FARMER'S ADVOCATE

PERSEVERE AND SUCCEED.

AND HOME MAGAZINE.

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THE FARMER'S ADVOCATE & HOME MAGAZINE

WILLIAM WELD, EDITOR AND PROPRIETOR.

THE LEADING AGRICULTURAL JOURNAL PUBLISHED IN THE DOMINION.

The FARMER'S ADVOCATE is published on or about the 1st of each month. Is impartial and independent of all cliques or parties, handsomely illustrated with original engravings, and furnishes the most profitable, practical and reliable information for farmers, dairymen, gardeners and stockmen, of any publication in Canada.

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360 Richmond Street,
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Our Monthly Prize Essays.

CONDITIONS OF COMPETITION.

1.—No award will be made unless one essay at least comes up to the standard for publication.

2.—The essays will be judged by the ideas, arguments, conciseness and conformity with the subject, and not by the grammar, punctuation or spelling, our object being to encourage farmers who have enjoyed few educational advantages.

3.—Should one or more essays, in addition to the one receiving the first prize, present a different view of the question, a second prize will be awarded, but the payment will always be in agricultural books. First prize essayists may choose books or money, or part of both. Selections of books from our advertised list must be sent in not later than the 15th of the month in which the essays appear; otherwise we will make the selections ourselves. Second prize essayists may order books for any amount not exceeding $3.00, but no balance will be remitted in cash. When first prize essayists mention nothing about books, we will remit the money.

Our prize essay on *Personal Observations on the Effects of the Removal of our Forests,* has been awarded to Mr. Thos. Beall, Lindsay, Ont. Several second prize essays have been awarded; we shall publish as many as we can find space for. Mr. A. E. Lussier, whose essay appears in this issue, has not given us his address.

A prize of $5.00 will be given for the best original essay on *Improving the Soil by Green Manuring.* Essays to be sent in not later than February 15.

A prize of $5.00 will be given for the best original essay on *The Farmer's Garden.* Essays to be sent in not later than March 15.

To Our Subscribers.

We have lately received letters containing money in which the senders have omitted giving their Post Offices. Please examine the date label on your paper and see if you have been credited with your remittance. The date on your label shows to what time your subscription is paid. If there be any error, notify us at once, so that it may be rectified immediately.

Editorial.

Scientific and Practical Professors—Sayings and Doings of our Young Philosophers.

We recently attended the annual meetings of the Eastern and Western Dairymen's Association, and made jottings of such matters as we thought would be of interest and practical use to our readers. The gist of the proceedings is nut-shelled in our dairy columns; but those who attended these meetings may feel disposed to insist that we should apologize for not conceding more space to the speeches of our budding philosophers, who occupied about three-fourths of the time devoted to the subjects discussed.

Prof. Jas. W. Robertson, who had recently been elevated to the dairy chair of our Model Farm, and who had just returned from the Colonial Exhibition, where he superintended our dairy interests, received marked attention, which was quite natural from the standpoint of the ability and enthusiasm which he displayed. Considering the short time during which he has administered our dairy affairs, he has accomplished marvellous results for our country, our dairying interests and himself. He is thoroughly practical both in butter and in cheese making, and as a man of business capacity, he has few, if any, rivals in Canada. He is a well-educated gentleman, and has done honor to our country as a representative of our dairying interests at the Colonial and Indian Exhibition. Although still a young man, he is exhaustive and fluent on the platform, and is equally facile with the pen. Possessing all these virtues and all these rare combinations of talent, sustained by an admirable reputation and an honorable business career, we would readily pass over any misgivings wherever the interests of our farmers and dairymen are not at stake.

The work of a professor of dairying at our Agricultural College and Experimental Farm is, or rather should be, largely experimental, and no professor, no matter how profound his learning, how enlarged his practical experience, or how unstained his integrity, if he has no practical experience in experimental science, can succeed, all his other brilliant qualities being more detrimental than beneficial. On previous occasions we pointed out what injuries may be sustained by foisting the results of an investigation upon the farmers without prefacing them with what has been accomplished in the same direction by other investigators. The conclusions of Prof. Robertson which we publish are scientific as well as practical, and they may be safely followed by practical farmers and dairymen; he has won public confidence and respect in the principle he has followed, that of inaugurating tests in order to ascertain whether or not our native stock "must go"—out of the dairy business. By doing so, he has showed his adaptability for working in the interests of our farmers instead of those of our live-stock manipulators.

In his other investigations, however, the professor has not proved a success. A professor of agriculture having informed him that stock did not require salt, Mr. Robertson set to work to test the validity of this "theory." He showed by his experiments that his cows shrank in their yield of milk when salt was withheld, and gained up again when it was re-supplied. He intends repeating the experiments for the purpose of further demolishing the said professor. We may be permitted to inform Prof. Robertson that he may save himself all this trouble for the reasons (1) that there are many other experiments of more practical value which should engage his attention, and (2) that his experiments, conducted after his fashion, are utterly worthless. This subject has perplexed many of the greatest investigators of modern times. The professor lays great stress on the fact that cows go back in their milk if allowed to fret from any cause, but he does not say whether or not the decrease was caused from fretting after salt. The experiment, to have any value, should be conducted with cows that have not been accustomed to salt; at any rate, if he continues the experiments, he should tell us something about the chemical composition and physical characteristics of the milk from unsalted cows; also give us an approximation of the saline constituents in the food consumed, the succulence of the ration, the quantity of water drunk, &c., and let us know whether the food was cooked or uncooked. We would raise no objection to this investigation at present were it not for the fact that the professor is scattering his theories broadcast as if they were pure gospel. A more superficial experiment could never enter into the head of any man.

He conducted another experiment for the purpose of testing the action of rennet in cheese. It is generally accepted that the action of rennet continues until the cheese is consumed, but he thinks he has proved that it ceases with the coagulation of the milk, *natural* fermentation performing the rest of the work. This experiment has little practical value; besides, it must be conducted on scientific principles, and his investigation has not been extensive enough to prove anything. He succeeded in securing the approval of Mr. D. McPherson, and an immense deal of valuable time was wasted in the theorizings. Prof. Arnold, who was present and who has made the action of ferments his life's study, could have settled the question in a few words; but the

young and ambitious philosophers, fearing the loss of their popularity, did not dare to ask the professor to give the results of his investigations. The most disgraceful and iniquitous part of the proceedings was that a committee was appointed for the purpose of lobbying the government for more money to aid in propagating the wild theories of these young philosophers.

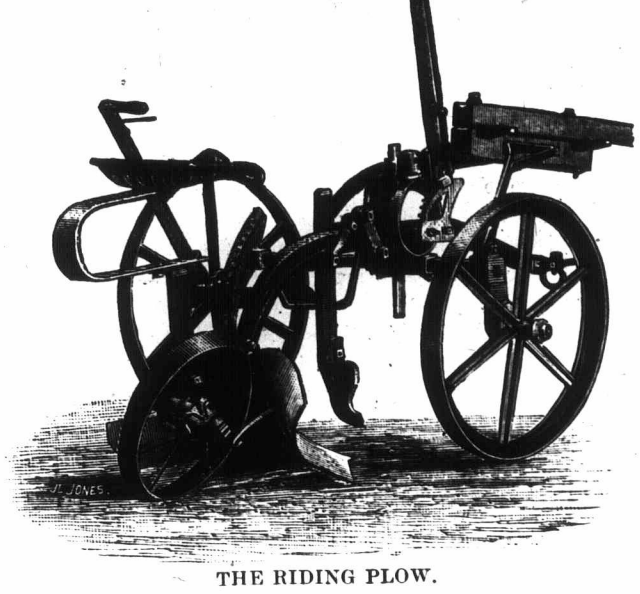
It is the sad misfortune of all youthful and aspiring philosophers that, not suspecting the weight of criticism which they are sure to receive, they rush into all sorts of theories without taking the precaution of subjecting them to rigid scrutiny. Our advice to venturesome boys who swim without bladders is: Boys, don't go beyond your depth.

Variation in the Yield of Milk.

A cor. of the N. Y. Tribune gives the following bit of his experience: When I milk in seven minutes a cow giving nine quarts at one milking, she never varies. When I change cows, lest in my occasional absence the cow might resent the presence of a stranger, and the man takes fifteen minutes to milk her, the cow gives a quart or two less. The same happened when because of a badly bruised thumb I milked the cow more slowly than usual. A cow with short teats is milked by using the bent thumb and the first two fingers, and is thus milked as quickly as another cow with the whole hand. When another milker strips the cow with the thumb and forefinger the milk always falls off. If, as is most probable, a good deal of the milk is secreted during the milking, the quicker milking should get the most milk, and the quantity should keep regularly up to the standard yield so long as the same quick method is practiced.

The Riding Plow.

When attending the exhibitions last year, we walked through the implement departments to ascertain if any new or improved implements of importance were to be seen. The plow here illustrated drew our special attention as destined on our best farms to take a place among the improved labor-saving implements. There are in this plow many improvements made on the old sulky plows, and new patents have been secured on the improvements. Some of the principal features are the even balancing of the weight of the plow, the turning of the furrow, and driver on the three wheels; the guarding of the rear wheel from obstructions by a flexible steel landside; a flange or guide furrow wheel, and the connecting of the plow by means of a king bolt to axle, placing the plow more under the control of the plowman, enabling him to turn more easily, cut a straighter furrow, and to finish the furrow more effectually. The operator also sits where he can see his work, not in front of it. It is claimed that with this plow the work can be done quite as well in every respect as by the most skilled plowman when walking, and with quite as much ease to the horses. More particularly is this the case in breaking and plowing hard, dry land; here the whole strength of the team is utilized to the best advantage, as the even depth of cut and steadiness of the plow can be so guaged as to keep it at just the depth required without any exertion of the plowman, and so much more plowing can be done that in point of economy alone this plow will, as soon as its capabilities are known, be, as the harvesters now are, on every good, well managed grain farm. This plow is a Canadian invention, and is, we believe, superior to anything of the kind made either in England or the United States. The inventors were convinced, after introducing the American designs of sulky plows, that something more was required to make riding plows a success for our Canadian farming, and as a result from their practical experience have produced this valuable machine plow, combining in one implement all these valuable improvements, have produced a riding plow that has made its mark during its first appearance in 1886, and is destined to be regarded as one of the greatest labor savers in farm machinery of the nineteenth century. The Cockshutt Plow Co., of Brantford, Ont., are the patentees and manufacturers. They have published a pamphlet giving full particulars and testimonials regarding it, which they mail free to applicants. This is a good firm. It is always best to communicate with the manufacturers direct in making purchases.



THE RIDING PLOW.

Salt as a Fertilizer.

In our last issue we discussed the effects of land plaster as a fertilizer, which reminds us of the desirability of inquiring into those other applications which act somewhat similarly, namely, salt and lime. We pointed out that the action of gypsum was mainly indirect; salt has almost entirely an indirect action.

Few substances have been more perplexing to the experimenter than salt, both for land and for stock, and there is yet much to be learned concerning its uses for these purposes. Applied to land, it has produced variable results under apparently the same conditions. Its action, therefore, being uncertain, farmers should be ready to grasp everything that has been proved concerning its advantages and disadvantages. We pointed out that plaster sometimes acted directly and sometimes indirectly, or both; not so, however, with regard to salt, for mostly all agricultural plants can grow and attain perfection without the elements of which it is composed, which cannot be asserted of the constituents entering into the composition of plaster, viz., sulphuric acid and lime. However, as salt is found in every fertile soil, it is taken up by the plant, and although, as a rule, it is not necessary for plant growth, it is required in the composition of agricultural plants for the animals which feed on them. So far as the animal kingdom is concerned common salt is as necessary in the composition of the plant as those other salts without which cannot grow.

