omit this. You will thus avoid any trouble that might otherwise occur.

The average price for clearing land may be set down at about ten dollars the acre. Persons can always be found who will contract at this price.

The next thing to be done, is to build some sort of a dwelling. The log shanty is usually the first a settler builds. It is an

exceedingly comfortable dwelling, cool in summer and warm in winter; and if white-washed every year, and clambering vines made to run over it, it is a very pretty one. It is speedily built, and if necessary, the settler can build it all himself.

Having got up a shanty or a log-house, the next step will be that of clearing. The emigrant will now be disheartened, perhaps. It will seem a long and dreary work to lay the giant forest low, and make of the wild land, fruitful fields. But as he proceeds, he will find it less difficult than he had supposed. After the lapse of two or three years, order will begin to reign, and he will be more than satisfied.

In clearing, the first thing is to lay out in as regular a shape as possible, the land designed to be cleared the first season. A portion of this, say one or two acres, should now be underbrushed, that is, the small growth of wood and bushes all cut up. If there are any old logs or trees lying on the piece to be cleared, cut them up into fifteen-foot lengths. Having thus made clean work of the underwood, go to work, and cut down all the trees, clean as you go, with the exception of the rail-timber which may be growing on it, such as black-ash and cedar and such other woods as the country furnishes for rails. All this should be saved and cut down last and taken care of.

In clearing, the trees are usually cut down at that distance from the ground which is most convenient for the man who uses the axe—say about breast high.

Having felled the trees, the next step is to cut them into logs, of a size convenient to be drawn into piles for burning. These logs should be about fifteen feet in length—say five paces. Go on with this till all the trees you have cut down are chopped into logs.

Now cast your eye around, and see where the heaviest logs lie, and if these be in tolerably convenient spots, make them the centres of different piles. Now, with your oxen and log-chains, draw the logs to these piles. This is called logging. Now pile up the brush into heaps, ready for burning. The log-heaps may be made small, if it be a dry time; if not, they must be large. No particular instructions can be given on this point; the settler must be guarded by his own judgment, and by the example of others. The logs and brush thus piled, take occasion of the first dry time to set fire to them. They will soon consume, if the weather be at all favorable. The ap-

pearance of a new country by night, when this is going on, is exceedingly picturesque and beautiful. The fires light up the surrounding forest with great brilliancy; and one fancies that he is walking amid the aisles of some gorgeous, though unearthly temple. If upon the forest there be the drops of a passing shower, or of the dew, they glitter in the brilliant light like living diamonds.

And even by day these clearings have a picturesque and interesting appearance. When the air is still, and the blue column of smoke rises like a tall fairy shaft, up to the heavens, contrasting with their deeper blue, it seems as if it were a monument of praise to the noble pioneers who are thus willing to bear the heat and burden of the day.

The system of clearing by slashing as it is termed is not a good one. By all means avoid it. Girdling trees, leaving them to decay of themselves, and after they have fallen to burn them, is another poor way of clearing. It is practiced, however, in many places, and has its advocates.

Having burnt the logs and brush on the lands, the ashes that remain should be made into "Black Salts," (if there be a good quantity.) An acre of well timbered land will furnish from seventy-five to one hundred and fifty bushels of ashes. Every four hundred bushels of ashes will make a ton of potash or pearl ash.

When the land is fenced it is ready for sowing.

In a year or two the stumps that remain should be set fire to, in a dry time in autumn, to hasten their decay. If any young twigs shoot out from them, cut them off at once. Keep everything tidy; the fences in good order, and the greensward from being trampled on, either by man or beast.

EXPERIMENTS WITH POTATOES.



R. Youngs presented a statement from Geo. R. Underhill, made to the Glen Cove Farmers' Club, relative to experiments with potatoes.

Report to the Glen Cove Farmers' Club, of a series of experiments on raising Mercer potatoes the present year: The principal object of the experiments was to discover some remedy against the depredations of the wire worm. Another object was to test the value of Bruce's Concentrated manure, fish scraps, shell lime and wood ashes, compared with

Peruvian guano. The last object was to determine the propriety of planting seed from large potatoes, or from those of medium size.

April 2d. Commenced planting a plot of $5\frac{1}{2}$ acres, a portion of the ground manured with New York stable manure at the rate of 90 carman loads to the acre, another portion with the same kind of manure 125 loads to the acre, the balance of the ground with hog pen manure 30 wagon loads to the acre; the manure was all placed in the furrows, the seed dropped on the manure. A portion of the plot was left without any additional manure; immediately adjoining it on four rows Bruce's Concentrated manure was added at the rate of 1360 lbs. to the acre, it added nothing to the crop, and the potatoes were as much eaten by the wire worm as on the rows adjoining. The next four rows with Peruvian guano, added at the rate of 680 lbs. per acre; increase of crop half the value of the guano; did not check the worms. Four rows with fish scraps added at the rate of 2400 lbs. per acre added to the crop two-thirds of the value of the fish, not more than two-third as many potatoes were eaten by the wire worms, as many potatoes were eaten by the fire worms, as in the previous experiments.

Four rows with fresh slaked oyster shell lime added at the rate of 120 bushels to the acre; no addition to the crop, and did not prevent the wire worm.

Four rows with fresh leached ashes; result the same as the last.

Eighteen rows with coal tar at the rate of 80 gallons per acre, reduced the crop one third, and did not prevent the aggressions of the wire worm.

Four rows with the addition of salt at the rate of 10 bushels per acre; there was no addition to the crop, but the potatoes were brighter colored, smoother, and not half as badly eaten as the others; probably if twice the quantity of salt had been used, there would have been none eaten.

All the ingredients used were placed on top of the manure, and in contact with the potatoes.

The yield was 1141 bushels of marketable potatoes, and 234 bushels of worm eaten and small potatoes, making the entire crop 1375 bushels, or 250 bushels per acre. The conclusions arrived at from the various experiments were, that from the addition of fish scraps there was the largest yield.

From salt the potatoes were much bet-

ter looking, and not so much injured by the wire worm.

When seed from large potatoes was used, the increased quantity of large potatoes, over that portion of the lot where the seed was cut from medium sized potatoes, was equal in value to twenty-five dollars per acre.

Where the largest quantity of stable manure was applied, there was the largest net profit.

To sum up, manure heavily with New York stable manure in the furrow, sow 20 bushels of salt to the acre on the manure, and plant with seed cut from large smooth potatoes. **GEORGE R. UNDERHILL.**

COVERING MANURE—DEPTH AT WHICH IT SHOULD BE APPLIED.

E. Thorne of Little Neck, said that he had been surprised at articles that had appeared in our agricultural papers, relative to farmers keeping their manure under sheds. He said a neighbor of his was accustomed to spread his manure on, and to allow it to remain exposed to the atmosphere until he was ready to plow it under. He is an excellent farmer and very successful in his agricultural operations. Mr. Thorne believed that the idea of housing manure was all ideal, and more theoretical than practical.

Mr. S. T. Jackson of Woodbury, advocated burying the manure deep and then to plow it upon the surface, and thus mixing it thoroughly with the soil.

Wm. Floyd Jones of South Oyster Bay, advocated surface manuring as most beneficial to the crop.

Geo. Allen of North Hempstead, concurred in the opinion above expressed, advocating spreading the manure broadcast upon the soil for corn particularly.

Jacob Smith of Centre Island, had excellent success in surface manuring. Had tried both systems side by side, and was satisfied that the shallow application of fertilizers is the proper course for farmers to pursue.

Isaac H. Cocks of Westbury, inquired whether it is deemed best to apply manure for potatoes in the fall or spring.

Jacob Mott of Newton, had seen the two practices pursued, and well rotted manure had produced decidedly the best results, when applied in the spring. Warm and fresh manure were apt to injure potatoes and prevent them from coming up.

Isaac H. Cocks believed that proper sheds for the covering of their manure might be beneficial if judiciously constructed.

S. B. Mersereau, Hempstead, had practiced covering his manure with sheds, and is of the opinion that it would be an economical practice.

Mr. S. T. Taber of Mineola, stated his practice was to put on as much as he could. He thought perhaps that the theories relating to the subject might be carried to extremes. Had applied pond mud the last year to wheat, and the effect at the commencement of the season was marked, but at the close of the season there was but little if any difference. Had also used pourette in the hill of corn with good success, but cannot say it is a cheap manure.

NECESSITY FOR MORE BARNYARD MANURE.

In this section a portion of the farming community, at least in my opinion, are rapidly coming to the conclusion that no special will take the place of barnyard manures, and that the latter must be had, from some source, at almost any cost.

To prove this we have only to look at many of the tobacco growers of our own State, who in order to obtain the requisite quantity of manure for this crop, in the autumn purchase stock, for the most part sheep, for winter feeding, and then purchase the corn to feed them with, expecting to get the returns for their expenditure, in a degree at least, in the amount of fertilizing matter thus produced. And, by the way, you have a most judicious article on this subject in the Co. GENT. of Dec. 10, "Feeding Stock for the sake of Manure," which I trust will be seriously pondered by many of the stock readers of your paper.

The question is really a fair one, and one which as yet seems unanswered—how, much, or in what proportion may I credit my manure heap with the expense of the grain fed to fattening stock?

In the article referred to you quote from Mr. Mecchi, who, it seems, feeds annually \$25,000 worth of food to his stock, a large proportion, I should judge, of which he purchases. Indeed this part of farming seems reduced to more of a system in England than with us, and we shall probably go on in imitating the English farmers in this respect (as well as many others) just as fast as we continue to approach them in the density of our population.

I have no doubt the valuation of manure is rapidly increasing in all the eastern section of our country, and the idea is also

gaining ground that no foreign substance will fully take its place in the successful cultivation of the soil.—*Country Gentleman.*

BREEDERS' DEPARTMENT.

ARE PIGS PROFITABLE?



HIS subject was discussed at a recent meeting of the Croydon Agricultural Club.

Mr. Wilson read the introductory paper. He said—

No doubt the profit of pig keeping depends in a great measure upon having a good breed, and on the management of them.

In an article on high farming read by the late Mr. Baker before the London Farmers' Club, some years since, that gentleman says—"A bushel of barley or pease has always been considered as equivalent to producing 8 lbs. of meat. Therefore, if the price of meat is less per stone than the grain per bushel, the difference is a loss, and *vice versa.*" Now, if I can show from others and my own experience that pigs do pay for the food they consume, and leave a small balance besides, I think it will be admitted that they are a profitable stock to keep. In some experiments tried at Mr. Lawes' farm, Rothamstead, with sixteen pigs.

	£	s.	d.
Four pigs were bought in at 41s. 6d.	8	6	0
Consumed 2650 lbs. of barley, at 37s. 6d. per qr. of 416 lbs. including grinding.....	11	18	10½
	£20	4	10½
99 stone 3 lbs. of pork sold at 4s. 4d. per stone, sinking the offal..	21	10	7½
Profit.....	£1	5	9

This experiment shows that the farmer obtained a good price for his barley, though the pork was sold at a low price. When I commenced farming, in December, 1857, I had one pig valued to me at £1 10s. In May, 1859, by purchases and breeding, the number had increased to 77, at a cost of £35 2s. 6d. At the latter date I had sold out for £133 4s. 5d., thus leaving a balance of £104 1s. 11d. for their keep. I then commenced again with two sows, and in twelve months I bred from them 39 pigs, and purchased 14, making together 55. In the succeeding twelve months I lost four by death, and sold the remaining 51 for £100 5s. 11d. thus leaving £85 17s. 11d. for their keep. Now, this appeared to be very

satisfactory; but, as I had not kept account of the cost of the food consumed, I could place no reliance on the result; therefore, after that time, I entered against the pigs the cost of all they consumed, and I will now state to you my profit and loss account:

	£	s.	d.
May 1860, two sows in pig (produced 16 pigs).....	8	0	0
Cost of food and grinding.....	24	6	7
Profit.....	7	17	9
	£40	4	4
November 1860, sold 16 fat pigs..			
Two sows and their second farrow (19).....	12	0	0
	£40	4	4
November, 1860 to April, 1862..	28	4	4
Bred and purchased 99 pigs at a cost of.....	36	18	0
Cost of food with grinding.....	104	4	9
Profit.....	10	13	0
	£151	15	9

April, 1862.
By sale of 89 pigs to date.....£151 15 9
Died 10.

Now I admit that this profit of £10 13s. extending over a period of nearly 18 months is not large; but you will bear in mind that the oats, barley, and peas consumed were my own growth, and charged to the pigs as follows—viz., oats, 37s.; barley, 36s.; and peas, 42s. per quarter. Pollard and midlings at the miller's charge.

	£	s.	d.
From April 25 to Dec. 31, 1852, I had and purchased 30 pigs at a cost of.....	11	6	6
Cost of food and grinding.....	15	13	11
	£27	0	5
30 pigs sold as stores and fat for..	29	3	0
Profit.....	£2	2	7

Since which time I have not struck a balance. I have made no charge for attendance, as I consider the manure made a sufficient set off against it. To my thinking, pigs possess an advantage over other animals kept on a farm, in this respect—that you sooner get a return of the capital originally invested in them. For instance,

suppose you commence with a sow and eight pigs, and that you give £6 for them, you will not have to keep them long before you can sell the pigs for the same amount and have the sow left to fatten or breed from, as you please. Out of 24 farrows that I have had I find the average number reared has been eight and a-half.

Dr. Powell said a friend of his had three pigs, and he weighed all their food, and every week he weighed the pigs regularly, and he found that for every half-hundred weight of food he gave them that they gained 14 lbs. of flesh. He mostly fed them upon rice, but whether upon rice or barley-meal he found that for every half-hundred he gave they gained 14 lbs. of flesh.

Mr. Ashby said pigs were cleanly, and would thrive best by being kept in a clean state. He would tell them that they must not put a pig to feed a pig. If they wanted a pig to pay, they must be well looked after, for pigs wanted as much looking after as a Christian in regard to cleanliness. Mr. Streeter once kept an accurate account for two consecutive years for his own satisfaction, and he had found the balance in favor of the pig. He pulped Swedes and mangolds in spring and summer, and mixed ground corn with it, which kept them in a growing and thriving condition, and reduced the expense of keeping them; but if the pulped food was continued during the whole time of fattening, the fat would boil out in cooking; but if the fattening was finished with corn alone the pork would be fine and good. His opinion was that it was a cheaper mode of making good yard manure than making it by fattening bullocks; but to be profitable, independent of the manure, it was indispensable that the young pig be kept on good food, and never be let go back in condition.

Mr. Humpidge thought it was better to sell pigs as stores than to keep them to fatten. Mr. Wilson said he had allowed the attendance for dung. He (Mr. Humpidge) thought if they put the straw and attendance against the manure they would find that it would come to a pretty high price. He did not know whether Mr. Wilson had charged all the food the pigs had consumed.

Mr. Wilson said he had entered all that had come from the barn. He could not say that he had charged for every cabbage that had been given to them.

Mr. Humpidge at one time kept an account of the cost of his pigs, and he found that all he got was their manure. A person

he know had kept an account what the pigs cost him, and he never found that they cost him less than 6d. a pound, and sometimes they cost him 1s. The principal argument in favor of fattening pigs was the large amount of manure that would be available to the farmer.

SELECTING EWES FOR THE RAM.



HERE there is an opportunity to choose between several valuable rams, the selection of the ewes to breed to each, requires judgment and careful study. The flock of ewes should be examined, the individual excellencies and faults of each, and hereditary predispositions and actual habits of breeding, so far as can be ascertained, fully taken into account; and then she should be marked for the ram, which, in himself, and by his previous get, appears on the whole, best calculated to produce improvement in their united progeny. Many of the Vermont farmers thus divide their small flocks of ewes into parcels of ten and twenty each, and take them to the rams owned by a number of different breeders: for, by a prevailing custom, the liberality of which cannot be too highly commended all the most distinguished breeders of that State allow other persons to send ewes to their best stock rams for a merely nominal compensation, considering the advantages which are often thus secured. This enables the owners of flocks who can not afford to incur the serious cost and risk of keeping a number of high-priced stock rams, to obtain, notwithstanding, the services of those which are best adapted to breeding with each class of their ewes. And the young and less skilful breeder can thus, too, obtain the immense advantage of using the most perfect sire rams in the country—those which are too costly for his purchase—and those which will improve his flock more in the first generation than he could possibly otherwise improve it in five generations.

Coupling.—Very few flock-masters now feel that they can afford to bestow the whole annual use of a choicé, high-priced ram on the seventy-five, or at the very utmost, on the one hundred ewes he can serve, if he is permitted to run at large with them; and to accomplish this, he must be a very strong animal, and must be taken out of the flocks nights and fed by himself. And no even tolerably good man-

ager turns two or more valuable rams at the same time into the same flock to waste their strength, excite, worry, fight, and perhaps kill each other. Even the ewes are frequently injured by the blows inflicted by a ram while another ram is covering her.

There are several different modes of putting ewes singly. Some keep "teasers" in the flock so "aproned" that they cannot serve a ewe, and daubed with lard and Venetian red under the brisket, so that when a ewe will stand for them, she is marked red on the rump. The flock is driven several times a day into a small inclosure (usually a sheep barn,) in apartments of which the stock rams are kept, the "redded" ewes are drawn out and each is taken to the ram for which she is marked. After being served *once* she is turned into the flock of served ewes.

Another mode is to use no teasers, but to drive in the flock selected for a particular ram twice a day, and let him loose in it; and as soon as a ewe is served to draw her out. After three or four are served, the ram is returned to his quarters, and the remainder of the flock to the field. A very vigorous ram may be allowed to serve from eight to ten ewes a day. This last mode is now generally preferred. It takes up but little more time than the other. It saves the expense and trouble of keeping teasers, which must be frequently changed; for after their making their fruitless efforts for two or three days, they generally almost cease to mark ewes. Lambs and yearlings are nearly useless for teasers. Good stock rams ought not to be put on this service, for it rapidly reduces them in condition.

Any mode of effecting the object in view, one on the correct management of which the success of breeding so much depends—must be conducted with rigid accuracy, so that the mark on the ewe shall in all cases indicate the ram actually used. An erroneous record is vastly worse than none. It misleads the owner, and cheats the purchaser who buys with reference its showings.

The served ewes should be returned to the ram after the thirteenth day. If they come in heat again, it is usually from the fourteenth to the seventeenth day; but the number is ordinarily quite small if the ram is a good one, and is well managed.—*Practical Shepherd.*

Potatoes are selling in Rutland at 75 c. a bushel.

A PROFITABLE STOCK OF FOWLS.



DOWING that Hiram W. Jones, of Dover, Mass., had for several years paid considerable attention to the raising of chickens and the production of eggs for market, we requested him to furnish a statement in regard to the business. In compliance with that request he has given us certain memoranda, from which it appears that on the first of January last, he had fifteen hens and two cocks, worth \$8 50. From January 1st to November 30th (eleven months,) the cost of the food, consisting of Indian corn, buckwheat and boiled potatoes, consumed by all the fowls on the place, was \$23 75, making the outlay \$32 25. During this last period he sold 123 7-12 dozen eggs for an aggregate amount of \$27 95. He also sold during the same time 101 fowls of various ages, for \$50 80. The stock on hand on the 30th of November was twenty-seven hens and one cock, worth \$14. The aggregate returns are therefore, \$92 75, deducting from which the value of the original stock and expenses, \$32 25, there remains \$60 25.

No account was made of all the eggs required by a family of eight persons, which may be offset against the care of attendance, this being given by Mrs. Jones. All the eggs and chickens were taken by the market-man, who sold them in Boston, and the sums named were returned to Mr. Jones. The highest price obtained for eggs was 30 cts. per dozen. and the lowest 18 cts.—the average being a fraction less than 24 cts. More than half of the chickens were hatched before March 13th, and the sales commenced on the 6th of May, when six chickens sold for \$4 30. Of the eggs set, 70 per cent hatched of the chickens brought out, 90 per cent were saved.

Mr. Jones states that his fowls are a cross between the Dorking and "old fashioned barn-yard fowls." They have heavy bodies, with short, yellow legs. They are kept most of the time in their house and yard, which is warm in winter and cool in summer.—*Boston Cultivator.*

CLOVER HAY FOR COWS.

The *N. F. Farmer* states that Mr. John Day, of Boxford, Mass., who cuts large quantities of clover, feeds it out principally to his milch cows, and he finds that when the clover is exhausted, and he feeds timothy and red-top, "twenty cows immediately shrink two cans of milk per day."

KEEPING CATTLE, HORSES, AND SHEEP TOGETHER.

THE economy of keeping horses, cattle, and sheep in a pasture together, or at the same barn, is perhaps not generally considered by many farmers. There are at times some disadvantages in keeping different kinds of stock together, but so far as the economy of feed is concerned, there is evidently a saving by so doing.

From experiments and investigations made on this subject, it has been ascertained that domestic animals eat and reject plants in the following proportions:

The Cow	eats 276 plants,	and rejects 218.
Goat	do. 449 do.	do. 126.
Sheep	do. 387 do.	do. 141.
Horse	do. 262 do.	do. 212.
Hog	do. 72 do.	do. 271.

Every farmer has noticed that many plants that are eaten by one kind of stock, are rejected by others; that cattle or sheep are averse to eat the grass that grows in those places where they lay nights, or in the shade of trees where they get together, in consequence of the unpleasant flavor given to it by their droppings—yet the horse will eat it readily. The horse will eat many coarse grasses and weeds which cattle and sheep will refuse. For this reason will be seen the economy of keeping horses, cattle, and sheep in the same pasture, in suitable numbers and proportions.