Common salt is a chloride of sodium; that is, a chemical union of chlorine and sodium—a gas and a metal. By a series of laboriously conducted experiments, its chief action in the soil has been placed beyond doubt, being almost identical with that of plaster. When a sodium salt, in an ordinary soil, which contains absorbed bases, comes into contact with lime, magnesia, potash, and ammonia, it sets these substances free, while a corresponding portion of the sodium in an insoluble form becomes fixed, which produces an increase of easily available plant food, and prevents too great a localization of the same in the surface soil. This action may be demonstrated by an experiment made by Eichorn, who caused pure water to percolate through the soil, and compared the results with a one-tenth per-cent salt solution percolated through a soil similar in quantity and composition, the depth being one foot. The following table gives the result, reckoned in pounds of constituents named:

	Pure Water.	Salt Solution.
Sulphuric acid	117	130
Phosphoric acid	36	27
Potash	134	171
Lime	149	315
Magnesia	45	82
Ammonia	10	12

This table shows that salt produces the greatest effect in dissolving lime and potash, causing them to descend into the soil. The experiment seems to show that salt has no effect on the phosphoric acid in the soil, but other experiments have proved that it also has a solvent effect on the phosphates. The advantageous effect of this action is to distribute the nutriment to greater depths, where it usually becomes absorbed more efficiently by the plant roots. During this substitution process, however, injurious chlorine combinations are formed, notably chloride of calcium and chloride of magnesium.

Specially worthy of note are also the effects of salt on the composition of plants. It has been observed that applications of salt reduce the percentages of starch, sugar, and other carbo-hydrates, and have been known to produce an incombustible quality of tobacco. Salt has been useful for hemp and flax; indeed, flax has flourished on soils so salty that they have killed the tobacco plant. It has proved beneficial for pastures, especially when the land is moist. It sweetens the grass, making it more palatable for stock, and thus acts an important part in stock-feeding. The causes given for the beneficial effects of salt upon pastures are that grasses are not easily injured by the chlorides of calcium and magnesium which are formed in the soil. Salt has been found to benefit clover for the same reasons mentioned with reference to the action of plaster. Roots have also been benefited by applications of salt. It is also noteworthy that nitrogenous fertilizers, such as nitrate of soda and ammonium salts, have produced better results when applied with salt than when applied alone.

Salt should only be used on light, rich soils, and should, as a rule, not be applied in greater quantities than 450 lbs. per acre.

Countries which know the most about the action of salt use the least of it. England uses

more than Germany. The soil, the climate, the mode of cultivation and manuring, and other circumstances must be taken into consideration before salt can be intelligently applied. In Canada it is often applied to absorb moisture, but the soil itself, if not baked, is one of the best absorbents of moisture. Pure salt absorbs no moisture; this is done by the impurities which it contains, mostly plaster. A loamy soil which contains a large percentage of organic matter is an excellent absorbent of moisture and ammonia. The folly of applying salt for this purpose is thus made plain. Moisture should be obtained by thorough drainage.

Results from Careful Farming.

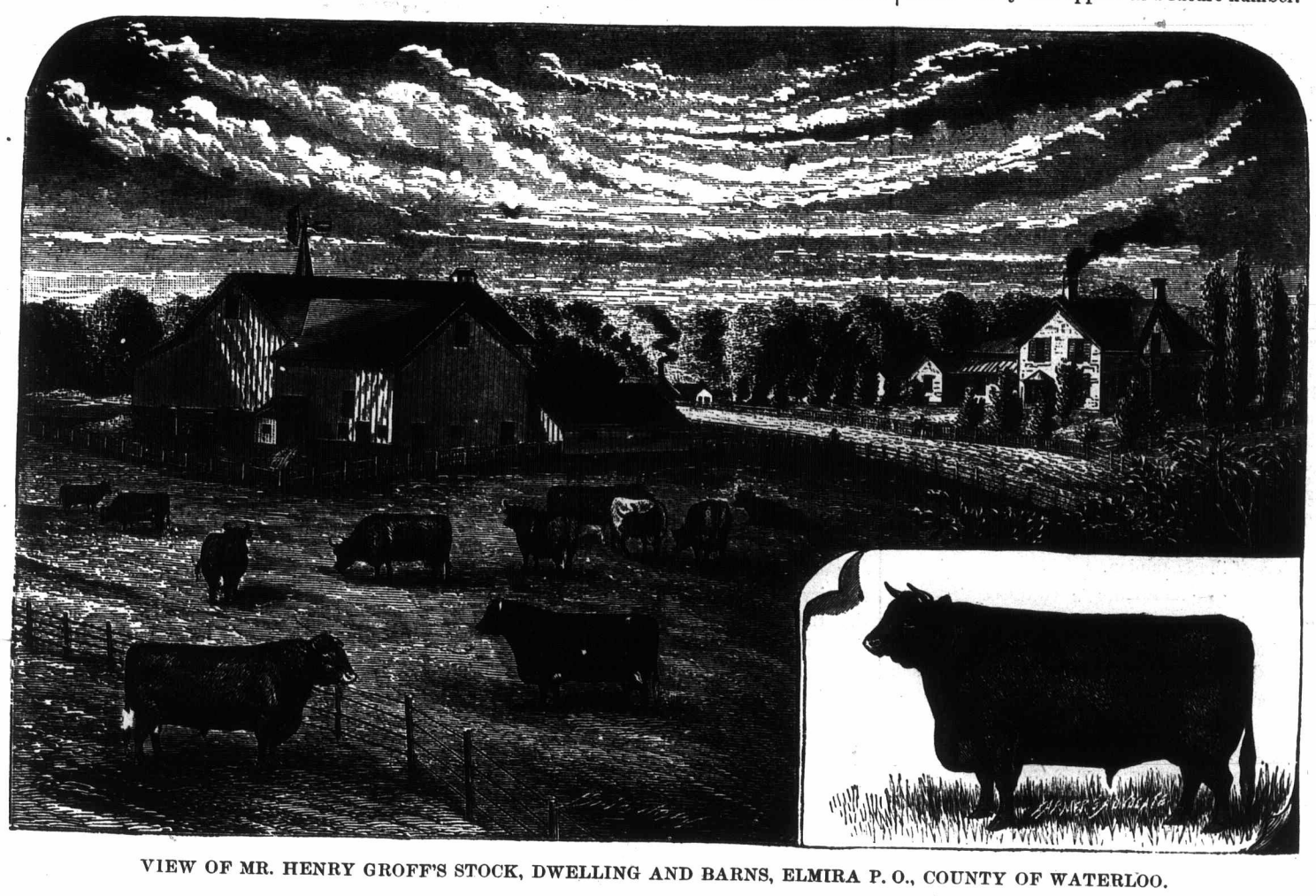
It is with much pleasure we now give you a brief account of one of Canada's sons of toil. Mr. Henry Groff is a native of Canada; his parents having emigrated here from Pennsylvania. His father took pride in keeping the best yoke of oxen he could get when clearing his farm, took them to the local exhibitions, and gained prizes with them. His son Henry was imbued with the spirit of excelling, and with his hard earned money purchased a Shorthorn heifer, paying for her such a sum that his relations and friends considered injudicious, but Mr. Groff was firm, took her to the exhibition, gained a prize, raised a calf, and bought another still more expensive. In connection with his brother they fattened large numbers of cattle for the European markets, and knew well how to take care of cattle. He exhibited what was considered by many Americans the best animal that was exhibited at the Fat Stock Exhibition in Chicago; and although the sweepstake prize was awarded to what most practical men considered a much inferior animal, he gained the first prize. Mr. Groff's was a grade steer. This year he determined to try what he could do by fattening a pure-bred Shorthorn. The result was the sweepstake prize at the Ontario Fat Stock Exhibition was carried off by him.

Mr. Groff now has nearly forty head of Shorthorns, such as any man might be proud of. He will not fatten his best breeding animals for show purposes. He has a young bull on his farm which we consider as good as any imported bull we have seen. The bull has the advantage of being a Canadian; its dam was that magnificent sweepstake cow, Pride of Strathallan admired by every Shorthorn man, owned by Mr. Snyder, of German Mills. The progeny of this bull will probably be heard of in generations to come. He may be seen in the front part of the illustration. The sweepstake steer is in the corner.

Mr. Groff's sole attention is not given to Shorthorns. He has a good lot of horses and other stock, and an excellent farm of 160 acres, which he feeds and takes care of as he does his stock; he feeds it before it gets hungry, the result being most bountiful crops; even his grass fields, despite his large numbers of stock, when winter sets in seem to have a good coat of grass to protect the roots and give strength for the ensuing year.

His barn and stables are large and very convenient, despite the fact that they were not all built at once; a windmill furnishes power to supply water in all parts of his buildings from a cistern, also to drive a chaff cutter on the floor above the stable.

We give the accompanying diagram to show the plan of his stabling. What impressed us more than anything was when we went into the stables the heavy coating of salt thrown over the cut feed and bran, had just been put into the mixing trough,. "We asked how often he salted his cattle?" "Every night and morning." "Do you give them as much as this every time?" "Yes. I approve of giving them plenty of salt; they eat their food better and thrive better." The quantity fed we should judge from what we saw was about ¾ of a pint. This was for 12 head of cattle. Mr. Groff does not use any condiment as a food, but uses large quantities of bran. If any farmer deserves a medal for commencing from a small beginning and putting a farm in order, gaining honor for our county and the business of the farmer in all its branches, and without any Government favoritism, Mr. Groff would stand very high on the list. We might call his the gold medal farm from the number of medals he has taken for his stock. If a medal were awarded to any county for really good, progressive, substantial farming, good farm buildings and good roads, Waterloo would be a hard county to beat. Space prevents us from inserting the plans and fuller description in this issue. They will appear in a future number.



VIEW OF MR. HENRY GROFF'S STOCK, DWELLING AND BARNS, ELMIRA P. O., COUNTY OF WATERLOO.

CURING BACON AND HAMS.—A writer in the London Agricultural Gazette says: It is quite possible to smoke hams and flitches of bacon at home by hanging them up a chimney where only wood is burned. The best kind of wood is oak and its saw-dust, if it can be procured: fir or deal must never be used. But when the business has to be performed on a large scale, it will be found much better to adopt the plan followed in Hamburg. They hang the hams and bacon in a large roomy chamber at the top of a high building, the smoke being conveyed to this room, or rooms, as the case may be, through tubes from fires in the cellar. The vapor is thus condensed and the heat absorbed, so that the smoke, when it reaches the meat, is dry and cool, and, in consequence, it imparts a flavor by far superior to that obtained by the commoner method. An excellent way to keep both bacon and hams after being smoked is to put them into large chests filled with bran; this plan will prevent them becoming rusty, and will also protect them from maggots.

Farmers' Clubs.

Dominion Farmers' Council.

[This Council meets on the third Thursday of every month at 2 o'clock p. m. All communications should be addressed to the Secretary, W. A. Macdonald, London, Ont. The Council has now on hand pamphlets containing its Constitution and By-laws, with an account of its origin, also pamphlets containing a form of Constitution and By-laws suitable for Farmers' Clubs, which will, on application to the Secretary, be distributed *free* to all parties having in contemplation the organization of clubs.]

The regular monthly meeting of this Council was held on the 15th ult., President Leitch in the chair. This being also the annual meeting, officers were elected, and as various important matters relating to the future of the Council had to be discussed, there was no regular programme. All the officers were re-elected, viz., President, D. Leitch; Vice-President, Henry Anderson; Treasurer, John Kennedy; Secretary, W. A. Macdonald.

AN AMALGAMATED CLUB ORGANIZED.

The Secretary read a communication from Mr. W. J. Biggins, secretary of the newly organized Granton Farmers' Club, stating that this club, consisting of 19 farmers in that locality, had been organized, and desired to be amalgamated with the Dominion Farmers' Council.

W. Weld stated that he was pleased to see that the first club was organized in one of the finest agricultural sections in the Province—the county of Huron. He was well acquainted with that section, and knew the farmers to be an intelligent, progressive and enthusiastic class of people. Mr. Biggins had one of the finest herds of Shorthorns in the country, and was one of the oldest and most respected members of the agricultural society. In that section they had also a grand agricultural society. He wished the club success, and hoped that they and the Council would work harmoniously together for the interests of the farmers of the Dominion.

THE PRESIDENT'S ADDRESS.

D. Leitch, in thanking the Council for his unanimous re-election as their president, said he was satisfied with the progress of the Council, but regretted that his arduous duties prevented him from giving as much attention to the proceedings as he should, but he expected he would be able to devote more time to the Council in the future. Farmers must be convinced that more science or accurate knowledge was necessary in their profession in order to make it a success. If it was necessary to set aside one day in the week for rest and religious duties, surely no farmer ought to begrudge one day in the month for the discussion of such questions as would elevate him mentally, morally and professionally, especially when he had a grand opportunity for edifying and elevating his fellow farmers at the same time. We must place more reliance on our brain and less on our muscle; hence the necessity for organized effort for the purpose of gathering all the agricultural truths that were in command. Thanks to the liberality of Mr. Weld, the Council had the use of the best agricultural library in the Dominion, as well as the best agricultural journals in the world, and they should firmly grasp this opportunity for doing good to their fellow farmers and to themselves. With all these sources of knowledge at their command, and with members comprising the most practical and scientific talent which the country can afford, nothing was failing in the elements of success. He had recently attended Farmers' Institutes, and was surprised to see the extent of the Council's popularity. He was introduced as President of the Dominion Farmers' Council, and in discussing the questions, he felt it his duty to do honor to the Council. These flattering marks of respect impelled him to greater earnestness and sincerity in the discharge of his duties as President of the Council, and he hoped for brighter prospects than ever.

THE VICE-PRESIDENT'S SPIRIT OF SELF-RELIANCE.

Henry Anderson, in thanking the Council for his re-election as Vice-President, said the Council had made a satisfactory beginning under the disadvantageous circumstances under which they had been working. The time for the discussions had been too limited, and no effort had been made to push matters. The growth had been slow but sure, and he believed slow and natural growth to be the basis of true prosperity. The farmers of our Dominion were sadly lacking in public spirit; they should be at the head of their country and their profession instead of at the tail. They possessed the necessary talent, but it lay dormant and needed waking up. If we, as a Council, did nothing but infuse some public spirit into them, we would accomplish a great deal; but in order to do so we must exhibit our own enthusiasm in the discharge of our duties. The spirit of self-reliance amongst farmers was too weak, and they should strengthen it by concentrating their energies. He felt that this Council, with the co-operation of amalgamated farmers' clubs, would yet become a power for good in the land.

DATE OF MEETING CHANGED.

Henry Anderson, having given notice at the previous meeting that he would move to change the date of meeting, made his motion to this effect. He said Saturday was not a convenient day for him to attend, having so many municipal matters to attend to. He was willing to spend a day specially for the meetings of the Council, and come to the city exclusively for that purpose. He felt that the time allotted to the discussions was too short, and that there was too great an irregularity in the attendance on account of members having so much private business to attend to on Saturday.

President Leitch said he would also rather spend a day exclusively for forwarding the interests of the Council. The work was getting heavier and required a longer time and more careful attention. During the summer months Saturday was also his busy day, as he had to attend the cheese markets, and could not therefore attend the meetings of the Council punctually.

After some discussion it was unanimously resolved that the date of meeting be changed to the third Thursday of each month.

REMARKS BY A NEW MEMBER.

Mr. John O'Brien, who had been proposed and seconded as a new member, said he was pleased at the proceedings of the Council, but he would never again join any secret organization where there was much time wasted in ceremony. He once joined the Grange, and did not like it for the reasons stated. Mr. Weld having explained that there was neither secrecy nor ceremony in connection with the Council, Mr. O'Brien expressed his pleasure in joining.

TESTING COWS BY FARMERS' CLUBS.

W. A. Macdonald drew the attention of the Council to the fact that no instructions or conditions had been prepared with reference to the lactoscopes to which amalgamated clubs were entitled. The money with which these instruments were purchased came out of the funds which were to be spent in the interests of agriculture, and this object could not be attained if the lactoscopes went into the hands of the clubs without the condition attached that reports of the tests be forwarded to the Council for publication. The question was discussed, but was postponed for further consideration.

GAS-LIME AS AN INSECTICIDE AND A FERTILIZER.

John O'Brien stated that he observed in the FARMER'S ADVOCATE under the reports of the proceedings of the Council that Jas. Fletcher, Government Entomologist, had made inquiries through the Council if any of the members had any experience with gas-lime as an insecticide or a fertilizer. He had made a number of experiments with gas-lime for both these purposes, and would like to give the results at the next meeting of the Council. The President thanked Mr. O'Brien for his kind offer, and said the Council would be delighted with a report of his experiments.

AGRICULTURAL EXPENDITURES.

In choosing a programme for next meeting, the above question was decided upon, and Henry Anderson was chosen to prepare a paper. It was held that this was a vital question at the present time, as several influential bodies were preparing to lobby the government for increased expenditures for agricultural purposes.

PASTURES IN THEIR RELATION TO DAIRYING.

At this juncture in the Council's proceedings several members left, there being nothing more on the programme. A few members remained, and a desultory discussion arose with reference to pasture in connection with dairying. President Leitch was asked to give his experience and present his views, to which he assented, and made the following remarks, taking for his text the following string of aphorisms: "All flesh is grass; grass is king, and he who makes two blades of grass grow where one grew before is a benefactor to his country." He said farmers paid less attention to grasses and clovers than to any other crop. He would like to know why this should be so. When we looked upon the beautiful carpet of green which covered our fields and meadows and roadsides, and thought of its vast importance for those animals that administered to our wants, the great source of wealth it was to the country, and the barrenness and desolation that would ensue were it wholly or partially destroyed, as was sometimes the case in Australia and other semi-tropical countries, thousands of cattle perishing from famine and thirst, we would then begin to appreciate the importance of the question. It was, therefore, no wonder that some thoughtful people occasionally paid attention to these humble and lowly plants. It was only in recent times during which these plants began to be appreciated, and as yet only by the few. Look over the fence in the heat of summer and mark the bare fields where the cattle, horses and sheep graze; mark how gaunt they appear; how restless the cows were while the milk was being relentlessly drawn from their shrunken udders; and how mournful the matron looked while deploring the loss of the product with which she was to supply her household wants. These pictures were familiar to all, but how were we to paint them brighter? In order to commence at the right place, it was necessary to know what the plants fed on, how to supply their needs, and all their other peculiarities; how to prepare the soil for the reception of the seed, and how the varieties should be grouped together in order to have a succession of growths during the entire season. For a permanent pasture the preparation must be ample and complete in order to realize an abundant return for the labor expended. For most grasses, the best soil was a clay loam, but the soil should be thoroughly

cleaned, pulverized, manured and drained. Foster crops should, as a rule, be abandoned, and the seed should be sown early in spring or during the month of August. With reference to the varieties of seeds to be sown, the question was not so easily answered, and the farmers in every locality should make tests for themselves. Our best authorities recommended the following mixture, but the relative proportions could not be settled for every condition: timothy, red top, orchard grass, blue grass, meadow fescue, oat grass, perennial rye, and red, white, alsike and lucerne clovers. The quantity to be sown per acre was 30 to 35 pounds. Such pastures should not be grazed the first season, but mowed once or twice till the sod thickened and the ground became firm. We were lamentably ignorant of the feeding values of these grasses, although many of us could discuss the relative feeding values of other farm crops. Who could tell us how many pounds of timothy, of clover, of orchard grass, or of blue grass were required to produce 100 lbs. butter or cheese, and what the quality of these products was from each of these plants? Would it be better to feed them separately or mixed? These were important questions to the farmers of our country. He knew from many years of observation and experience that there was a great difference in the feeding values of these plants, and that their effects upon the dairy products varied very materially. He had cheese factories in sections where there were great variations in the soils and grasses, and he had never failed to get a hard cheese from the clovers, while the grasses produced a soft cheese. Our native blue grass was probably the best in the world for quality in butter and cheese, but it was not prolific enough. A blue grass pasture should be accompanied by soiling on an extensive scale, which few farmers had the time or the courage to undertake. If a variety of clovers and grasses could be made to flourish on the same pasture field, the expense of the soiling system could be largely obviated. Land was not yet so valuable in all sections of the Dominion that soiling should be indulged in on an extensive and expensive scale. In his section pastures of this kind could not be made permanent. Ten years ago he seeded a newly-cleared field with red clover and timothy; now there was scarcely a plant to be found except blue grass and white clover. Other imported varieties would suffer the same fate. It was related of the Hon. Harris Lewis, of Herkimer County, New York State, that he once had a piece of white clover which he saved until it was in full blossom. He then turned his cows into it, expecting the produce to be of great value, but was astonished to find the therefrom-obtained butter was poor, frothy stuff, which caused white clover to fall 50% in his estimation. What would be the result if all the clovers and grasses were so tested in butter and cheese making, feeding them separately and also in mixtures of varying proportions? Here was a wide field for experimentation for this Council. These were questions which should engage the special attention of all farmers who had anything to do with dairying. Pastures seeded down according to these rules would carry an ordinary-sized cow per acre, and produce 4,000 to 5,000 lbs. of milk per season, which were remarkable results when compared with our present slip-shod methods of pasturing. He was a strong advocate of the soiling system, without which the most profitable results in most localities could not be obtained. His favorite soiling crops were rye, oats and peas mixed, red clover, and corn. He denounced the general-purpose cow, and judging of the merits by pedigree and fancy points. The size of the cow should be consistent with the productive capacity of the soil, and the carrying capacity of the pasture. A small cow on a poor soil or pasture stood starvation better than a large one. It proved nothing to say that such and such a cow or breed produced so many pounds of milk; there was a great difference in the consuming capacities of different breeds and sizes of cows, which farmers did not attach sufficient importance to. The manufacturer, as well as the farmer, required skill and intelligence, if we were to compete in the world's markets. Both were yet far from perfection. He looked with pride and satisfaction upon what had already been accomplished, and trusted that both the creamery and the cheese factory would be more liberally patronized than ever before.

Garden and Orchard.

PRIZE ESSAY.

Personal Observations on Effects of the Removal of our Forests.

BY THOS. BEALL, LINDSAY, ONT.

In the year 1840, my father purchased a wooded farm near the centre of the township of Whitby. The family at once commenced clearing the land. My "personal observations" will be confined to a number of townships east, west and north from that point, about twenty-five in all, or about 2,000 square miles, as I have lived almost continuously during the past 46 years within these limits.

At the date referred to —1840— most of this land was an unbroken forest, the settlers were few and generally far apart, and mostly in the front townships. The clearings along the few roads which had been then opened were very small, excepting a few along the old Kingston road. Probably not more than from six to eight percent of this great area had at that time been cleared. Late returns show that about 70 percent is now under cultivation.

The territory referred to lies between Lake Ontario on the south and several inland lakes from 30 to 60 miles north, which form portions of the Trent waters. Between Lake Ontario and these inland lakes, and about ten miles north of the former, runs a ridge of land averaging about 1,000 feet above Lake Ontario, and nearly parallel with it. Along this ridge there then existed, and yet exists, a large number of springs producing rivulets, each starting on its downward course, some towards Lake Ontario, and others to the north. These rivulets in their descent at that time received the surface drainage from large areas of forest and swamp land, and long before reaching the lakes, either to the south or to the north, became of sufficient size to drive the numerous saw-mills, grist-mills and carding-mills which existed in this district 30 or 40 years ago. Most of them, however, have long since ceased to be operated.

What a wonderful change has taken place in the appearance of this great tract of land! This great almost unbroken forest, which 46 years ago was the home of the wild deer, the bear, the fox and the wolf, has now almost totally disappeared, and has been replaced by smiling fields of grain and beautifully undulating pastures, stocked with the finest breeds of sheep, cattle and horses—the whole country dotted here and there with towns and villages, and excellent farm buildings may be seen on every hand. It would be difficult to find a rural district of the same extent in this or any other country where all the circumstances and surroundings of life would seem to present a more perfect picture of rural felicity; yet upon enquiry we find some drawbacks to the happiness of this people—drawbacks consequent on the removal of their forest surroundings, the chief of which are scarcity of water during a portion of the summer because of the drying up of the creeks and a supposed diminish rainfall, and the injuries done to the growing crops by high winds in the summer, and also the blocking up of the roads with snow drifts in winter.

The losses and inconveniences from these two sources are very serious. During the summer season we are liable to droughts lasting two or three weeks. At such times the crops—under the present system of shallow cultivation, which too often prevails—suffer greatly from excessive evaporation, especially when high winds occur at the same time, which often come sweeping along the parched earth for miles without any obstruction, the relative humidity of the air at such times being often below 30 percent, thus adding materially to the increasing aridity of the soil. In the winter season the impediments to travel along many of our highways, caused by the drifting snow over an open country becoming packed between the roadside fences, are so great that travel thereon is impossible. At such times fences have to be taken down and new roadways made across the open fields, very much to the inconvenience of the traveller, and often a serious loss to the owner of the land.