I have heard some farmers say that they did not think that it cost anything to keep a horse or colt in a pasture with cattle, as they would get their living on that which the cattle would not eat. For my part, I do not think the saving is as much in the summer, when they can select their own feed, as in the winter, when they get only such as is given them.

It is generally thought that sheep and colts do well when kept together. Colts will eat the coarser portions of fodder which sheep leave, and do well on it. This fact was forcibly brought to my mind, while visiting the barns of a noted sheep-breeder, the spring of 1862. There were about fifty sheep, which were about equally divided and kept in two separate pens. The hay with which they had been fed was a mixture of red clover and timothy, and the sheep were literally up to their knees in the coarser portions of the hay which they had pulled from their racks on the floor and rejected. This might not be entirely wasted, as it goes into the land with the manure;

but if this waste had been consumed by colts, it would have been made into good manure, and the gain or growth on the colts saved. It was the opinion of both myself and the gentleman who was with me at the time that a two-year old colt might have been well kept, in each of the pens, on the hay which the sheep wasted.

During the latter part of last winter, while feeding my coarse hay, the oats which my cattle and sheep left were given to my horse. They were eaten up clean by the horse, who appeared to do as well as when fed on fresh hay, and many days but very little other hay was fed to the horse. A friend of mine who had a horse that was troubled with the heaves, kept it a part of the winter entirely on the hay that his other stock left. The horse did much better during this time than when fed on fresh hay—the cattle picking it over, removed the dust and lighter portions of it, which had the same effect as wetting it before feeding it to the horse. In cold and dry weather in the winter, when my barnyard is covered with snow, I frequently take what is left by the cattle and sheep after feeding in the stables, and scatter it in the yard. The cattle will always clean up that which the sheep have left, and the sheep will eat a part of that left by the cattle, and the colts will pick up what is left by both cattle and sheep, so that between them all but very little fodder of any kind is wasted, but much is saved during the winter that would be wasted if only cattle or sheep were kept exclusively by themselves.—C. T. ALVORD, in *C'y Gent.*

WINTER FEEDING OF STOCK.

THIS, we mean not only supplying farm stock with food, but also such general and special care as they require to keep them comfortable and easy during the inclement season. Perhaps it would have been better to have headed our article, "The Winter Care of Stock." Every resident of Maine knows that our summers are pleasant,—neither too hot nor too cool, but of a temperature that not only is congenial to the luxuriant growth of grass and other forage plants, but also equally grateful to cattle, enabling them to feed and fatten on the products of the pastures, without suffering from excessive heat. Our winters, on the other hand, are cold, and sometimes rather severe. The ground, for a time, is covered with snow, and the rigors of the weather

such that all stock is completely dependent upon the care of their owners for their daily sustenance and shelter. Hence, what is so easily gained in flesh and fat in summer, is too often lost in winter. This is well known, as a general truth, but those who have attentively read the experiments and observations of Hon. S. F. Perley, member of the Board of Agriculture from Cumberland, and communicated by him to the Board last winter, will remember the demonstrations which he gave of the amount of loss sustained, even by what is called good winter treatment. Facts like these should lead us all to pay attention to the winter management of stock, and study to so feed and care for them, in such way and manner, as to reduce this loss (for we purpose there must inevitably be some) to the smallest possible amount.

To effect this, two things are absolutely and imperiously necessary. First, plenty of nourishing food and drink, and second, warm and dry shelter, and strict attention to their comfort and cleanliness. There are two uses of good food during the winter: One use is the supplying or nutritive matter to the stomach, by which the natural waste of the body is supplied, and by which also, such material as the growth of the system requires. Another use, more particularly required in winter, is the furnishing animal warmth to the system. It may be said, that if you give an animal a sufficiency of nourishing food you thereby supply a cause of animal heat, as that arises from the digestion and assimilation of the food given. This is true, but you will see that two very important requisites depend upon you, nevertheless. First you must supply the food, for the animal cannot help himself, as he does in the summer, and second, this food must necessarily be more condensed than that of summer food, and contain the proper quantity of carbonaceous matter, so that this heat can be eliminated from such supplies. In summer, the climate being warm, the food which they obtain from the pastures is not condensed, but full of watery particles, affording the nourishment required in greater parcels, and in a cooler state. The hog gives you a good demonstration of this fact. In summer he will thrive on slops of almost any kind, with grass and such other eatables as he can find in pasture. He gets along very comfortably. But in winter you put him up and give him the same food, and he will shiver with cold and bury himself in straw to keep warm.

Change his food to a more concentrated kind, such as corn, or corn meal, or peas, or barley without stint, and see how, instead of burrowing in the straw he will seek out the cool changes. He will "lay on fat" as you say, and the animal heat which accompanies this assimilation of the food, is so great that he prefers a little "norwester" to the warmest chances.

Hence, in addition to plenty of food, you need to supply warm and dry stabling, if you would have the full benefit. The warmer the stable the less food will stock eat, and the colder the stable the more and better the food they ought to eat and will eat if they can get it.

Another thing—they should have sufficient drink. We have no doubt it would pay in many cases, if fixtures were so placed as to warm the water a little in the coldest days. Cattle and horses, that have to go some little distance to drink are always loth to go in the coldest weather, and, when driven to the water, drink comparatively a small quantity, and then come back shivering and shaking as if they had ague. At such times, if they can have access to water that has the "chill taken off" by a little warming, they will drink a full supply without exhibiting the cooling operation before named.

A writer in the *Genesee Farmer* last winter, quoting from an English journal, recommends not only the warming water for cattle or at any rate keeping it at a comfortable temperature, but, in addition to this, the making it nutritious by keeping meal in the trough so that the soluble portions may be dissolved and drank whenever they pleased.

We have no doubt this would be an excellent thing for stock, though in our cold climate, it would involve considerable cost at first, to establish fixtures that would at all times keep the water at such temperature as would give all the requirements through the winter. We should like to see a careful series of experiments tried, in order to test the true value of this plan. We do not suppose that all farmers can adopt all the good improvements that are suggested, or that their own judgment and experience may suggest. The most of us are not able always to do what he know would be best,—but we can all *strive* to do it, and thereby we shall come nearer to what should be done than we otherwise should. Aiming right, if you do not fairly hit the mark, is better than shooting at random, and hitting nothing.—*Maine Farmer*.

PRODUCT OF TEN COWS.

MR. J. W. Greenleaf, of Charlestown, in this county, has kept a dairy of ten cows this season, and foots up the result of his operations at six hundred and eighteen dollars and fifty-three cents, thus :

Cheese made, 5,490 lbs., sold for..	\$491 60
Butter " 330½ " "	63 63
Hogs kept on whey, valued at.....	52 55
Calves valued at.....	10 75

Total.....\$618 53

There is a table of figures that reveals a story of a good summer's work. Other dairymen are invited to "compare notes" with the foregoing. We incline to the opinion, however, that the number who will foot up similar proceeds from the same number of cows will not be very large—but let us have the figures.—*Portage Co. Democrat.*

NEW METHOD FOR SALTING CHEESE.

PN salting cheese, the general practice among dairymen is to draw the curd or whey, and then apply salt in proportion of one pound of salt (a pure article) to from forty to fifty pounds of cheese, according to the time cheese is designed to be marketed.

The question has occurred with many, whether the salt could not be more easily incorporated by salting the milk, or applying it after coagulation; and when the curd is sufficiently cooked. From experiments made in salting the milk, it seems the cheese manufactured was of good quality, but the proportion of salt required was at the rate of 3½ oz. to the gallon of milk, or 8 lbs. 3 oz. of salt to 40 gallons, or about 40 lbs. of cheese. The objection to salting in the milk is, that the whey is unfit for pigs, and the large quantity of salt required. Mr. P'Angiles, of Oneida county, N.Y., has recently advocated the plan of salting the whey. His method is briefly as follows: When the curd is about sufficiently cooked most of the whey is drawn off, leaving just sufficient to hold the mass in a loose and finely divided state; the salt is then applied and stirred through the mass. The advantages claimed are, that much hard labor is saved; that the salt is more evenly distributed through the curd, which is not bruised, and the oily particles passed out by rough handling. This method is being adopted by some, the proportion of salt used being graduated by the amount of whey in

curd at the time of salting, and the character of the cheese to be manufactured.

SHEEP STABLES AND SHEEP YARDS.

Cleaning out Stables in Winter.

Tis rather the prevailing custom among Northern flock-masters not to clean out their sheep stables in the winter, but merely to cover the manure occasionally with fresh litter. This is unquestionably bad practice, in two particulars. It certainly prevents making anything like the amount of manure which could be formed by mixing the dung and urine of the sheep with amount of litter which would half fill the sheep stable, if suffered to accumulate there throughout the winter. And there can be no reasonable doubt that a deep bed manure, which except during severely cold weather, is constantly heating, evolving gases, and filling the apartment with a warm steam and odor of fermenting dung, and which, after a decided thaw of a few days positively produces an offensive stench, cannot form a very healthy lair for sheep. It is rather the prevailing opinion now among the best flock-masters, that the increased practice among Merino sheep of pulling their own and each other's wool in the winter, is occasioned by an irritation of the skin caused by lying on these beds of heating manure. Unstabled flocks do not, so far as I have observed, thus become addicted to "wool-biting." Stables should be cleaned out three times during the winter, say early part of January, the latter part of February, and in April. And in the intermediate periods, it is an excellent practice always to strew the manure on the floor with plaster (gypsum) prior to covering it with fresh straw. This absorbs the escaping gases, and thus not only preserves the purity of the atmosphere, but vastly enhances the value of the manure.


Yards.

They should be constructed on dry, firm, thoroughly drained ground; and a gravelly soil rapidly permeable by surface water, and which quickly dries, is much preferable to a clayey, tenacious soil, or a peaty or mucky one which retains moisture. All the yards ought to have separate access to water, and if practicable, separate access to different fields.

Strawing or otherwise littering sheep yards in winter in the most thorough manner, is a matter of prime importance. If

sheep are compelled to stand or move about in mud or water whenever out of doors, the most liberal feeding and good management in every other particular, will hardly preserve them in the best condition. They should have a comparatively dry out-door bed to stand on in wet weather, and a warm one in cold weather. Sheep—or at least all the upland breeds of sheep—find one of the worst enemies of their health and thrift in the habitual wetness under foot. Muddy yards prevent sheep from moving about out of doors and spending a portion of the time in the sun and fresh air, in pleasant weather; promote fouls; render hoof rot incurable; and cause lameness and annoyance to sheep which have sound feet, when a sudden freeze converts the small pellets of mud which adhere to the hairs in the forward part of the cleft of the foot, into pellets of stone. A little straw is excellent feed for sheep. If it is scattered over the yard they will “pick it over,” eating the best parts, and leaving enough to keep the littering constantly renewed.—*Randall's Practical Shepherd.*

TEACHING HORSES NOT TO KICK.