A careful consideration of this subject will go far to convince us that this state of affairs has been the result of our own acts, to a very large extent, and also that remedies for these evils are largely in our own hands. For, notwithstanding the idea which everywhere prevails that the rainfall in this Province is much less than in former years, the carefully kept records at the Meteorological Office in Toronto show no diminution for the past 50 years. And it may also be observed that the numerous springs on the "ridges" before referred to as the sources of the rivers of this district, are as active and abundant now as they were fifty years since. The drying up of the streams is a natural result of the deforestation and subsequent cultivation of the land. Soon after the land is cleared along these streams, the bed of the river gets its share of attention. Stones, logs and debris of all kinds are removed therefrom; and the course itself is often straightened, and every means is applied to facilitate the escape of the water with the greatest possible speed. Getting rid of all surface water with the utmost rapidity seems to be an article of faith of all workers of the soil. Not only are the natural water courses cleared of every obstruction, but much labor is expended in opening ditches and running furrows through cultivated fields to aid the water in its escape, and thereby carrying with it large quantities of the best of the soil.

The day is not far distant when great changes in our methods of treatment of lands will take place, but it will not be until the principles, as well as the advantages, of underdraining and deep and thorough cultivation of the soil are fairly well understood by the farming community. Then, but not till then, much greater efforts will be used in supplying means and appliances to prevent the flow of water on the surface than have hitherto been taken to facilitate its escape. All the rainfall on a fairly level farm will then pass into the soil, and the superfluous water escape from the farm chemically pure, and only by the outlets of the underdrains provided for that purpose.

The remedies to be applied to prevent the losses and inconveniences incident to the blocking of our roadways in the winter by drifting snows, as well as to lessen the injury to the crops by the strong scorching winds of summer, are much more formidable than those having reference to the water supply, because the necessary means to accomplish what is here desired must, to be effective, be undertaken by large communities, namely, the re-planting of considerable portions of our cleared farms with forest trees. To accomplish this work in such a way as to secure for ourselves a very large share of the protection from storms enjoyed by the early settler, there should be planted rows of trees along every division line between the several owners, along all permanent divisions of every farm, and along both sides of every road. In 20 or 30 years, if judiciously planted, these masses of trees would afford a protection from the evil effects of the high winds of both summer and winter pleasant to contemplate. In summer the cattle would thus be provided with the much needed shelter from the sun's burning rays. The hot, dry winds

would become cooled and moistened before reaching the growing crops and the strong currents of wind would thereby be kept above us, while sufficient circulation would be felt on the surface of the soil to keep it properly aerated. In the winter there would be but few snow drifts, and the snow would lie more evenly over the fields, and not as now, when nearly all the snow becomes piled around by the fences. Then, to, there will be no more snow in the roadways than in the fields, provided the old rail fences on either are replaced by wire fences or something equivalent thereto.

The Farm.

A Leading Township Agricultural Society.

Despite the attempts which are being made by interested parties to centralize our agricultural exhibitions as much as possible, thereby weakening the influence of local exhibitions, we find many of the latter in a more flourishing condition than ever, the stringency of the times notwithstanding,

One of our most stable and influential societies is the Ameliasburgh Township Agricultural Society, of which Mr. H. Wellbanks is President and Mr. Edward Roblin, Secretary. We have just received a report from the Secretary, which represents a good showing. About $560 were expended in prizes at their last exhibition, and it appears to us that they have been distributed with better judgment than those distributed at more pretentious exhibitions. We wish long life and prosperity to our township agricultural exhibitions.

Specially noteworthy in the Ameliasburgh Society is the tendency to greater independence which it is exhibiting. The Secretary informs us that the organ agricultural papers, which were at a premium last year, are now at a discount, and he calls the ADVOCATE their "old stand-by." This exhibition of independence is worthy of this honorable body of farmers; they will find the ADVOCATE stand by them and fight their battles so long as they persevere in the same honorable and independent course which has characterized them in the past.

How to Manage the Manure.

How to manage our manure in winter, so as to save labor and prevent loss of valuable qualities, has been a study with me all my life, and I am coming nearer solving the problem each year that I farm. I think that there are few farms on which there is not a great waste of manure from leaching or fire fanging, and also a waste of labor in drawing the manure to the fields when the land is soft and the wheels cut down, so that even with a half-load the horses are over-worked and the land damaged. On most farms the manure from the stables is thrown out of a high window and allowed to accumulate against the building, greatly to its damage, and if not under the eaves it heats and fire fangs until most of the ammonia is driven off, and if under the eaves the soluble parts are leached out and carried away.

There are a few things easily understood which are necessary to the successful and economical management of manure. I enumerate as follows: (1) To make the manure most valuable the liquid should all be saved with the solid, and to do this requires plenty of absorbents. (2) Fermentation is necessary to prepare the manure for use, and this fermentation must be under control, for, if excessive, the nitrogen will be driven off and the value of the manure greatly reduced. (3) The agencies which cause fermentation are air and moisture, and to get the best results these must be under our control. (4) An intelligent choice of the time of hauling manure will greatly reduce the expense of taking it to the fields. Half the farmers through the great wheat-growing belts leave more or less of their straw in the wood lots or fields, instead of bringing it to the barn yard, to be mixed with the manure and save the liquid.

The plan which I have adopted in the management of my manure is this: I have three stables, each 30 feet long, in the basement of my barn. The middle stable is occupied by the horses, and has a double floor, so that no liquid can escape. The outer or north stable has no stalls, but can be divided into four equal apartments, or box stalls, with movable bars, which can be put in or taken out in less than five minutes. It has double doors at each end, so that we can drive through it to take out the manure, and at the side opposite the horse stable a manger extends the entire length, and hay or fodder is dropped into it from above. The horses stand with their heads from this stable, and every morning the manure and soiled bedding is thrown from the stalls into it. What stock is kept in this stable—which we call the manure stable—is loose. If we have only spring calves, they can all run together with the partitions out, or if we find some of them drive the others from the feed, two minutes' time will put in a partition. When the partitions are all in we have four box stalls, 7½x10 feet, each of which will accommodate two colts or four spring calves. The manure from the horse stalls is scattered in this shed every morning, and the stock keep it tramped so solid that it does not heat and give off ammonia. We can use this shed from four to six weeks when we have four horses and ten calves stabled, before it gets so full that it must be cleaned. If I was building again I would make this stable sixteen feet wide instead of twelve.

We manage to clean out this stable when the ground is frozen, and usually take it out and spread it directly from the wagon on the field. This saves one handling, and as there is little evaporation in winter, the rains and snows take the soluble parts right down to the soil. I think we get the full benefit of it in this way with the least trouble. If the manure is needed for some special crop, such as sweet potatoes, or to manure in the hills for melons or cucumbers, we pile it at the side of the field where it will be wanted, and fork it over after it has heated once, so as to get it fine and uniform.

A manure heap should always be made flat on the top, when it is designed to get it fine for garden use, and in this way the heat will be uniform. The manure from the cow stable is wheeled out every day and scattered around the straw stack, so that it will be mixed and incorporated with the straw pulled down by the cattle, and all the corn-stalks from the mangers are also distributed over the barn yard. As this barn yard is so arranged that no water can flow into it, either from the roof or from the adjoining land, there is no loss from leaching. The cattle are kept at the stack on all pleasant days and they tramp the corn-stalks all to pieces, and always keep enough straw pulled down from the stack to give them a dry bed. If we find toward spring that they are not likely to use up the straw stack, we cut down a small section at a time and scatter over the barn yard; or if we have room in the barn we take the last of the stack in to be used for bedding for the horses during the summer. But we aim to have the material in the barn yard ready to turn and compost by the time the stock goes to pasture. This manure is turned and rotted so as to be ready to top-dress the wheat land for the next crop, and by this means we have very little manure to haul over soft, wet land in the spring.

We find it a help in getting this "long" barn-yard manure in shape to feed our hogs on it for a little time in the spring, as they will work the surface over and put it in condition to rot. There is not a foot of our barn yard but is coated so thickly with straw and stalks as to prevent any loss of urine, and with from twelve to twenty head of cattle and horses we manage to work into manure the straw from four to six hundred bushels of wheat and oats, and the waste from twelve to twenty acres of corn fodder, and to make near a hundred loads of manure a year; and as we also sow twenty acres or more of clover each year, we are keeping our land at a high state of productiveness, without buying fertilizers of any kind, unless it is an occasional sack of some brand of commercial fertilizer to experiment with, and compare the effects with our barn yard manure.

I often see on farms where corn-fodder is fed largely the stalks are left over a year or more before they would rot so as to be fit for manure, but if, instead of allowing them to accumulate at one side of the yard, they are spread and mixed with the straw and manure, they can be worked up as quickly and easily as straw. I have fed out twenty acres of heavy corn-fodder in a winter, and had all the manure in the barnyard where the waste was thrown ready for the field by the middle of April, and in nice condition at that.

In turning manure to rot and fine it, the more it is shaken apart and loosened the better it will heat, as it is air and moisture which cause fermentation, which is a slow combustion; and if at any time the heat becomes too great, so that ammonia is escaping, or there is danger of the heap fire fanging, it can be checked by tramping the surface solid, just as sure as the fire in the stove can be controlled by closing the damper. When handling horse manure, which heats quickly and violently, keep the heap perfectly flat and trample as solid as possible, but the barnyard manure, which consists largely of straw and broken stalks, and the manure from cattle is of a colder nature, and should at the first forking be thrown up in loose conical heaps or ridges, and as soon as fairly hot turn again into broad flat heaps or beds. Usually two ridges can be turned together to form one heap.

There is no work on the farm that pays better than that which is done to increase the quantity and improve the quality and condition of the manure; and when we realize the importance of this work, and give it the attention it demands, we shall be able to dispense largely with commercial fertilizers.—[WALDO F. BROWN in National Stockman and Farmer.

A French writer says:—"Few colts are born with defective hoofs, and if, in riper years, such appear, the cause must be attributed to the farmer's vicious handwork. It may arise from his ignorance in this respect. The first shoeing ought to be done by an experienced farrier, one not likely to coerce or torture the colt, and so have an unhappy influence on its temperament forever."

SECOND PRIZE ESSAY.

My Personal Observations on the Effects of the Removal of our Forests.

BY ALFRED E. LUSSIER.

In noting my own observations on the effects produced by the removal of our forests, it will be well to remark that my observations relate to the effects of the two agents by which our woodlands have been chiefly cleared and removed—by fire and natural cutting. The importance of this distinctive remark will be abundantly apparent on considering that the effects produced by each of these causes are not quite alike. At least I observed that when fire removed the timber from the land, a certain phenomenon occurred, which was not to be noticed in the case that natural cutting had stripped the country of its superior vegetation.

This phenomenon, unknown when the trees are cut, I twice found was such that the vegetable mould in the soil was, as it were, burned out and destroyed, and the possibility of reproduction reduced to narrowest limits or totally stopped. While on those tracts where the woods had been removed by the axe, I found a rich crop of fungi, as if the cutting had not seriously prevented their growth. The reason of this phenomenon, in my opinion, stood on the fact that the fire had consumed the vegetable germ, which the axe did not even touch.

Further, in my observations on the effects of the removal of our forests, irrespective of fire or by the axe, I have been struck with the prevalence of a younger growth of rapid growing but inferior kind of timber, in the place of strong massive wood of great value. In fact, I never came across trees on land cleared by fire or the axe, that were even comparable to the average timber in the primitive forest. The timber was little and of less consistency.

Yet, one of the most remarkable features it was permitted me to observe with regard to the effects due to the removal of our forests, was the frequency of unseasonable and prolonged droughts. Before a most disastrous bush-fire had levelled a wide expanse of forest near our farm in Eastern Ontario, the soil of our lots was remarkably humid, and our crops were rich and abundant. But since that time the opposite is the case. From that eventful summer the air, the soil, all, in fact, around that once thriving farm, has been dry and parched, and partaken more of the nature of a desert than of a farm. It has been impossible to grow anything substantial, the droughts have been so severe. We at first thought it was the severity of that summer's heat that caused the unusual aridity, but since then, year in and year out, the same dry weather has ruled over that region with periodical regularity.

I will note another fact coupled with the removal of the before mentioned forest, which covered a sloping ground. On the south-western side of the sloping wood ran a small stream, which I had never known to lower below the slanting floor of our boat house, and as a general rule was always one foot higher. From the summer the forest was removed, the water lowered to as much as five feet below the point to which it previously rarely descended; and since then, and it is now sixteen years, it has never risen to the floor of the boat house. Besides, we had a cold water spring on the west of our house, which must have taken its water from the forest, for since the burning of the forest it never flowed except for a couple of weeks at the beginning of the month of May. The removal of this forest must have diminished the volume of water of the stream and dried up the spring.

Another effect I now recall to mind, which I consider a consequence of the removal of that vast wood, is the increase of cold felt in the vicinity. It was peculiarly characteristic. Never previously had anything ever frozen inside the house, all was so comfortably temperate. But ever since the forest disappeared we found it extremely and unusually cold, and the ink and cider froze hard; and the full blast of the north-western wind whistled loudly around the now unprotected walls of our home.

Such are the observations I have made on the effects of the removal of our forests. So the epitome of my personal observations discloses that when forests are removed the vegetable mould may be often destroyed by fire; the next growth is inferior to the prior; frequent, unseasonable and lengthy droughts occur; the water of streams diminishes and springs dry up, and an increase of cold follows.

Lumbering in the Rockies.

Some of our readers, no doubt, will, when going to the Pacific coast, recognize the spot which is illustrated in the engraving on page 52 of this issue, which locality is destined to be one of the greatest lumbering districts on the continent.

The Waterous Manufacturing Co. is one of the most energetic firms in Canada. They have set a pattern that many others might advantageously follow. They do not shut down or reduce the number of their men on any diversity of time or season. They keep on their men; they are troubled with no strikes, and keep their customers by their strictly judicious principles. For many years they have striven to arrange the duties on their rough material so that they might extend their business in the States and territories. To do this they are now erecting extensive workshops near Minneapolis. They are meeting with the greatest encouragement and support in the U. S,, and we feel confident of their success. We are pleased to add that they do not intend to abandon Canada, but are extending their works in Brantford.

A correspondent at Ross' Saw Mill, Duggan's Crossing (Mr. John Lyle), writes as follows to Mr. C. H. Waterous, jr.:

"I thought you would be pleased to hear from me, and thus get an accurate account of how my mill worked, the amount of timber sawn, and the expenses connected with the running of it, this being the first of this particular style you have sent to the Rockies.

"I left Brantford on the 26th of May. The mill was shipped on that date. I arrived here on the 8th of June, via C.P.R. The mill came on the 12th, and on the 21st we had it running. By the 8th of November we cut 3,500,800 feet, averaging 31,423 feet per day (not more than 13 running hours.) This was cut into inch boards and 3x4 inch planks, 8, 10, 12 and 14 inches wide. All cutting and edging was done with the large saw, we having no edger. The timber was spruce, pine, fir, cedar and hemlock.

"The expenses for repairs only amounted to $1.50, viz., one bolt in friction lever, one bolt in saw lever, and repairs on timber gauge. The mill was never stopped during a working hour throughout the season, and there need never be any trouble running these mills if properly managed. The new dogs are a complete success, being quick and sure to hold. The only man that had any experience in the mill was the sawyer. The rest of the men were picked up as they came along. I filed the saws and kept general oversight."

It might be interesting for you to know how much timber it takes to build one of these snow-slide sheds per mile. It takes over 6,461,800 ft. of timber, and 62,080 bolts 36 in. long, and 200,000 spikes 10 inches long. I do not refer above to the ordinary snow sheds such as used on the Intercolonial Railway; these are used here also where snow is likely to drift in, but in speaking above I refer to what might more properly be called snow-slides. They are built at a point where snow-slides are apt to occur always in the face of steep and high mountains. One side (the high side of the shed) is built up into the side of the mountain and has a slant over the track something like a shed roof. They are wonderfully strong, and you may be sure none too much so, as the accumulated snow of many years may start from the top of these loffy hills and come thundering down in masses 50 to 100 or 200 feet thick, with a force that nothing can resist unless it is the mountain on the other side of the valley from which the slide takes place. The snow in passing down slides over the top of the snow-slide and passes on down into the valley and on up, may be several hundred feet up, the side of the mountain opposite. One can imagine what would be the result of such a slide striking a passing train. Certainly nothing but pieces of the smashed up wreck, that would be unrecognizable, would ever be found. Near where I am one of these slides happened. The snow came down the mountain in a body estimated to be 175 feet thick. It struck the track and carried it bodily down the mountain to the valley across the river that flowed through the valley, and up the opposite side to about the same height. It was where the railway track was found after the snow melted, and where it was struck. Some cars were wrecked at the same time, and were never found; probably the remains were carried down by the melting snow to the Columbia River, and then out to the Pacific ocean. The location hear is a very beautiful one. Level places large enough to build a mill on are hard to get up here in the mountains. There are some very interesting things up here, and one need not get very lonesome if he has any taste for curious nature. A little way from the mills are soda springs and hot springs, so you can have both a plain soda and a hot bath, one or both as you choose, and no thanks to anyone. I have been up the Roumanian, Bulgarian, and Thuringian mountains, but the mountains here, I think, are much grander. It is not possible to picture them. Should you be taking a trip over the Canada Pacific to British Columbia, you can remember when passing through these sheds that Brantford saw mills with Brantford brains and muscle cut the six million or more feet of lumber that is required to build each mill. For this is not the only one of your mills here; there are a number of them, and no other mill, American or Canadian (and there are a good many, especially of the former, scattered around the mountains), have done as much or as good work as your mills. At one of the annual shop picnics about the time the Canada Pacific was first being talked about, Mr. Robertson, of the Bank of British North America, was making a few remarks and spoke about the great railway, and said it was sure to be built, and would carry from ocean to ocean the Brantford saw-mills. We have seen that now all come to pass, and that his forecast of the future was correct. I have seen the Brantford saw-mills go ahead and cut the timber to build the railway bed, the stations, and the fences, and now we have turned back and are cutting the timber and plank to cover the road where it is necessay to protect it from the snow.

Lambeth Farmers' Institute—Stock and Dairy Matters Thoroughly Discussed.

We attended a meeting of the Farmers' Institute held in the village of Lambeth on Jan. 11th. There was a fairly good attendance of farmers. Some able papers were read by local men; and Prof. Saunders, Director of the Experimental Stations established by the Dominion Government, and Prof. Robertson, of the Ontario Agricultural College, took part in the proceedings.

CENTRIFUGE BUTTER MAKING.

Mr. Henry Wall, who conducts a creamery in the neighborhood with a centrifugal separator, gave some of his experience. He contended that dairying was bound to be a success, owing to the small profits in other departments of farming. Farmers with 100 acres should keep 10 to 12 cows instead of 4 or 5, the returns from the latter numbers being too small to be appreciable. Private dairies didn't pay, good butter in London market selling last summer at 10 to 12 cents per pound. It was therefore necessary to adopt the creamery system, by which butter could be held for a time and then sold to better advantage. He obtained during last season an average price of 20½ cents per pound for his butter, and obtained 4 lbs. of butter from 100 lbs. of milk as an average. He charged 5 cents per pound for making, leaving 15 cents for his patrons, who also got the skim milk in good condition for their calves. His difficulty was that he could not get milk in paying quantities during the winter months when butter brought a good price. He reckoned the skim milk to be worth 30 cents per 100 lbs., so that the butter profits compared favorably with those of cheese. Four pounds of butter at 15 cents, including 30 cents for the skim milk, equalled 90 cents per 100 lbs. for the milk. He strongly advocated winter dairying.

Prof. Robertson, in commenting upon Mr. Wall's remarks, contended that creameries were a necessity under our present conditions. Farmers often made as good butter as the creameries, but the quantity was so small and scattered that it made no impression upon the markets; the creamery made a uniformly good quality in paying quantities, which brought a uniformly good price. Summer creamery butter could be kept over for better prices, but it was better to sell at once. Prices here were so low in summer that butter must be kept, but there was a remedy in winter dairying. However, we could not bring this change about all at once. He did not doubt Mr. Wall's statement that 4 lbs. of butter could be obtained from 100 lbs. of milk with the centrifugal separator, but this percentage was much too high for our ordinary systems of butter-making. He had made numerous experiments with cows owned by patrons of the Guelph creamery, and found that it took 33 to 34 lbs. of milk to make a pound of butter on an average. He had no doubt that the centrifugal system would be adopted in Canada in a few years. The Model Farm creamery butter was shipped to the British markets, bringing an average of 18c. for May and June, 21c. for July and half of August, and 24c. for the balance of the season. The export demand would take all our fine butter. Creamery butter could be made for 4c. per lb., but the more farmers were scattered the greater was the cost of production. At Guelph he had realized 31c. per 100 lbs. for skim milk by feeding it to calves. The farmer who realized 90c. per 100 lbs. for his butter and skim milk made just about the same profits as he would have done had he sent his milk to a cheese-factory. No section was large enough to support both a creamery and a cheese-factory; he enjoined the farmers in one locality to stick either to cheese or to butter. The cheese sold in our markets for home consumption was too poor in quality; a better quality should be sold, as it would increase our home consumption and demand. Creameries were coming to the front where stock-raising prevailed. He had great faith in the co-operation of butter-making and stock-raising. Little Denmark exported more butter and cattle per acre than any other country in the world. As good calves could be raised on skim milk, as on whole milk, providing the feeding be done properly. Milk should never be fed cold or sour. Cold skim was injurious, and sour skim was both injurious and unprofitable. Sour milk caused dyspepsia. Oats and linseed should be fed with the skim milk, and chopped grain should be fed in the dry state, in which condition it would not scour. The average calf would begin to chew grain when a week old, before which time it should receive whole milk. As a rule, for most calves whole milk should be fed for the first two weeks. In reference to the best dairy breeds Prof. Robertson maintained that the "scrub" was the best breed in Canada for profit. The first great object of the farmer should be to improve her. With a little care, she was able to turn more feed into butter and cheese, taking profits into consideration, than any breed we have. Early liberal feeding was the best pedigree, but he did not ignore pedigree and blood. He would rather have a calf from a well-fed scrub cow than one from a poorly-fed thoroughbred. The best blooded animals, if neglected and poorly fed, would rapidly deteriorate. Climate also helped to make breeds, and our Canadian cows were well adapted to our climate; but many of them suffered from ignorance and neglect. Last summer he made an experiment in this direction. He bought twelve common cows on the Guelph market—poor, starved looking creatures that appeared to have no breeding. He also knew that they were not the best milkers, because the farmers indulged in the practice of sending their worst milkers to the market. Some of them were so weak that they had to rest on their way from the city to the farm—a distance of about a mile and a half. He took these cows in hand, fed them liberally and treated them kindly, giving each three pounds of bran per day on the pasture, the result being that they gave an average of about 3,300 lbs. of milk in three months and three weeks. The average for the whole of Ontario was only about 3,000 lbs. for six months. He credited these results entirely to liberal feeding and good management. Cows should be well fed in March, the time previous to calving; hay was not enough. Clover cut on the green side was better than early-cut timothy. Feed ground grain with coarse foods; bulky food was necessary to develop the body, and the cow should be filled up with it once a day. Oats, peas and barley were the best grains; barley was regarded as an excellent butter food in Denmark. The ration adopted by the best feeders in that country was 2 lbs. bran, 2 lbs. oil cake, 5 lbs. grain, 7 lbs. clover hay, and 30 lbs. mangels. The grain should be crushed and well mixed. It was a great mistake to feed more than half a bushel of roots daily. This daily ration was for a 1,000-lb. cow. If the cow was not properly fed in early spring, it was a mistake to suppose that she could be forced in summer to make up for this delinquency. The profits depended upon the March and April feeding. The cow should not have access to ice water. The average production of milk in Denmark was 6,700 lbs. per cow per season. In summer supplementary foods should be provided to guard against droughts and shortage in the pastures; he had increased the yield 20 percent by soiling. A change of pasture was advantageous. It was advisable to divide the pasture into three portions, changing once or twice a week. Cows should not have very far to walk to and from the pasture, especially if they were employed all day in picking all the grass they could eat. Only the best quality of salt should be used. Rock salt was objectionable, as the cow's time should be better employed than by licking at a lump of salt for half a day till she gets enough.

DOMINION EXPERIMENTAL STATIONS.