 KICKING horses are among the greatest nuisances with which the community is beset, and who that is at all accustomed to the use of horses will not admit that there are a dozen kicking mares to one kicking horse? This established, and let us consider why it is so. It is supposed that one-half of all the colts foaled are mares, and while young they are very much like horse colts, and perhaps would continue so if they were treated alike; but out of every hundred horse colts that live to be four years old, ninety-four or ninety-five of them are altered, and generally before they are broken to harness. In order to perform this operation the colt has to be well secured with the proper instruments which I will term “Hobble and Belt,” used to throw and hold him down. This part of the process is what I want to call attention to as the important part towards breaking up this kicking business in mares as well as in horses. Let every colt be well halter-broke and somewhat used to the “bit,” before they are three years old. But before you ever attempt to gear up a colt and put any body harness on, and particularly a mare colt, let her be taken by some careful and judicious hands into the barn-yard or other soft place, and having procured a good

“hoppie and belt,” there adjust them, and throw her and secure her, being careful not to hurt her unnecessarily, and while down handle her feet and legs, turn her over and back; after seven or fifteen minutes, when about to release her, do it thoroughly and completely; before you let her attempt to rise to her feet remove everything as much as possible except the halter, so that when she rises she will get up clear. Do not let her flounce and kick, and get up half hobbled and loose, or the work may soon have to be done over again and again, or have a kicking mare. But if all goes on right, as soon as she is up, have a set of good strong harness carefully laid on her (never throw harness on a horse; heavy sharp harness are liable to bruise the withers,) bring the different parts of a proper bearing, let the traces or other chains or ropes be well secured, so that she cannot become entangled with them, and let them dangle about her legs and elsewhere, until she is thoroughly accustomed to them—but be very careful and not let her go away in this condition, lest she run and do mischief. A strap buckled around the body, just in front of the hips, might have a good effect, as some horses are so ticklish when anything touches them about the flank.

If the above plan is pursued, we may conclude that the colt is about half broke; but the majority of dispositions will be better if the process is repeated during the next forty days; then immediately after being released from the “hobble and belt,” gear up the colt to a cart, or aside of a well broke horse to a farm wagon, and drive off at a gait not faster than a walk, and with care and practice you may have good walkers; but do not put them into a trot until they have acquired a good walk. Never hitch up a colt to a sulkey, or sleigh, or light vehicle at first, that they can run away with driver and all. Never gear up to a harrow the first thing—it is dangerous in case of getting tangled up. Horses sometimes get into difficulty, even after they are “broke,” and go into kicking, their natural means of self-defense. In such cases the “hobble and belt” may be resorted to with advantage.

Horses that are bad about standing to be shod might also be treated to this “hobble and belt,” but do not use it on the horse when it is the shoer that needs it; and it is often very apparent that this is the case. One good “hobble and belt” might answer for fifty ordinary farmers.—*Telegraph.*

BRUISED OATS FOR HORSES.

A HORSE fed upon whole oats and uncut hay, expends a large proportion of his motive power in the process of mastication. After a hard day's work he has before him the task of reducing to pulp 15 or 20 pounds weight of hard food, and the operation is carried on during the hours which ought to be devoted to repose. Not unfrequently is the animal so tired that he is unable to properly chew his food; he therefore bolts the oats, a large proportion of which passes unchanged through his body. Those who desire to render fully effective the motive power of the horse, must pay attention to the mechanical state as well as to the

quality and quantity of his food. The force expended by the horse in comminuting his food—when it is composed of hay, straw, and oats—may be set down at least equal to the power he expends in one hour and a half of work, such, for example, as plowing. The preparation of his food, by means of steam or water power, or even by animal motive power, would economise by at least one-half the labor expended in its mastication: this would be equivalent to half a day's work in every week—a clear gain to the animal's owner. It has been objected to the use of bruised oats, that they produce a laxative effect upon the animals, but this disadvantage may be easily obviated by the addition of cut straw to his food.

ENGINEERING DEPARTMENT.

THRASHING GRAIN BY WATER POWER.

IN some sections of the country and in some places in this state, thrashing machines have been put in in connection with other machinery, and operated by water power, with good success.

In such cases the machines answer for thrashing the grain raised by farmers for miles around, and, so far as we know, give satisfaction. The annual job of thrashing by traveling machines is always an unpleasant affair, and any plan by which our grain may be the most readily thrashed, with the least expense and labour, will be the best.

Our neighbour of the *Journal of Agriculture*, recommends the use of machines operated by water power for reasons which we fully endorse. He says:

"The machine is set up so that the straw drops from the apron directly upon the rack, while the grain passes to a room below, where it is winnowed and measured up. The owner of the machine furnishes men to do everything except load the straw, and charges five cents a bushel for oats, and other grain in the usual proportion. This plan involves the least labour of any that has come under our notice, and consequently the least expense; and then again we get rid of the dust that would be made in the barn—especially if machine thrashing were done there—and a greater nuisance was never in barn to man or beast. It covers everything, lodges in the hay, and every time the cattle are fed, they and their keeper have to inhale a cloud of dust. By the

above plan this is completely done away with. As the grain is handled but little before thrashing, and being taken directly from the field before it is dried, as it would be after lying in the barn a few weeks, but very little scatters out, nor is any destroyed by hens, rats or mice. Another advantage is, the job of thrashing—always a hard and unpleasant one—is completed with the harvesting. Whatever grain you have had the good luck to grow, has been secured and stowed away, ready either for the market, if that should be favourable, or for home consumption. We have just harvested and thrashed in this way, ten as large loads of oats as are generally seen upon an ox-rack, and after carefully comparing the cost with that of having it thrashed in the barn, either with a machine or by hand, are fully satisfied of its advantages.

STIRRING THE SOIL—CULTIVATORS vs. PLOWS.

THE gradual extension of steam power in the cultivation of the soil in England, has tended to produce sounder views as to the advantages which result from stirring the soil by cultivators or grubbers. At one time it was deemed essential for the luxuriant growth of a grain or bulbous crop, that the soil should be inverted. This is now proved not to be necessary; on the contrary it has been shown that on retentive soils the crops produced on lands which have been stirred but not inverted, are more abundant than where the soil has been turned over by the plow. An intelligent correspondent resid-

ing in Buckingham, who has the best opportunities of ascertaining the results produced by the use of cultivators compared with plows, draws attention to this fact in his report for that county. It is highly probable that, as the steam engine is more generally brought into requisition in cultivating the soil, that the implement most commonly used will be a cultivator or a grubber. Those farmers who are preparing land for wheat—whether the previous crop had been beans, potatoes or turnips—could undertake experiments to ascertain the difference of produce from one part of a field stirred by a cultivator or grubber, compared with that produced on the other portion of the field, which has been stirred by the plow. The question is one of such great importance, that it is to be hoped several farmers will conduct experiments, not only in the preparing of the land for wheat, but for other grain crops, and report the results.—*North British Agriculturist.*

POTATO DIGGER.

THIS invention consists in the arrangement of a hinged adjustable platform supported by a castor wheel in combination with a frame supported at the front end by two wheels and carrying a rotary digging cylinder, a conveyer and a slotted endless apron, in such a manner that by said hinged platform, the digging cylinder can be thrown in and out of the ground, and the potatoes by said cylinder are thrown on the conveyer and delivered to the slotted apron and by said apron carried up over the hinged platform and dumped free from dirt and other impurities, into a basket or other receptacle, on the rear of the hinged platform. Alcion Wheeler, Mallory, Iowa, is the inventor of this potato digger.—*Scientific American.*

THE ROLLER.

WHAT don't our farmers use the roller more frequently? Is it because they are not willing to incur the expenses of purchase? Is it because they are not disposed to bestow the extra amount of labor involved in rolling their fields, or is it because they do not understand their uses and benefits? Do they not know that a roller is almost indispensable on light soils, because it presses the earth closer around small seeds,—that it is equally useful on heavy soils, because it

crushes the clods, and brings the pulverized earth in direct contact with the seeds—that it is good on grass fields, because it presses small stones, bones, &c.,—which would otherwise injure the knives of the mower,—into the earth, and out of the way, and that it also levels ant and mole hills; that it is useful upon wheat fields in the spring, pressing the plants which have been thrown out by the frost, into the earth again; that it exercises a most happy influence upon oats, if used after the plants have attained a height of three or four inches; in a word, it is good almost everywhere, and ranks very properly with the most important implements of the farm.

NEW STEAM CARRIAGE.



AN ingenious mechanic, Mr. S. H. Roper, of Roxbury, Mass., has invented and put in operation a new steam waggon or buggy for common roads. It is thus described: An ordinary four-wheel carriage has a boiler, of about sixteen inches in diameter, in the rear, with the lever regulating the steam and speed, extending over the seat in front. Beneath this boiler is the furnace, and in the rear of the boiler is a small water tank. The steam gauge is on a level with the driver, and he can at a glance ascertain the amount of steam pressure. The whole machine is of two horsepower. Two persons take their seats in the carriage, and off it starts, the driver guiding with one hand the front wheels, by means of a crank, and with the other hand he can regulate the speed of the engine or stop the carriage in less time than a pair of horses can be brought to a halt. Coal sufficient for one day's running can be carried beneath the seat of the carriage, and although the speed attained is that of the fastest horse, the expense of running the carriage is estimated at one cent per mile, while in operation, with the additional virtue of not costing anything in the way of feed and stabling when not in use. Lately, when the carriage was exhibited, the engine carried but fifteen and twenty pounds of steam, and yet it taxed the powers of the horses present to keep pace with its speed. The carriage and engine do not weigh more than seven hundred pounds. No difficulty was experienced in turning sharp corners or in backing.—*Scientific American.*

Ring bone is caused by dragging heavy loads up steep hills.

FARM IMPLEMENTS AND MACHINERY.



E make the following extract from a valuable article under the above head, by J. J. Thomas, in the Report of the Department of Agriculture:—

The great requisites for successful cultivation, are a fertile soil, and the means for its working and pulverization. The first is attained by excellence combined with manuring, rotation and ploughing in green crops. The second is accomplished by farm implements and machinery. Without the latter, no soil, however excellent, can be cultivated. They are as indispensable as the breathing apparatus to the life of an animal, or as vessels to the navigation of the seas. In nothing is the advancement of modern agriculture more conspicuous than in the rapid improvement of the tools and machinery of the farm.

Compare, for example, the old wooden mould-board plough, extensively used not fifty years ago, with the best modern 'centre-draught,' or steel mould-board, easy running, smooth cutting, and inverting the sod almost with mathematical precision; or the old-fashioned mode of pounding out grain with the flail, with the best improved thrashers and separators. Observe the difference in expense between laboriously collecting the hay of a ten acre meadow by means of hand-rakes and sweeping it up with horse power, with revolving or steel tooth-rakes, or the slow and fatiguing labor of dropping the minute seeds of root crops, when compared with the rapid and accurate distribution by the best seed drills. No laborer who has gone through the slow toil of swinging the hand-scythe and cradle day after day, will need any argument to prove to him the value of horse labor as applied to the best mowing and reaping machines, which shear off ten or twenty acre crops in a day. And during the present scarcity of labor, occasioned by the war, extensive farmers must have utterly failed to go through with their many operations but for the assistance rendered by modern implements for cultivating, drill planting, harvesting and thrashing.

The amount of capital at present invested in farm implements throughout the United States is probably not less than five hundred million dollars! How important that this money be *well* invested! The best implements will execute work not only better and more perfectly, but at a vast saving in expense, over those of bad con-

struction. Take one of the simplest tools as an example: the common handhoe, one made of best steel, and of light, neat construction, will enable a laborer to do one-fourth more work than a heavy, clumsy one, or will save one day in four, twenty-five days in every hundred of work—an amount in a single season, more than fifty times as great as the difference in cost. The best steel plough may cost five dollars more than a poor cast-iron one; but the force required to draw it if one-fourth less, would save the labor of a span of horses of one day in every four, and perhaps fifty or a hundred dollars yearly. What would be thought of the man who, to avoid the expense of buying a good plough, preferred to spade up his fields by hand, or to carry his grain to market on his back, to obviate the cost of a farm waggon? He would commit the same kind of error, although perhaps more glaringly, as the farmer who neglects to avail himself of the best information on the machinery of the farm and the principles of its construction and use. Much loss has been occasioned by a want of knowledge of the principles which govern the working of all implements and machines, and many suffer themselves to be imposed on and deceived, when a simple and ready application of such principles would at once detect errors without resorting to expensive trial. The day is past for the commission of such blunders, as the man who thought he was favoring the weaker horse in his team by giving it the small or short end of the whiffletree, or of the other man who balanced the bushel of grain, when carried to the mill on his horse's back, by placing the grain in one end of the bag and a large stone in the other. But still no one can visit any large agricultural fair without witnessing, among the large collection of farm implements, instances of glaring departure from fundamental mechanical principles. There are two great laws that should be thoroughly mastered by every farmer as well as every manufacturer—by the former, that he may the better select and make his purchases; and by the latter, that all his work may be as perfect in construction as possible. These are the law of virtual velocities and the law of momentum.

1st, The former, familiar to many readers of this article, may be briefly explained to others before citing cases of its application. This law—simply expressed by "whatever is gained in power is lost in

time" (or distance), or by the formula that forces are always equal when the products of the power, multiplied by the distance, are equal—renders easily understood the principle of the working of every mechanical power or machine, from the simplest lever to the most complex combination of cranks and wheels. It explains equally well the capacity and power of the crowbar or the steam-engine. In the use of the crowbar, or any other lever, it explains how the strength of a hundred pounds applied by the hand to one part will raise a thousand pounds weight resting on another part,—the hand of power being required in such a case to move ten times the distance of the weight. To lift the weight one inch the hand moves ten inches. The two forces multiplied by their respective moving distances, namely 100 by 10 inches and 1000 by 1 inch, give equal products. This principle at once renders plain and intelligible the amount of efficiency in all the mechanical powers, as the lever, wheel, inclined plane, wedge, or screw. Throwing friction aside, it gives the exact relative force of the moving power and of the operative power with mathematical precision. Explained by this law the famous "hydrostatic paradox" ceases to be paradoxical, but the inevitable result of unchangeable laws. The application of this law to machinery, for example, to a thrashing machine, gives the force with which the teeth of the cylinder strike the straw, and consequently the amount of resistance which will stop it. If four horses drive such a machine, walking at the rate of three feet in a second, the cylinder, revolving at a velocity of ninety feet in a second, has a force thirty times less, or seven and a half times less than the force exerted by a single horse. This calculation shows the facility with which small obstructions, as, for example, an over feeding, will stop such machines. On the other hand, horses applied to slow working parts, as in a stump puller where the stump is moved, perhaps, one hundred times slower than the working force, possess immense power. If, for instance, the horses travel thirty times faster than the movement by which the stump is raised, the force, instead of being diminished, as in the last example, is increased thirty fold, or equal to the power of 120 horses, friction deducted. If each horse draws with a force of 300 pounds, the power would be equal to raising a weight of thirty-six thousand pounds. In the same way the wonderful force of the

hydrostatic press—which is such that a man might, with one not larger than a water pail standing on a table before him, cut through a thick bar of solid iron with as much ease as he would chip pasteboard with a pair of shears—may be determined with equal accuracy. The operation of all mechanical contrivances may be explained and rendered simple by the application of the law of virtual velocities. It explains the steelyard, the platform balance, the toggle-joint, the rolling-mill, the cylindrical straw-cutter, the wedge power of the plough, the construction of the compound whiffletree, the power of the cider-press, the force of pulleys, the required strength of the mole-plough, &c.

In all these machines, the application of this law to every part is of the utmost importance in construction, that every part may be of just the required proportionate strength. Where great pressure occurs, these slow-moving parts must be correspondingly strong. Where there is less pressure, and greater velocity exists, lightness and less strength is essential. Thus a scientific mechanic may be able to manufacture machines equally strong with these made by his ignorant competitor, with less waste of material and less probability of breaking in weak places, and to become beaten to pieces by the momentum of its needlessly heavy parts.

Even in the construction of so simple a thing as a farm-gate, a great deal of skill may be shown by making the slow-moving parts, which are near the hinges, strong and comparatively massive, while the latch end should be rendered as light as practicable. We sometimes see gates made needlessly heavy at the latch end, drawing the hinges, and settling or becoming beaten to pieces against the post; while others, better made, equally strong, and half the weight, keep their position, move easily, work satisfactorily, and remain strong and uninjured. A farm-waggon, which has to be drawn thousands of miles yearly, should, in order to be as light as possible, have the strength of each part accurately adjusted to its intended use: and although no one expects to see so perfect a vehicle as Dr. Holmes' famous "one-horse shay," it is well to carry out the leading principle as nearly as may be practicable.

2d. The powerful effects of momentum deserve a few passing remarks, as affecting the operation of implements and machines. Its great effective force is exhibited by such

simple operations as driving nails with a hammer, or wedges with a maul or beetle. The mere weight of the hammer, with the strength of the arm added, would produce no effect; the momentum does the work in a moment. The momentum of a rifle-ball in motion, small as it is, carries it through solid plank. On a large scale the power of the pile-engine depends on this principle. The water-ram owes its acting to the momentum of the water in the driving-pipe. The fly-wheel in the same way equalizes the irregular or interrupted resistance, or jerking of various machines, such as straw-cutters, horse-pumps, and churns. These are the beneficial results of momentum. Sometimes it produces disaster, as when a heavy-loaded waggon strikes a stone, the sudden effect of which is lessened on waggon, harness, and horses by the use of springs under the load. It was ascertained, by experiments made many years ago, that the machinery of a railway locomotive, when supported by springs, would endure the wear and tear of use four times as long as without them.

THE FARMER'S WORKSHOP.

THE neat farmer has not only his neat wood-house, well filled with dry, sound wood; but he has his workshop where he keeps his carpenter's tools and timber for use. This is not full of chips, save when he labors. It is neatly swept, and every tool in its place; and he knows, though in the dark, where to find it. You can see at a glance that he takes pride in it. And his tools are in order. He lends; but not to every one. This is right. Some people are as careless about other people's tools as their own; and a man does not want to have a thing destroyed. The sluggard, the slattern, should not be trusted too far, or he will make a sluggard of yourself. Bad neighbors at the

best are a pest, and the less you have to do with them generally the better. At least, keep your tool-shop in order.

"Well, now! there is no use; I cannot keep my tools in order; others will have the handling of them."

This shows you lack grit. The right kind of man *will* have his premises—all relating to them—"in good order," though he should sacrifice the good will of the slovens. The farmer's workshop is often a place to lounge in, in idle weather, when the little tinkering is done by the owner. —*Valley Farmer.*

THE GRINDSTONE.

A GOOD grindstone is one of the necessary implements of every well furnished farm. We say a *good* one; not one of those substitutes for a stone which too often fills the place which should contain a better article—but a first rate stone—all mounted and ready for use, of which there are a plenty to be had, and in using which, the labor of keeping tools sharp becomes almost a pleasure. Don't grudge a dollar or two more when purchasing one, but obtain one of a large size and mounted on cast iron anti-friction rollers. A large and good one will run easier, and cut faster, and as it is to be an implement which will last for nearly a life time, it is an object to make it second to none. Don't keep a water box underneath it, for the side of the stone which is immersed in the water when it is left after using, will become softened so that it will wear away faster than the rest of the stone, and consequently it will not be perfectly round. Keep your axes, chisels, various kinds of knives, &c., all sharp and in order for use at a moment's notice, and much vexation may often be prevented when you are in a hurry to do some job in which they are used. —*Maine Farmer.*

HORTICULTURAL DEPARTMENT.

THE GARDEN.

THE benefits derivable from trenching deeply are many. A greater degree of openness is given to the soil, so that the roots can penetrate it easily, and in dry seasons go down where the soil is more moist, and so escape to a greater extent the evil of a drought. On the other

hand, moisture by the law of capillary attraction ascends more freely from the sub soil, a more perfect access to air is secured, from which the soil imbibes the necessary gases, and more soluble matter becomes available for the use of plants.

The system of tillage yet far too prevalent in small gardens of dunging and digging only one spit deep till a few inches of

the top soil is poisoned with dung and turned into a moving mass of slugs and grubs, while the subsoil is hard as the road, cannot be too severely condemned. Gardens in such a condition would produce famous vegetables for two or three years without any further manuring if they were trenched and the subsoil well mixed with the top spit. By deep trenching, ground that is naturally tenacious is rendered more open for the time, and water finds its way more quickly into the drains below. And the benefit derivable from manure by a given crop is increased by porosity, inasmuch as the decomposition of the vegetable matter in the soil is dependent on the action of the air.