Prof. Saunders detailed the work which was in progress and in contemplation at the Experiment Stations, and reviewed the progress made in scientific agriculture in Germany, England and the United States. Agriculture, he said, was an experimental science. Practical farmers often differed in many little points relating to their practice, and they had no means of arriving at accurate knowledge without incurring enormous expense. Accordingly, the matter was taken up by Governments. In 1840 Liebig, a distinguished German chemist and investigator, showed that plants took from the soil certain mineral constituents which must be restored in order to prevent soil exhaustion. From that time forward science had been the handmaid of agriculture. A body of intelligent farmers in Germany originated the first experiment station, which resulted in the dawning of a new agricultural era. All kinds of food stuffs and fertilizers were analyzed, and the vitality of seeds was tested. There were about two hundred of these stations now in Europe, some devoting their chief attention to the economic feeding of stock, some to the analysis and testing of fertilizers, and some to testing the vitality of seeds. The attention of other countries was soon drawn to the subject, and public and private stations gradually progressed. Sir J. B. Lawes had established a station of his own in England, and now most of the large States in the American Union had experiment stations supported by State funds. The Canadian House of Commons had instituted an inquiry as to the propriety of establishing stations in the Dominion, and the reports were favorable. He was commissioned to visit the leading stations and to report thereon, the results being the establishment of the Canadian stations, the central one being already located, and situated near the city of Ottawa. (Prof. Saunders here gave detailed information about the utility and scope of these stations, but as the details appeared in a recent issue of the ADVOCATE we will not repeat them here.) He had a seed-testing house nearly ready at the Central Station, and farmers could send samples of seeds at any time to test their germinating power. The arrangements would be completed in two or three weeks. He was also preparing to test the relative productiveness of different varieties of spring wheat and fertilizers; especially our own phosphates and ashes would be tested on experimental plots. The value of exchanging seeds would also be ascertained, and samples of grain from the North-west and from Russia would be tested as to early maturity, etc. The climatic effects would be noted; all soft wheats turned hard in the Manitoba climate. Fruit trees would be tested, native and otherwise, and 200 hardy varieties from Russia would be tested next season. Experiments with potatoes would be made, and forest trees would be introduced from Japan, Russia Australia etc.

The Dairy.

Injustice of the Creamery System—A New Solution of the Problem.

BY PROF. L. B. ARNOLD.

It has always been a serious obstacle in the way of extending creameries, that there was no way by which an equal division of proceeds could be made. The butter making value of milk, as every dairyman knows, varies in different herds by reason of breed, feed and care, so widely as to make a division of proceeds based on the weight or measure of milk very unfair, and to base a division on the weight or bulk of cream would be still more unfair, as the butter making value of cream varies even more than that of milk. To obviate this difficulty, and make a more just distribution, it was proposed to make an analysis of the milk or cream and make a division from the per cent. of fat the milk or cream of each patron contained, but it was soon found that the butter product of both milk and cream did not correspond to the fat contained in either, and the plan has been given up as impracticable.

It has also been suggested to churn each patron's cream by itself, and to credit him with the weight of butter his cream actually makes. This would be fair so far as the patron is concerned, but it makes extra work for the manager, and it makes too many sorts of butter, each patron's butter varying a little from all the rest. Uniformity is very essential in marketing butter, and this plan of churning each man's cream by itself is so seriously in the way of uniformity that it has found little favor with practical men.

Another plan, which has proved more successful, is that of churning a quart, or a gauge of cream—113 cubic inches, the bulk which comes nearest to averaging a pound of butter—and weighing the butter carefully, and using the weights of the butter in the respective samples as a basis for dividing proceeds. This has met with more favor than any preceding plan, but it causes a loss on the samples churned. As the churnings are too small to be sold separately, they must be mixed together, and the working necessary in mixing them evenly injures the butter and depreciates its value; besides it is next to impossible to work so many little messes just alike. There is always a liability to leave more buttermilk in one than in another. Then it requires a good deal of labor to work and weigh the pats of butter, and unless this is very nicely performed injustice will be done.

The latest plan for getting at a basis for distributing the proceeds of creameries is what is known as the

OIL TEST.

In making this test the cream only is gathered and is generally collected only every other day Each patron skims his own milk as soon as the cream is all up, and holds it in a cool place to be in readiness for the cream gatherer whenever he calls. This makes the sweet skim milk available for whatever use the farmer prefers to make of it while it is in its best condition.

The teamster, before starting out to collect cream, is provided with a measuring pail just 12 inches in diameter, and of any depth convenient for handling, say 14 inches. The cream he takes in is all measured in this pail. When a part of a pailful is taken in, the depth of it is determined by plunging into the cream a rule graduated with inches, and the inches graduated with tenths. He is also provided with as many small straight glass tubes, some six inches long and perhaps three-fourths of an inch in diameter, closed at one end and stopped with a cork at the other, each having a mark near the middle at the same distance from the closed end. These tubes, which are also sometimes called churns, or bottles, are set in frames or "cards" and numbered, and the cards set in a box for convenient handling and safe carrying. He is also supplied with blank forms for entering the names of patrons and their measure of cream.

Thus equipped he starts on his round. As he arrives at each farm he pours the cream from the farmer's can into his own measuring can, and finds the depth in inches by his rule. This done, he stirs the whole till it is evenly mixed, and then with a small dipper fills a glass tube exactly to the mark near the middle, and sets the tube or "churn" back in its place in the frame or card, and fills up a blank as below:—

ROUTE No. 1. JOHN BROWN, Collector.
CARD No. 1. DATE—Feb. 2nd, 1887.

No. in Card.	Patrons' Names.	Cream. Inches.	Cream. Tenths	Test per Inch.	Butter. Pounds	Butter. Hundredths.
1	H. Adams.....	27	3			
2	J. Borden.....	15				
3	N. Cole.	6	9			
4	W. Davis.....	11	7			

The collector continues making entries as above till the blank is full, when he begins with another and also with a new card of tubes. When he returns he hands over the box of cards and blanks filled out as above to the creamery manager, who, after they are properly ripened and warmed to the proper temperature, lays the cards in a frame, so that the tubes or churns will be horizontal, and churns the whole at once by oscillating the frame rapidly till the butter comes in all the samples. When this is done the tubes are all set in water hot enough to melt the butter—about 150°. When fully melted, the butter or oil rises to the top and shows a distinct line from the buttermilk, so that its depth can be accurately measured. This done, the manager proceeds to determine the depth of the oil, and to record the results in the blank form partly filled out by the collector. The measuring is done by applying to the oil a scale having for a unit of measure the depth of oil that corresponds to one pound of butter from a gauge of cream, or a pound for each inch in depth of cream in a vessel just one foot in diameter. This unit of measure is graduated into 100 equal parts. If the depth of the oil is exactly equal to one unit of measure, the cream from which the sample was taken will yield just one pound of butter to the inch or gauge; if it over-runs or falls short of the unit of measure, the yield per gauge will over-run or fall short just according to the number of hundredths it varies one way or the other.

As he measures the oil the manager sets down the rate per inch in the collector's blank as below, and by multiplying the inches of cream by the rate per inch, fills out the last two columns with the weight of butter due to each patron's cream.

ROUTE No. 1. JOHN BROWN, Collector.
CARD No. 1. DATE—Feb. 2nd, 1887.

No. in Card.	Patrons' Names.	Cream. Inches.	Cream. Tenths	Rate per Inch.	Butter. Pounds	Butter. Hundredths.
1	H. Adams.....	27	3	1.03	28	12
2	J. Borden.....	15		.98	14	70
3	N. Cole.....	6	9	1.05	7	24
4	W. Davis.....	11	7	.94	11	00

This mode of estimating the butter the cream furnished by the different patrons will make, is a close approximation to the truth and renders even-handed justice to all. If closely measured, the per inch of oil will be a little less than the butter per inch, as the melted butter loses its water and casein, but it does no injustice, as the shrinkage occurs the same in all.

Among the special advantages of this method may be named the fact that each patron skims his own cream when and as he pleases, and that he gains nothing by having it thin, nor does he lose anything by having it thick, as he is sure to draw pay according to the actual quantity of butter his cream will make.

2nd. There is no waste. The oil after being measured is put back into the vat of cream.

3rd. There is no washing or working or weighing samples of butter, and no injury can be done by over-churning, as the butter is to be melted when churned.

4th. The labor of testing 100 samples or more at a time is so little that all the cream received can be tested, thus ensuring the greatest accuracy.

5th. The system is adapted to testing milk as well as cream, and small machines can be made for use in private dairies.

Eastern Dairymen's Association—Annual Meeting.

The annual meeting of this Association took place in Brockville on 6th, 7th and 8th ult. Papers were read and discussed by leading dairymen from Eastern and Western Ontario. The United States was represented by Hon. Harris Lewis, who read an interesting paper on

BUTTER MAKING,

from which we took the following notes: When the looks and smell of butter were bad, the price greatly deteriorated, so that there was no wonder oleomargarine, butterine, pigine, dogine, ratine, etc., brought high prices. The imitation was so close that 60,000,000 lbs. were sold last season in the United States as genuine butter. Grease taken from horses and mules that died on the streets, and grease from hogs that died from cholera, were deodorized and manufactured into butter to outsell that of the gentle cow. The first great requisite in butter-making was a love of the business, and the second was the possession of a good thermometer, which was as much required as a compass to the sailor on the ocean, or a cow for making the good butter. The hand as a measure of temperature was very unreliable when plunged into hot and cold water. The third requisite was the building for setting the milk for creaming and for making the butter. The building should be for butter-making alone, and should have a uniform temperature at all seasons. The ups and downs of temperature ruined much butter. The breed was not so essential as the after conditions; good butter could be made from all breeds, including the scrub. Plenty good food, pure water, salt, kind treatment, regular attention, absolute cleanliness, and freedom from taints and odors were a necessary requisite. The milk should be set as warm as possible from the cow. After long experience with all the methods, he had adopted the large shallow pan, keeping the milk at a temperature of 60° F., at which temperature, the milk not being over four inches deep, all the cream worth having would be thrown up before the milk got sour, except in the very hottest weather. The proper time to skim was when the cream was all up, which depended more upon the condition of the air than upon the tick of the clock. This must be left to the skill of the butter-maker. When the wind was from the north, north-west, or west, the cream rose much sooner and the milk would not sour so soon as

when the wind was from the opposite directions. The cream should be removed as soon as any degree of acidity was perceptible in it or in the milk. No cream rose after souring, but the acid of the milk consumed more or less of the butter fat in the cream. Good butter couldn't be produced from bitter cream. Tin vessels should be used for the cream. From firm, thick cream, remove half as much milk as cream, and put in four ounces of salt per gallon of cream, or a large tablespoonful to each quart of cream; stir gently but thoroughly, and stir each time after fresh cream is added. Churn every day if possible. If the cream was removed when acidity was first perceptible, and kept at 60°, the churning should take place next day, as a rule. The cream must be ripened in order to get all the butter out in churning. If part of the cream was ripe and part just removed from the milk, the most of the butter from the unripe cream would remain in the buttermilk, so the mass should be kept stirred to ripen evenly, causing the butter to come all at once. The old dash churn was as good as any, but was not so easy to work as some others. In some particulars the revolving barrel churn was preferable. In preparing cream for the churn the temperature should first be taken after thorough stirring, the can being set in hot or cold water, the cream being constantly stirred, until 60° were reached. Box or barrel churns should be turned at the speed of 30 to 40 revolutions per minute. Stop when the butter came like wheat kernels, and the buttermilk should then be drawn. Butter should be washed two or three times in pure water at 50° or a little colder, and should be removed by a wooden skimmer. Salt, ¾ to 1 oz. to the pound. Spread butter on worker, and sift salt through a fine sieve. Stir salt into butter with suitable paddle. Pack in white ash, spruce or white oak tubs, 12 inches high, 12 inches in diameter at bottom, and 14 inches top diameter, holding 50 lbs. when well filled. Remove woody flavor of tub by putting a quart of salt into tub and fill full of water, boiling hot. When brine became cold, throw same away and repeat the operation, leaving brine in tub until latter wanted for use. Mark honest weight of butter on side of cover. Pack firmly and exclude butter from air. When filled, place over butter a circular piece of paraffine paper neatly tucked down between butter and tub, which would exclude the air and show the butter as if nothing was there. Sell when price was good.

OUR BUTTER AT THE COLONIAL.