Another point of importance in kitchen gardening which may be worth referring to is the state of the soil most desirable as to moisture for performing the operations of planting and sowing. I have heard of an old gardener who laid down as a wise proverb—"Plant wet and sow dry." I take exception to the former half of this rule. Of course we are all at times glad to plant when we can, but as a rule, it is best to both plant and sow when the ground is dry. With respect to planting all the Brassica or Cabbage tribe I have always found it best to plant immediately the plants are ready, no matter how dry the ground. All movement on ground when it is wet is injurious, and it is much better to plant when the soil is so dry on the surface that the hole made by the dibbler or trowel is so dry that the hole is ready to be filled up before you can insert the plant, than when a hole is made in wet soil, with glazed and compressed sides. In the former case the dry soil runs in and surrounds the roots and small fibres completely. In the latter a body of wet compressed soil is pushed up against the roots, and they are for the time being as in a vice; and when dry weather follows the soil next the roots is hard and compressed and ungenial. My own practice is to draw drills two or three inches deep, and plant in them, no matter how dry the soil or hot the sun. And when planted, a good watering is given through a rose, and then a portion of the dry surface and is drawn round the necks of the plants to prevent evaporation. Under such circumstances, the work is more completely accomplished, and the plants soon get hold of the soil and are ready to make the best of a rainy day when it comes. I have made holes in a clay soil with an iron

crow bar, and have planted Broccoli, Savoys, &c., filling up the holes with a little fine mould, and watering well, and never saw finer growth in a given time. Never wait for rain; the work is better done when dry, and time is gained by it in respect to growth. The rule applies with equal force to the planting out of Verbenas, Geraniums, and other house plants, in the flower-bed.

In the foregoing remarks attention has been directed to what may be considered the cardinal points in the production of good vegetables. The same points—namely, efficient drainage and deeply worked soil—are equally as applicable to the flower-beds that stud the trim little lawn or surround the cottage door. And, however frequent these essentials are neglected in the culture of vegetables, there is good reason for fearing that they are still less attended to in the cultivation of flowers. And this is undoubtedly one of the chief reasons why so many comparative abortions and failures are met with in the shape of beds of miserably stunted Geraniums, Verbenas, &c., &c., which are often bought at some considerable expense. Often do we hear expressions of wonder that such plants do not grow and bloom more freely, while at the same time the soil is either soured with wet, or it has neither been properly trenched nor manured for years. It is a settled point with experienced gardeners that the great majority of flowering plants used for decorating borders are as exhausting to the soil and require as much manure as a crop of cabbage or cauliflower. And this is more particularly the case from the fact that the same rotation of cropping so necessary and usually carried out in the kitchen garden is not often practicable in the flower-plots. Let this be thoroughly appreciated as being an indispensable requisite for a brilliant and lasting array of bloom, and the nurseryman and the plants he supplies will not be so often made the scape goat for the shortcoming of cultivation on the part of the purchasers.

Where the soil is of a light sandy or gravelly nature, the best possible manure for flowers in such soil is old cow dung that has been in heap for a couple of years. This can easily be commanded by the farmer. Where the soil is clayey, tenacious and cold, it should be removed, the beds well drained, and made up with a loamy rich soil, and it should be raised well above the level of the bed or grass as a further precaution against

stagnant water about the roots. Where these points are not attended to, all the care and labour bestowed on the general routine of management will never be rewarded with that degree of success for which an anxiety may be manifested.

Watering is an operation which is perhaps more frequently attended to in smaller gardens than in the more extensive establishments which come under the superintendence of professional gardeners. This may, perhaps, be accounted for by more reasons than one. In the first place watering after a certain fashion forms to the amateur a sort of relaxation and pleasure, especially in those cases where from vague ideas regarding it, the operation is deprived of its completeness and efficiency which, when thoroughly understood, make the watering-pot the implement of drudgery that is as seldom called into operation by the gardener as possible—he being aware of the fact that if watering is not done thoroughly it is in most cases best left alone altogether. In fact, the general opinion of the most experienced gardeners is that out-door watering, except in particular cases, is better left alone unless time and water can be afforded to do it much more copiously than it is generally done. Hence the watering-pots are resorted to only to water newly-planted things, and any crop which shows signs of languishing during the most scorching weather. In the next place, many who have recourse to watering, judging from the way in which they perform it, are entirely ignorant of the evils consequent on inefficient watering—water being the vehicle through which food is conveyed to the plants through the soil, and in the atmosphere the preventive of evaporation from the foliage; and in order to be beneficial in these respects, it must be administered in such quantities as will penetrate sufficiently deep into the ground to reach the roots, in contradistinction to the too common method of merely painting or sprinkling the surface of the soil. And as far as watering can affect the atmosphere in hot weather its effect in preventing evaporation must be very limited indeed. A mere sprinkling on the surface of the soil is productive of more evil than good, because in its necessary rapid evaporation in hot weather the soil is robbed of heat, and in stiff soils especially the surface becomes caked and hardened, rendering it a better heat-conducting medium than when loose and porous; and in proportion as the heat-

conducting power of the surface is increased so is the evaporation of moisture increased. So therefore not only do your mere surface-sprinklings evaporate with the rising sun without its ever having reached the roots or materially benefited the plants, and the natural heat is also more likely to evaporate by means of a hard caked surface.

These considerations render it superfluous to give detailed advice as to the proper quantity or way of administering water during hot scorching weather, and the natural inference will be that watering, to be of any material service, must be given in quantity sufficient to reach the roots of plants, and that the less frequent the dose is rendered necessary, by keeping the surface of the soil constantly stirred and loose to prevent evaporation, the better. It is not difficult to understand why so much difference of opinion exists as to whether artificial watering during a drought is beneficial or injurious. One who thoroughly understands what he is about, and waters almost to an irrigating extent, and plies the Dutch hoe among his crops the next morning, is in a position to assert that his vegetables and flowers do derive unmistakable benefit from watering. Another, who rests content with merely painting the surface, and leaves it to become hard and caked, may assert with equal truth that watering appears to do more harm than good.

But to be practical: take, for instance, a bed of celery in July, which we shall suppose was planted a month ago, perhaps when the weather was moist and showery. It has rooted into the dung below, but a partial drought overtakes it and continues. Let it be watered infinitesimally, and the surface of the soil never touched, nor covered over with a fresh layer of loose soil, and under such treatment it will be extraordinary indeed if it does not get hard and wiry, and ultimately run to seed. But let it get sufficient water to thoroughly soak the dung, and then let the surface soil be stirred next morning, and a layer of dry soil put over the surface. In eight days renew the dose, and it will be found that the celery makes rapid progress, assumes a dark green hue, and grows into a fine crisp head of celery. Now the labour incurred by a sprinkling every evening, and which evaporates by breakfast time next day, is a far more serious affair than the weekly thorough watering; and in the one case the labour is worse than in vain, while the other secures the crop.

In the case of seeds sown during severe drought it not unfrequently happens that they are watered with the view of causing them to germinate, and under such circumstances it is no uncommon occurrence that the seeds perish altogether. The extreme alternations of heat and cold moisture, and drought to which they are subject in twenty-four hours is more than they can stand. To prevent this and secure with certainty and rapidity their germination the bed should be well soaked with water when sown and then covered over with a mat or any non-conducting material to prevent evaporation. Thus the seeds will germinate and lay held of the soil with certainty. —*N. B. Agr.*

RABBITS AMONG FRUIT TREES.

WHEN the winter comes on and shuts up the feed upon which the rabbits are wont to subsist, they very naturally betake themselves to the neighborhood of human habitations where, when the boys and the dogs are quietly asleep, they make a meal of any tender vegetables which they can lay their teeth to. Poor Bun is not to be blamed for this act of self-preservation, but the damage is none the less annoying to the orchardist or nurseryman, and we are constantly inquired of for a remedy in the shape of protection to the trees or destruction of the depredators.

First, by way of protection to the trees or shrubs: where they are not too many to be treated individually, the easiest and most effective protection we know of, is to wrap paper around the trunk, to the height of say eighteen inches from the ground. Take common newspaper or wrapping paper, tear it in strips about six inches wide, commence close to the ground, and wind upwards, fastening the ends with a bit of yarn to keep the paper from unwinding. This plan was first recommended to us by Wm. D. Gallagher of Kentucky, who lived in a region very much infested by rabbits, and was largely engaged in fruit-growing. We made a practical application of his advice, by putting papers upon the small trees in our fruit garden, where he kept a lot of pet rabbits through the winter, and not a tooth was put through the frail protection of a single thickness of newspaper, and the paper remained upon the trees whole all through the storms of winter.

Another mode of protection is to smear

the trunks of the trees with butcher's blood, or rub them with peices of liver, refuse meat, or grease. But as these modes of protection are hardly applicable to larger plantations, such as nurseries or extensive gardens of small fruit trees and shrubs, the next remedy is the destruction of the depredators. Where there are plenty of rollicking boys of the school of Nimrod, with the right sort of dogs, the little marauders can be dispatched or driven off by making a few raids upon them at the right time, when the snows come. Where these facilities of destruction are not at hand, resort must be had to traps, the cheapest of which is the snare. Snares can be made of small, hard cord, a running noose, fixed to a spring pole kept down and touched off by a figure 4 trap: the bait—a piece of apple or potato—so placed that when the thief nips it, the figure 4 flies its brace, and the noose snaps up the game by the neck, and stops his breathing and his nibbling at the same time. This trap is so cheap and easily set, that dozens of them may be placed about the field, just before night, and if the game is abroad, they will be found swinging as stiff as mackerel, in the morning. Box traps, stake pens and dead falls, are also used to catch rabbits and other small animals.—*Ohio Farmer.*

REARING PEAR TREES FROM SEED.

System employed by M. Gregoire-Nelis, of Jodoigne.

THE extraordinary collection of new kind of pears exhibited by M. Gregoire-Nelis, at the International Fruit Show, on October 8th to 18th, must be fresh in the recollection of the Fellows; and many must have been puzzled to comprehend how one individual should have succeeded in raising so many good kinds. Their wonder will certainly suffer no diminution when it is known that M. Gregoire's plants have not been grafted, but raised on their own roots.

It is notorious, that for one good kind raised by seed a forest of bad kinds appear. It is almost equally so, that it takes nearly half a century to bring a fruit tree grown on its own stock into bearing. The mode in which this long protracted period of expectancy has been shortened by cultivators has been by grafting the young plants on older stocks, and so endowing them with fictitious age. Yet M. Gregoire's life has not been extended beyond the ordinary span allotted to mortals. He is not an old man. No doubt he has been engaged for a con-

siderable period in prosecuting the experiments whose results have now been exhibited, but not for a period greater than many others. His experience extends over thirty-two years. He ought not, therefore, according to rule, yet to have had a single crop from any of his young trees; but the fact is, that he has tried and adjudicated upon tens of thousands, and from among them he has kept 150 kinds as really good and deserving of preservation. That many of these were so is proved not only the various kinds raised by him which have already acquired celebrity, but also by many of those now exhibited, whose excellence was acknowledged by the International Pomological Congress at Namur, and by those who saw and tasted them at the International Fruit Show at South Kensington.

He has now communicated his system to this Society for publication. His account is short and to the point—

1. "He chooses his seeds about the middle of December and January—that is to say when the pear is at maturity. He takes the largest.