Prof. Robertson, of the Ontario Agricultural College, gave a bit of his experience at the Colonial Exhibition on the above subject. He said there was a defect in the cloth we used in packing our butter; it should be chemically pure, which cost no more than ordinary cloth. The cloth we used was too starchy and tasted the butter, but this condition could be partially remedied by washing the cloth in water and saltpetre. Packing made of salt plaster broke up, and the butter to the depth of about one and a half inches was spoiled. He did not yet recommend a remedy, but thought that paraffine parchment over the salt might be good. Tin-lined tubs met with general favor, and helped to keep the butter; but the butter stuck to the sides of the tin, so that the tin should be lined with cloth, causing the butter to be readily removed. The cloth should not cost over three cents per tub. The tin should not be scratched, which caused rust. The tubs should be of uniform sizes, holding 60, 65, 70 and 75 lbs. Hundred-pound firkins, which the Danes used, met with great favor. English dealers did not want our packages. Dealers in Danish butter would test ours with that made in Denmark next summer. The salt used should be the best, and should all be dissolved in the butter in at least ten hours, leaving no grittiness. Could we not get salt that dissolved in one hour? The Danes used such salt. Butter should not be allowed to set and then re-worked. We used too much salt; one oz. per pound in summer was enough; only three-fourths of an ounce was used at the Model Farm, which took best at our exhibitions. Our butter should not be held for speculation; making more butter in winter was a partial remedy. So long as so much butter was made in summer, when the price was low, suitable store-houses should be built, which would largely remedy the low prices. June and July butter could not be kept in the ordinary way. This butter went off flavor, but would be as good in December as in June if kept at the proper temperature. Butter kept best below 45°. Chilled butter did keep good when restored to the normal temperature; this was tested in England. Some central store-house was needed to keep our summer butter.

PEDIGREE AND PERFORMANCE.

Mr. W. H. Lynch read an interesting and valuable paper on this subject. He said the value of an animal depended upon its qualities and its power to transmit these qualities. The ultimate test was production. Some regarded family history as the secret of production; some depended upon family performances. Neither was sufficient in itself, although each was a partial test. Pedigree could have no value without actual performance. There was too great a tendency to over-value the former and under-rate the latter. Some paid far too much for mere names. Pedigree was only a presumption of merit, and herdbooks were based on supposed merit. Some outside animals possessed excellent individual merit and should be privately recorded, each owner keeping an account of the performances of his own herd. The process was not difficult. Here Mr. Lynch presented tables showing a system of registration invented by himself, which contained all the necessary facts relating to recording performances, etc., compressed into tabular form. We afterwards examined his system, and believe it to be of great utility for farmers and dairymen who desire to improve their herds. He said that value depended upon information not contained in the herdbooks—a want which his system of recording amply supplied. The weighings or the measurings were accurate enough if taken once a week on stated days, except during sickness, or a change of food or weather. He had tested this and found that the variations did not exceed one to two percent. The butter value was obtained by churning the cream separately; the oftener the tests the more accurate the results.

SHOULD WE HAVE STOREHOUSES?

Mr. Thos. McDonald, an extensive butter dealer in Morrisburgh, read an interesting paper giving statistics to show the paramount importance of our dairy interests above all other industries. He did not exactly agree with Prof. Robertson on the storehouse question, Canada having lost untold millions by holding butter until it began to decay. He strongly advocated winter dairying, and said that although it was sometimes desirable to have cold storage during depressed prices, yet transportation facilities were rapidly improving. Our reputation abroad must be maintained. He would not have our cheese factories opened till the first of June; for under the present system our June, July and part of August cheese were bought up cheap for the English market. This could be remedied by changing our butter season, making it last from November till June. We should remonstrate England against the consumption of oleo., by treaty, or otherwise. Farms could hardly be rented in England owing to the large consumption of oleomargarine and butterine. To these statements Prof. Robertson replied that Canadian butter was not consumed in England till December, and was then in a bad condition. We could not argue England out of oleo. and butterine. These imitations had too fast a hold and had come to stay. They were cheaper than butter, and the wholesalemen and shop-keepers made such large profits that they could scarcely be induced to handle butter. Our competition with butterine was not great in summer, it not being manufactured on the continent till autumn. Mr. D. Derbyshire remarked that butterine was a blessing in disguise compared with the vile stuff called butter which was found on the Brockville market. It was no wonder that the butterine business flourished, and farmers could only blame themselves.

Mr. D. Derbyshire retired from the presidency of the Eastern Dairymen's Association, and Mr. D. McPherson was elected in his stead for the present year.

Testing Milk and Cream.

[A Lecture delivered by W. A. Macdonald before the Dominion Farmers' Council.]

No. II.

CHARACTERISTICS OF MILK.

If all milk and cream had the same chemical composition and the same physical characteristics, no tests would be required except for adulterations, and these would be greatly simplified. In testing for adulterations, it cannot always be asserted with certainty whether the milk has been drawn from the cow in an inferior condition, or whether it has afterwards been tampered with by human hands. The natural conditions which affect the quality of the milk are (1) the breed of the cow, (2) her individuality, (3) the kind of food she consumes, (4) the condition in which the food is preserved and fed, (5) the relation between the carbonaceous and the nitrogenous constituents of the ration, (6) the character of the soil on which the food grows, (7) the management of the cow. The variations caused by artificial means are numerous, but may be ordinarily classified as follows: 1. By addition, such as the adding of water, skim-milk, etc., and such solids as starch, meal, sugar, salt, or other substances which affect the color or specific gravity, thereby destroying the accuracy of certain instruments which are used in making the tests. 2. By abstraction, such as when a portion of the cream is removed. 3. By the practice of addition and abstraction at the same time. These adulterations may be classified (1) as those which merely increase the weight or volume of the milk without producing any deleterious consequences to the consumer, and (2) those which are prejudicial to the health of man. Another phase of the question is the abnormal milk from unhealthy cows, which is included in the artificial classification, the owner of the cow being censurable. I have spoken of the use of one system in

testing milk and cream; it now also remains to be seen whether the natural and the artificial abnormities of milk and cream can also be reduced to one system of testing.

The desirability of testing milk and cream hangs upon three conditions, (1) the extent of the variation in the composition and the abnormity; (2) the expense of making the tests, and (3) the educational value. If the variation is very small, and the expense very great, the making of tests is not practical; whereas, if the reverse is the case, testing becomes a matter of great consequence. The encouragements or discouragements to be given to our dairying systems depend exclusively upon these questions, the answers deciding whether the co-operative or the home rule should prevail. Under any system, the educational value of tests should not be overlooked. When the farmers of a given neighborhood receive the same prices for all grades of butter, the competition is for inferiority and not superiority. So it is with milk and cream. No farmer is encouraged to produce a good quality of milk unless he receives remuneration for his extra pains, and he has no facility for ascertaining the quality without painstaking tests. The country which has the most complete system of testing has a great advantage over other countries in the world's markets, and if government expenditures for dairy purposes are necessary, the first aim should be to promote these educational advantages.

The quality of milk (cream) depends (1) upon its chemical composition, and (2) upon its physical characteristics. The following table gives the average percentage composition of cow's milk, also the variations which occur in normal, unadulterated milk under the conditions which I have already mentioned:

CHEMICAL COMPOSITION OF MILK.

Names of Substances.	Average.	Variations.
Water	87.5	85.0 ..... 91.0
Fat	3.4	2.0 ..... 6.0
Casein (Albuminoids)	3.2	2.0 ..... 4.5
Albumin (Albuminoids)	0.6	0.2 ..... 0.8
Lactoprotein (Albuminoids)	0.1	0.8 ..... 0.35
Milk sugar	4.5	3.0 ..... 6.0
Mineral matter (ash)	0.7	0.6 ..... 0.9
	100.0	

These figures are collected from reliable European sources, the variations indicating those which have occurred in the milk of individual cows; the extremes in different breeds or herds would not be so great. Practically, we have to deal with the herd variations, not with those of individual cows, for the valuation should be based upon the average quality of milk produced by the herd; the smaller the herd, the greater may be the extremes in the composition of the milk. I can find no accurate tests of the variations in a large number of herds, except with reference to the percentages of fat, in which there is apt to be a range of about one percent, one herd giving three percent and another four. On this basis, compare two herds, each comprising five cows, and you will find, supposing each herd gives the same quantity of milk (25,000 lbs.) per season, that the one herd will give approximately 250 lbs. of butter more than the other, although the milk not being tested, the owner of each herd would receive the same sum of money from the creamery man. The progressive farmer would not suffer this injustice if he knew it, and he should and will know it. With reference to cream, the difference is still more alarming, the variation being, in extreme cases, from 15 to 70 percent of butter fat.

Let us now suppose the same milk to be delivered at the cheese factory. Milk for cheese is valued for the percentage of total solids it contains; the table I have read gives an average of 12.5 percent of solid matter, the extreme variations being 10 to 15 percent in individual cows. One percent variation in the fats would correspond to at least 1.5 percent in the total solids, which would approximate a difference, between these two herds, of 350 lbs. of cheese per season from the same quantity of milk. Granting the variations to be only half these figures, there still remains an urgent necessity for making tests and distributing the profits according to quality. The merest attempt to do so would check all incentive to adulteration, which has almost ruined the United States cheese industry, and which is rapidly gaining foothold in our own country. The educational value of such tests would have more beneficial effects than those produced by all other government agricultural expenditures combined.

By these observations you may be led to conclude that the percentage of butter or butter-fat should be the standard for our creamery men, and that the percentage of total solids should be the standard for our cheese men. This is not so, and I desire to make the fact specially plain that the same system of testing is applicable to both industries. The arguments, however, are so deep-searching, involving a profound knowledge of physiology and the science of cattle-feeding, that you must for the present be satisfied with a plain statement of facts. It is well known that milk is not a direct exudate from the blood, but is elaborated in the milk glands by decomposition of the gland cells. The feeding of extra fatty foods does not, as a rule, produce milk richer in percentage of fat, but rations rich in albuminoids increase the total solids of the milk, the fat increasing in about the same ratio as the other solids; the extra quantity of protein (albuminoids), which finds its way into the milk glands, furnishes extra material, out of which the fat can be elaborated. Even the milk sugar is not a transudate from the blood, but is also developed in the milk glands, very largely from transformation of the protein or the fat. You will now plainly see that the fat of the milk may practically be taken as a measure of the total solids, or the solids may be taken as a measure of the fat. These researches are confirmed by practical experience, for it is well known that milk which is rich in fat is also rich in total solids, and the fat standard is therefore a true measure of the cheese-producing quality of the milk, as well as the butter-making quality. Should you dispute these conclusions, however, I will then show you that a constant relation, sufficiently accurate for all practical purposes, exists between the specific gravity of milk and the percentage of fat, by means of which the total solids can be calculated.

I have now reduced all milk-testing to one system, and I showed at the outset of my discourse that cream was nothing more or less than milk rich in fat. The one test is equally effective for butter, for cheese, or for milk delivered for town or city consumption. I shall not take time to discuss the senseless standard that all milk should be considered as adulterated which does not contain three percent of fat and twelve of total solids. For our purpose, it makes no difference whether the milk has been adulterated by mismanagement of the cows or by tampering after the milking is completed; in every case the milk will be valued according to its quality. The only question now to be decided is, Can the percentage of fat be ascertained with accuracy and dispatch? In order to answer this question, I shall now proceed to examine the various testing instruments in use.

TO BE CONTINUED.

Western Dairymen's Association—Annual Meeting—Interesting Papers Discussed.

The annual meeting of this Association was held in Ingersoll, on Jan. 12, 13 and 14. Besides the leading dairymen in Canada, there were present from the United States, Prof. L. B. Arnold, Rochester, N. Y., Prof. I. P. Roberts, of Cornell University, and Mr. W. D. Hoard, editor and proprietor of "Hoard's Dairyman," Wis.