2. "He sows them in boxes (frames) at the end of January or beginning of February, and when the young shoots have shown four leaves—that is, the two cotyledonous leaves and two others, he pulls them up and cuts away the tap root, as far up as the beard of the root (*recoupe le pivot jusqu'au cheveu*), and replants them in good soil.

3. "He then leaves them for two years in the same place; after that he takes them up again, and again cuts the tap roots (*retranche encore les pivots*). The same operation is repeated every two years, and in this manner he has succeeded in making them produce fruit so early as in six, seven or eight years."

It is curious to see on how many points our British mode of cultivation corresponds with M. Gregoire's system without having touched it. M. Gregoire attaches much importance to choosing large seeds. He finds that large seeds produce healthy strong plants, and small seeds weak ones, or to use an expression of his own, "*Gros pepins, gros sujets—petits pepins, petits sujets*." So does the English cultivator. Like M. Gregoire also, they adopt the same time for choosing and sowing the seeds. The usual way here is to take up and pot or replant the seedling when it is about a year old, and in doing so the root is trimmed either accidentally or by design—a treatment which

seems very near to M. Gregoire's cutting off the tap root. Again, the young plants are very commonly transplanted every two years, but the roots are again cut. The system, however, of encouraging the surface roots and preventing the descent of the tap root, if not as old as the hills, is at least as old as the monks who placed flagstones below the roots to compel them to spread. But it does not appear ever to have been applied at the early stages and in the stringent fashion adopted by M. Gregoire-Nelis.

M. Gregoire's experience throws no light on a variety of points. For example, he finds that the development, size, and shedding of the spines or throwns borne by the young pear tree vary much in different trees—some ceasing to produce them in six or eight years, while others do not do so for double the time, and some cease to produce them so early as even three years. He compares their presence and absence to the period of puberty in man, only it shown in a converse fashion. Man gains his beard on his arrival at puberty—the pear tree loses its spines.

M. Gregoire's great experience enables him to diminish considerably the period of suspense as to the quality of his seedlings. In many cases he can tell from the appearance of the young plant whether it is worth giving it a trial or not. If the wood is clear and grey it will probably turn out well; if red or yellow, most likely not.

M. Gregoire's investigations have also enabled him to pronounce with authority upon various questions which have agitated the horticultural world; for example, the system of Van Mons, which found its origin and was mainly in the district adjoining the residence of M. Gregoire. This, as most of the Fellows know, was founded on the theory that the successive raising of plants by regular descent improved the breed; that the seed of A produced B, a better kind than A; that B produced C, which was still better; that D, the produce of C, was an improvement on it, and so on. For a time this fancy met with a general acceptance. It has still some supporters—but M. Gregoire-Nelis is not among them. It has been already well proved to be nonsense, and it will go near to be taught so shortly.

It only remains to add, that M. Gregoire's statements are free from the bias of personal or at least professional interest. He is merely an amateur horticulturist. By profession he is a tanner, by nature an amiable and intelligent gentleman.—*Proceedings of the Royal Horticultural Society.*

KEEPING APPLES.



R. R. P. Marsh, of Brandon, Vermont, states that he had last July, Rhode Island Greenings, Northern Spy and Spitzenberg apples fresh and juicy and of good flavor. He says one great mistake in regard to apples (and we may add in regard to winter pears also) is in picking them before they are thoroughly matured. My experience, he says, in keeping apples for the past thirty years is simply this: I have poked them in buckwheat hulls, wheat bran, dried sand and sawdust. I have also kept them on shelves and in barrels with no intermixture of other material. The latter I consider the better method, for two reasons: 1st, they kept as well or better; 2d, they are fresher, more juicy, and consequently more delicious eating. In the latter part of last November, 1862, I took clean, dry flour-barrels, and set them on pieces of scantling in my coolest and darkest cellar room. A part of them I filled with apples, and nothing but apples. In a part of the barrels I placed very dry corn husks at the bottom and sides, and then filled with apples. Another portion of the same varieties of apples I placed in single layers on wooden shelves in the same room. In February and March I examined the apples, and found those in barrels with husks at the bottom had many of them decayed, and the rotted ones seemed to affect all the rest, for there was a damp mould reaching nearly to the top of the barrels, and many of the apples covered with it. In the barrels without husks there was a mere trifle of unsound fruit, while it did not at all affect (as in other barrels) the taste of what remained sound. On the shelves about the same proportion decayed as in the barrels without husks, but the apples in these barrels seemed a little fresher to eat than any of the others.

On the whole, then, I consider all the "mystery" about keeping apples is to have them carefully picked, without bruising, quite late in the season; kept in a cool place, free from frost, until the "sweating process" is completed; then placed in a dark, cool room in the cellar in barrels, as described, open at the top, or on shelves as preferred. If there is any better way, I have not found it. It should be borne in mind that if the heat from a furnace or any other artificial heat in the cellar, comes in contact with the fruit it is sure to injure it.—*Genesee Farmer.*

PROPAGATING THE CURRANT.



THE best way is to cut off in the early spring before the buds swell, the growth of the last year, close to the old wood; make the cuttings one foot long; remove all the eyes except three or four at the top of the cutting, to prevent suckers; then place it compactly in good sandy soil to half its depth, or six inches, and by good care in one year it will be sufficiently established for transplanting. It should always be cultivated in the form of small brush trees, and by a skillful hand can be easily made to assume a handsome pyramidal or espalier form. All superfluous wood should be carefully pruned out every winter, and the plant invigorated with a rich manure in the spring. The currant or gooseberry can hardly be over-fed,

APPLE SCIONS.



SCIONS may be cut at any time between the falling of the leaves in autumn and the starting of the buds in spring. When taken off in the fall, one method of keeping them is to bury them a foot or two deep in the earth. I once set several hundred which had been kept in this way. They appeared as fresh when taken from the ground as those recently cut from the tree—nearly all lived and made a good growth. In this case a trench was dug and some straw laid at the bottom; the scions laid on, and another layer of straw put over them, and the trench then filled with earth.

When taken from the trees in winter, my method of keeping them is to put the lower ends in loose earth on the bottom of the cellar, and put a box over them to retain the moisture. They may be kept in this way till June, in good condition as I have found by twenty years' experience.

When grafting is performed early in the season, scions may be taken from the trees and set immediately with good success, but they should not be kept much length of time before using. My usual custom is to collect them in February and March, before the starting of the buds, but it may be done at any time during the winter when most convenient. The fall is the best time, on some accounts; the weather is not so cold, and the ground is usually free from snow, rendering it less laborious travelling in the orchard.

When cutting scions, we should be careful to select first rate varieties, of thrifty

growth, with well developed buds, and from healthy trees. Scions may be sent hundreds of miles by mail, if closely enveloped in oiled silk to exclude the air. I have received and forwarded many in this manner, but few of which failed in growing.—O. V. Hills, in *Boston Cultivator*.

HOW I GROW BIG, CRISP CELERY.



S I have been very successful in cultivating celery, perhaps my method, which is a very simple one, may possess an interest for some of your readers.

Good strong plants are absolutely essential to success. These I secure, by sowing in a hot bed late in February. As soon as the plants have attained the sufficient size for transplanting and the weather is favorable, I set them out in a well manured, well pulverized, and well sheltered bed or border. This bed I prepare as follows:—After thoroughly pulverizing the soil, I cover it with short, well rotted manure, to a depth of three inches, and on the top of this, I place an inch thick of fine rich soil. The plants are then packed out from three to four inches apart. Immediately after they are set out, a copious watering is given them. They are then shielded from the bright sunshine until they have taken good root. From the first to the middle of July, I make my trenches, which is done as follows:—Allowing five feet as the distance which the trenches should be made apart, I dig them from twelve to fifteen inches deep, banking the earth carefully upon either side, so that the heavy rains may not wash it back into the trench, and damage the plants, by covering the hearts. The bottom of the trench is then spaded and pulverized to a depth of from eight to ten inches, and on this I place fully six inches of thoroughly rotted manure. (If good solid clay is desired never use fresh manure.) Over this I spread a coat of fine rich mould, two inches thick. Taking up the plants from the border with great care, and allowing as much soil as possible to adhere to them; they are immediately set in the trenches, and holes being made with a dibble, and sufficiently large and deep to receive the roots without cramping them too much. Fine mellow loam then lightly filled in among the plants, a copious watering given to settle it, and the plants protected by means of boards laid over the trench, which are to be removed as soon as the plants take good hold. If

the weather be dry, water is given freely, morning and evening, and once a week a liberal supply of manure water is applied. When transplanting, all the embryo suckers are removed, the tops of the plants trimmed with a pair of shears, and great care observed not to let the roots get dry or injured. Earthing up is done only in dry weather, and as the plants advance in growth, care being taken to leave the hearts uncovered. In earthing up, the leaves are held together, to prevent the soil getting between them. By earthing up gradually, I think the crispness is secured, which constitutes the glory of celery.

This is a very simple plan. As the reader will observe, its success is attributable, first to strong plants, which are secured by transplanting from the hot bed, to a rich, well protected border; and secondly, to a well prepared trench, plenty of well rotted manure, and the regular weekly dressing of manure water. I had almost forgotten to say that the soil around the plants in the trench should be kept free and open by frequent light hoeings.—A. RAMSAY, in *Culturist*.

HOUSE PLANTS IN WINTER.



ARE and attention bestowed on plants, which they do not need, are worse than no care at all. It is knowing just what to do, and doing that and no more, that gives some persons their success.

Plants cannot by any possibility have too much light. The stand should therefore face the window, and placed as near to it as practicable; and the window should be broad, as little obstructed in its light by outside trees as the nature of the case will admit. But rapidly growing plants require most light; hence should be placed more directly in front of the window.


Water must be given according to circumstances. A plant in nearly a dormant state, needs very little—those in a rapidly growing condition require considerable. Too much water will make the latter grow slender, but they will bear a greater supply if in strong light. It must be remembered as a standing rule, that dormant plants may remain comparatively in the dark, and with little water; and growing ones should have a good supply of water and a full supply of light. But it must not be forgotten that greenhouse plants generally are nearly dormant during winter, and the soil must there-

fore be kept moderately moist, as the plants in this condition do not pump any moisture from the soil, and little escapes directly by evaporation. Drainage by filling one-fifth of each pot with charcoal, is of importance.

Many house plants are destroyed by too much heat, which increases the dryness, and both these causes together are more than they can endure. A cool room never as low as freezing, is best. From 50 to 55 degrees is much better than 60 to 70, the ordinary temperature of living rooms.

Syringing the foliage with tepid water, to wash off whatever dust accumulates, is of use; and the admission of fresh air, when there is no danger of chilling or freezing the foliage, should not be neglected.

THE PLEASURES OF A GARDEN.

UTTING my last bouquet for the present season on the 26th October, I fell naturally into a train of reflections upon the events of the past and the pleasures of a garden—not a garden made classical with statues and rare vases, delighting in sparkling fountains ornamented with palatial arbors, or rejoicing in cool grottoes or secluded walks, though, when it has been mine to enjoy such rarities, I have enjoyed them with a relish unsurpassable; but the pleasures of a garden, unpretending in its character, and narrowed in its area—such, indeed, as may belong to a poor office-writer with a stipend not exceeding the wage of an ordinary skilled mechanic, and opportunities, for its culture most limited. Yet, still my garden has its pleasures, sweet and not transient; still it is a delightful thing, the “concentration of a thousand pleasant objects;” still does memory present, with fond affection, its long array of beauties unfaded; and many days of gloom and hours of monotonous toil will be relieved to myself and my old office-chair by pleasant reviews on the flowers that were, and fond anticipations of those to come.

And shall I tell how pleasures so simple

have been so sufficient? how, with opportunities of the most limited degree, I have needed never to repine? and how my daily bouquet has rarely for eight months in the year failed me? Two short rules have sufficed. I have confined myself to flowers of the easiest culture, and have learned to be content with results easily attainable and within my reach. Early rising has compensated for long office-hours, and afforded time for those little attentions in themselves so sweet and so delightfully required. Strong health has been given to me for a seeming sacrifice of rest; and nature seen in her dress of richly-spangled dew—more gorgeous than diamonds or orient pearls in beauty—has been my daily employment. Then, indeed, are the many glories of nature most glorious; then are her sweetest odors poured forth; then it is we are most ready to sing with Wordsworth—

“God made the flowers to beautify
The earth and cheer man’s careful mood;
And he is happiest who hath power
To gather wisdom from a flower,
And wake his heart in every hour
To pleasant gratitude.”


Then it is when “pleasant gratitude” rises most spontaneously to the Author of all good for the richly-varied beauties around us; then is the pansy most pleasant, the pink most delightful, the wall-flower, most sweet, the rose most charming; then strongest within us is the love of those sweets

“Which comfort man in his distress,
Which smile when he is gay;
Their fragrance and their loveliness
They yield him day by day;
For patience and for humbleness
No servitors like they.”

And fostering them we reap a rich harvest of peace and content. Such peace and such content—such pleasures as have been reaped by a poor office-writer—may be realized by every one; and it will gratify his fervent wish if his brief reverie shall conduce, even in the least, to a wider diffusion of the pleasures of a garden.—*Scottish Farmer.*

DOMESTIC ECONOMY.

SMOKING MEAT.

OT a little has been written on the subject of preparing meat, in the best possible manner for domestic purposes, previous to placing it in the smoke-house; but little or nothing

has been said of the manner of smoking it. To appearance, it has been taken for granted, that this process, (so important in itself, and that it be done with care) could be performed by any one, who knows enough to build a fire. Those, who

have eaten bacon smoked as it should be, and afterwards partaken of that which has been scorched, or burned to a crust on the outside, as is too frequently the case with the meat of many people, will detect a remarkable difference; and often denounce the latter kind, as fit for nothing but soap grease. The process of smoking meat should never be left with those who have not a faculty of exercising proper care and judgment in their business. It is not necessary that the smoke be driven in, by heating the smoke-house like Nebuchadnezzar's furnace, seven times hotter than it ought to be heated; a smoke, sufficient to fill the space occupied by the meat, is the great desideratum. Log heaps, back-logs and foresticks should be dispensed with, because after they get once on fire, there will be too great a degree of heat. And besides this, in wooden smoke-houses, there is a great danger of setting everything on fire. Such instances I have known to occur; and loss of the meat was the consequence.

The best, most effectual, cheapest and neatest manner of smoking meat that has ever come under my observation is, to place a shovel of live coals in an old pan, or some low dish, and lay on them a few sugar maple chips. Dry ones are the best, for it requires too much fire to use green ones. No other wood will produce so sweet smoke as sugar maple; and the coals of it will keep alive as long, or longer, than the coals of other wood. In the absence of chips, we use corn cobs, which are nearly as good as chips. Three or four laid on a few coals will produce smoke sufficient, to fill any ordinary smoke-house.

As a substitute for a smoke-house, we have been accustomed to use a molasses hogshead, covered with board on the top, and a hole sawed in the side near in the bottom, large enough to admit a small pan of coals, with a cob or two, or a few small chips. Thus we avoid all danger of setting fire to the smoke house, and consuming meat and all; and our meat is not "half baked;" but presents a clean, copper colored appearance.

Let those, who have been accustomed to smoke their meat over a log heap, adopt the mode of smoking it gently; and then say which way is the best.—*Cultivator*.

TO ROAST A TURKEY.

Prepare the stuffing with bread, salt, pepper, butter, cinnamon, or nutmeg, or a little lemon peel, or parsley and thyme, chop and mix all well together with one or two

eggs beat well. With this dressing stuff the body und breast, and sew them with a strong thread. Roast the turkey of a fine brown, not burning it. It will be well done in an hour and a half, or if old and very large, two hours or more. Make a gravy of drawn butter and the drippings. Another sauce is made of half a pint of oysters boiled in a pan, thickened with a lump of butter rolled in flour. Only let it boil once. Serve this by itself, in connection with other gravy, for every person does not like oyster sauce.

TO MAKE THE BEST SAUSAGES.

Take 20 lbs. chopped meat, 8 oz. pepper, 1 tea-cupful sage, and 1½ tea-cupfuls sweet majorum. Pass the two last through a fine sieve. If you prefer it, thyme and summer savory may be substituted for the latter.

PLAIN MINCE PIES.

I WOULD like to say that I hope no one will be tempted to make a batch of "nice mince pies" after the generally received idea among housekeepers. Plenty of spices, brandy, meat, fruits, sugar, vinegar, concocted and baked, with a rich, greasy crust, will make a rich pie, which will not digest, and which, if spread on the flesh, will draw a blister in a few hours. A plain pie can be made of good beef, good apples, cider and molasses, with little or no spices, and a plain crust,—only people now-a-days study perpetually how to ruin the digestive organs. The question is not, what is wholesome, good and necessary, but what will most please the perverted appetite.

A PLAIN PUDDING.


Two ounces of whole rice not ground, first boiled in water and then in milk till tender. Well grease a pie-dish, and have ready six beat eggs, some sugar and milk (the milk should be *boiled* and allowed to get cold.) When the rice is done pour it into the dish, stir the eggs, etc., into it; beat it all up. A *small* piece of butter to keep it moist. Add milk to fill the dish; sweeten to taste, grate a nutmeg over it; bake three-quarters of an hour.

GOOD WAY OF COOKING ONIONS.

It is a good plan to boil onions in milk and water; it diminishes the strong taste of that vegetable. It is an excellent way of seiving up onions, to chop them after they are boiled, and put them in a stew-

pan, with a little milk, butter, salt and pepper, and let them stew about fifteen minutes. This gives them a fine flavor, and they can be served up very hot.

HOW TO POLISH SHIRT BOSOMS.

 WAS somewhat amused by the letter from a young housekeeper, Mrs. Fry. As she is desirous to make her husband's shirts, bosoms and collars look nice, I will endeavor to tell her how my wife does up mine. The first thing is to wash them clean, then starch them thoroughly with the best of starch. A little pure spermaceti or dissolved gum Arabic in the starch will improve it, but have the starch thick, and work it into the linen thoroughly. When in a proper condition,

use the common sad iron to smooth them and get them in proper shape, the same as though they were not to be polished. I would here say that you cannot polish linen on a soft cloth. Take a piece of hard wood (I use birch) say 10 x 14 inches, or size of a shirt bosom, and plane it even and smooth. When you use the polishing iron lay the linen on that, without any cloth underneath; a liberal supply of elbow grease is indispensable to make the thing look first-rate. Now for the polishing iron. You cannot polish with an iron with a flat face, the one I use is made something like a small shoe with a round heel on both ends, nicely polished. The linen we buy at the stores, is polished by men, or machinery, which gives it a finer polish than can usually be given by females.

MANUFACTURING REVIEW.

ALDEN'S TYPE-SETTER.

We take the following account of Alden's type-setting machine from the August number of the *Printer*. This machine is evidently one of the wonderful inventions of the age:

The extraordinary type-setting and distributing machine, invented by Mr. Alden, is now so simplified and quickened in its operation that a skilful compositor can distribute, compose, and justify the astonishing amount of forty thousand ems a day. In its cases are contained the Roman caps, small-caps, lower-case, double-letters, and figures, as well as the Italic caps and lower-case of whatever size type is to be used; and while the operator composes, the machine distributes automatically, and without any supervision at all. It is the product of the brain and hands of Timothy Alden—co-operated in by his cousin, the present proprietor, from its first conception. That is, while Timothy devoted his days and nights to the great work of his life, the cousin was diligently employed in the mines of California, extracting the means from the prolific bowels of "mother earth" with which to produce the marvelous machine designed to abolish the drudgery of the composing room. Regularly as the month rolled round did Timothy's "report of progress" reach his "second self" in the distant gold-fields; and as regularly did the "yellow dust" find its safe conduct back to the workshop of the devoted inventor—valued only as

a means to the production of his great labor-saving machine. These two persevering men really seemed to think through the same mental channel, without the slightest inharmony.

What the one conceived, the other drank in as by intuition; and when Timothy died, the work of simplification went on as uninterruptedly by his coadjutor as if the former were still of earth, and daily operating upon the necessary improvements.

The *Scientific American* speaks as follows of the machine:

We have examined a great many machines which displayed extraordinary ingenuity on the part of the inventors, but we never saw any other that approached in this respect the type-setting machine of Timothy Alden. The inventor devoted twenty years of his life to the labor of designing it, and all who examine it are impressed with the conviction that his mind must have been busy during this period. It was a task not to be performed in a day. He died just after his work was crowned with success.

The machines are being exhibited in practical operation by Charles C. Yeaton, at 113 William street, in this city. We are informed that a company has been formed for their manufacture with a capital of \$100,000, and that orders in considerable numbers have already been received from the leading daily papers. The price is \$1,500.

MONTREAL MARKETS.

Potash, per cwt.,	\$6.10 to 6.15	Wheat, U.C. White, per 60 lbs., ..	\$0.90 to 1.02
Pearlash, "	6.85 to 6.90	" U.C. Red, " ..	0.90 to 0.91
Flour, Fine, per 196 lbs.	4.00 to 4.10	Peas, per 66 lbs.,	0.70 to 0.71
No. 2 Superfine,	4.20 to 4.25	Indian Corn, per 56 lbs.,	0.55 to 0.56
No. 1 "	4.30 to 4.40	Barley, per 50 lbs.,	0.80 to 0.85
Fancy "	4.50 to 4.70	Oats, per 40 lbs.,	0.47 to 0.50
Extra "	5.20 to 5.30	Butter, per lb.,	0.15 to 0.16
S. Extra Superfine	0.00 to 0.00	Cheese, per lb.,	0.08 to 0.08½