Prof. Arnold read an interesting paper on

DAIRYING IN ENGLAND,

in which he gave his observations gathered from a recent tour in that country. He was present at a conference of the British Dairy Farmer's Association, which met at Derby. This Association was organized 10 years ago. Representatives were expected from Germany, France, Denmark, the United States, Australia, Cape Breton, as well as from different parts of the United Kingdom; but Dr. Segelke and Dr. Fjord, of Denmark, and Dr. Fleischmann, of Germany, the expected delegates from these countries, did not attend. France was represented by Prof. Leze, and the French consul at Manchester. He was there to represent the United States. He considered that this conference contained the most brilliant array of dairy talent that had ever assembled in the United Kingdom. There was this great difference between dairy conventions in Great Britain and those held on this continent, that the former discussed milk production and the latter the manufacture of milk. At this great conference there was only one essay read on the manufacture of milk. Keen competition would compel us to pay more attention to the production of milk. Britain was leading us in the production of milk, but we were leaving them behind in its manufacture into dairy products. Mr. Robert E. Turnbull, a leading dairy authority in England, calculated the annual income from a five-year-old, 1,400-lb. Shorthorn cow to be $150, made up as follows: Eight hundred imp. gallons at 7½d. per gallon, $125; a thoroughbred calf, $12.50; and the manure $12.50. He placed the debits at $135, including feed, labor, rent, rates, and interest on investment. This was made up of $91.25 for the cost of the feed, and $43.75 for labor and other charges. These figures showed that the receipts from the milk were $10 less than the cost of keeping the cow. The small amount of profit was due to the calf or the manure. The Englishman, with all his having, must have beef; he lived on beef, thought beef, admired beef, and talked beef. Milk was of minor consequence. The bulls were all of the beefing type. In the midland counties, the Shorthorns were as plentiful as the "scrubs" here, and were as plain looking as our common stock. The feeding in England was much more regular and liberal than here; there was no grass up to the knees in May and June, and then bare, brown grass in August. With all their propitious climate for grazing, they raised green crops to feed in summer. The food was selected on the basis of its fertilizing properties, and the manure was carefully husbanded, absorbents being used in the stables. Their yield of hay was double that of ours; their climate was favorable to the continuous growth of succulent foods, and they enjoyed comparative immunity from droughts. Lord Vernon, President of the British Dairy Farmers' Association, an enthusiastic dairyman and proprietor of the Sudbury Dairy School, the first dairy school established in England, experimented with 30 cows. The average weight, 1,150 lbs., remained pretty constant during the trial, which began Feb. 3 and ended May 19. The average daily yield at the beginning of the test was 27 lb., and 24 lbs. at the close. The analyzed milk gave, on an average, a shade below 12½ percent of dry solids. One pound of butter was made from 27 lbs. of milk, and 100 lbs. of milk gave 10 4-5 lbs. of cured cheese. He (Prof. A.) had no faith in the huge general purpose cow. While in England he saw a little Kerry cow, so small that his curiosity was aroused to see her weighed, and she tipped the beam at 450 lbs. She yielded between 12 and 13

quarts of milk per day—over 30 lbs. He thought this milk was much more cheaply produced than that from the beefy Shorthorns; it was very rich and produced butter of excellent flavor. Most all the butter was made in private dairies, there being few creameries. In comparing the dairy profits with those of wheat growing, Mr. Turnbull estimated that it cost £7 to grow a ton of grain (2,240 lbs. or 37 bushels of wheat), which was the produce from an acre, the cost of production being $1 per bushel. The same acre would produce a ton of milk at a cost of £6. Milk was produced at a greater profit than wheat. The butter was not kept; it always found a ready market. Irish butter was better than English, but he could give no reason why, except that the difference was in the breeds. The Kerry cow, which had no breeding, produced a richer milk and better flavored butter. The professor then gave an account of his travels on the Jersey Island, the home of the famous breed of that name. All the islands of the group had the same geological formation—granite rock, and were situated about 15 miles from the coast of France. The surface was rough, the soil thin, rich and highly cultivated. The arable land was worth $1,500 per acre, and rented for $35 per acre. The exports were potatoes and stock. French was the official language, but most of the inhabitants spoke both English and French. The Jersey cattle were improved in size in the United States. The best milkers were the largest and coarsest cows. He was disappointed in the quality of the milk and butter; the latter was low colored and low flavored compared with the butter from the same breed in the United States. He attributed this difference to the feed, which was produced from a different class of soil. The quantity of milk required for a pound of butter varied from 19½ to 25 lbs.

Mr. W. D. Hoard, Fort Atkinson, Wis., delivered a most excellent and instructive address on

THE DAIRY COW.

He strongly denounced, in the most emphatic terms, the general purpose cow, and presented illustrations of cows to show that the milk and the beef temperament were diagonally opposed to each other. The cow was the farmer's dairy machine, and if he could not estimate its value, he had no right to be in the business. The farmer who wanted the best results in beef, milk, butter and cheese, was like the boy who wanted his cake to eat, to keep and to give away. It sounded pretty nice to talk about getting a fine chunk of beef after the milking period was past, but this talk cost far too much. As auctioneer he had often observed farmers giving $10 more for a cow that looked beefy than for one that possessed the milking temperament. Such farmers threw away $80 worth of butter to gain $15 worth of beef, and then complained that cows didn't pay. The milk cow, as distinguished from the beefer, belonged to the race-horse organization; the nervous temperament produced milk and speed, while the lymphatic temperament produced beef and strength. Butter was the product of nervous force. The butter-making or nervous machinery extended from the udder all the way to the brain. Gentle and kind treatment was therefore required for animals of the speed and milk machinery, the brain being the seat of this nervous force. A milch cow must therefore have a broad head, indicative of intelligence; a large, full eye; must be wide between the eyes; must have width of poll, and a cleanly cut face. Prominence of the eye made a dishy face. The juncture of the spine with the brain must be strong; this was a very important point. The shoulder should be sharp, the loin broad and far away from adipose tissue, a tendency to roach back being a good indication. The pelvis should be open and not beefy—concave and not a beefy convex. The ham should be thin to make plenty room for the udder. A great length was required in the base line of the udder from the front to the rear. The abdomen must be well developed, and the abdominal muscles must be strong, the back being correspondingly strong. The dewlap and brisket must recede instead of projecting forward. He did not care to look at the breed; he only wanted the temperament. The function of the dairy cow presupposed a relaxed condition of the body. The function of the milch cow was maternity—the unselfish principle; that of the beef cow was selfishness—miserhood. Every function of the beef breed was exactly the reverse of that of the dairy breed. Breed, therefore, for special, and not for general purposes. He found this system of breeding to be just as correct in practice as in principle. Of all the absurdities in the world, scarcely any one exceeded that of the general purpose cow.

WATER AND FOOD IN THE DAIRY.

An extremely interesting and practical lecture on the above subject was delivered by Prof. I. P. Roberts, manager of the farm connected with Cornell University. He said he would take Mr. Hoard's cow and show how to make her profitable in the dairy. A special cow should be on a special farm, and the farm, as well as the cow, should be run for all it was worth. It was important to feed the cow dry bran in the spring, not only for its feeding but also for its fertilizing value. He paid $14 per ton for bran, and found the manure from that ton to be worth $10. The farmer should learn to see further ahead than to expect to find all the profits in the milk-pail the next morning after the food was consumed. He fed 2 to 4 quarts of bran per head daily all through the summer. Bran had its greatest value in the spring when the clover was young and tender, the reason being that much of the nitrogen in the clover was in the form of amides, which had had little feeding value until they, later on, became converted into albuminoids; bran, being rich in nitrogen, just supplied the deficiency in these amides of the clover. The seven acre field connected with Cornell University, by his process of feeding and fertilizing, now carried four times the number of cattle which it formerly carried. Abortion was caused by exhausting the soil of some of its constituents. Even Mr. Hoard's cow could not eat sufficient grass to satisfy the demands of the milk pail; bran was required to concentrate the ration. The farmer could not afford to allow a cow to toil all day long to get a living. Clover roots went three to four feet deep into the soil, and he had observed with the microscope myriads of minute fibres attached to the roots; these were all busily engaged in pumping up nitrogen. In wheat stubble he found roots 31 inches deep. He also largely used corn fodder—field fodder; he snapped the best ears off for the hogs, and fed the stalks to the cattle. Too many farmers attempted to warm their barn-yards with cows. He saw on his way to Ingersoll cows stooping down into the ice for water at an angle of 45 degrees; he supposed the owners wanted to manufacture ice-cream in the cow's body. In various tests made at the University, he found that the manure from each cow was worth 15 cents per day—just half the value of the food consumed. Per ton, the manure was worth $3.06 to $3.56. He was a great friend of the medium red clover; this plant was *the* fertilizer of the farm. Clover was a biennial plant. (Here Mr. Hoard said he had seen a good clover pasture nine years old. It had been kept in this condition by being cut just as it began to blossom. In this way it kept growing from the roots; if allowed to seed, being a biennial plant, it perished). In treating the manure, Prof. Roberts continued, it might either be kept under cover or hauled directly to the field. He mixed the manures from all the farm animals together, and used water and plaster to prevent the escape of ammonia. (Mr. Hoard here said he also used large quantities of plaster in his stables, scattering it in the gutters. He used cut straw for bedding, and spread the manure on the land directly from the stable.)

Mr. M. S. Schell read a practical paper on

DAIRYING AS COMPARED WITH FAT STOCK.

He said the relative profits depended upon many varying circumstances. During the past 10 or 15 years there were few dairymen who had not realized direct profits above the value of the food consumed—even greater profits than from any other branches of farming, so much so that beef-raising, as a regular business, was becoming a thing of the past. Great advances, however, had been made in beef-farming during recent years, but the inferior class of stock called "scrubs" rendered the business unprofitable, which stock was also unprofitable for any other purpose. A 3-year-old beast sold for $30 to $35, and in many instances for less. A large percentage was bought at 2½ to 3 cents per pound by the butchers for local demand, or as stores. There should be a margin of direct profit above the cost of production, the market prices of the food consumed being reckoned; also an indirect profit by converting the coarse foods into money, returning the manure to the land. Early maturity was required for profit; no calf should be stunted in growth. Of the feeders who bought cattle in the fall and fed for the export trade, few realized a profit beyond converting the coarse products into manure. Some were satisfied with the manure. If an increased price per pound had not been obtained, it would have been a losing speculation. A farmer lost money by selling stores at 3 cents. The Northwest and Western States could make fine beef and compete with us at a less cost; we had therefore seen our best days in this branch of farming. The income from a cow producing 20 lbs. of milk per day for 9 months—5,400 lbs. per season—calculating 10½ lbs. of cheese per 100 lbs. of milk, and taking 9⅜ cents per pound as the average price for the past three years, was $50.90. Deduct 1½ cents for drawing and making, and $3 for milking, left $40, and allow $1.50 per month for six months pasture, 50 cents per month for supplementary food during the same period, and $2.50 per month for winter feeding, left $27 as the total cost of the feed, and a profit of $13 besides the manure; besides, cows could be wintered on less nitrogenous and less costly food than growing stock, and could therefore use up coarse foods, but the manure was less valuable. If it were objected that 5,400 lbs. of milk was a high average, then he would say that the price given for cheese was a low average. Three years return would be $120, leaving a greater profit than for beef. Mr. Graham, of Norwich, reported for his herd an average of 5,700 lbs. per cow per season of seven months, and Mr. D. McPherson, Lancaster, whose authority could not be disputed, estimated from his experience that the standard could be raised to 6,000 pounds per season.

DISCUSSION.

Thos. Ballantyne—I am a breeder of Shorthorns, but I have discovered that they are not a dairy breed. I agree with everything that Mr. Hoard has said; we must have special purpose cows, and go out of the general purpose business. The first grade of a Shorthorn is sometimes profitable for the dairy, providing the dam is a good milker, but the nearer you get to the thoroughbred the farther you get away from the milk. You can't get the milking type of animals from the Shorthorn. This is an early maturing breed and has an aptitude to fatten.

Mr. Caswell—In this section, we get the best milkers from Ayrshire grades.

Mr. Ballantyne—The best cows I ever had were from Ayrshire bulls upon Shorthorn cows. These bulls I bought 15 years ago.

H. S. Losee—You can't make a good Shorthorn milker unless she comes in at two years old. If she does not drop her first calf till the age of three years, she runs to beef, and then I always fatten her.

Mr. Schell—It is also my experience that I get the best milkers from the first cross.

It is computed that there would be as much nutrition per annum in the milk of the fifteen million cows in the United States, if it was all used for human food, as in the eighteen thousand million pound of boneless beef; or, to put it in another form, the milk of the average good cow for a year is equal in feeding value to the meat of one and a half steers, weighing 1,500 pounds each. The whole calculation is based on the fact that three and one-half pounds of milk are equal in feeding value to one pound of boneless beef-steak. [Hoard's Dairyman.

Stock.

A Chatty Letter from the States.

[From our Chicago Correspondent.]

Last summer and fall it will be remembered that unusually large numbers of Oregon and Montana range sheep came to Chicago and sold to feeders at $3.50@$3.80. A Michigan feeder who paid the latter price recently marketed a lot of his corn-fed wethers averaging 132 to 140 lbs. at $4.85@$5.00 per 100 lbs.

About two years ago an Illinois man tried the experiment of buying cheap bulls and fattening them for market after being castrated. The plan worked well and made money, as the stags, on the same feed, became fatter and were worth 50c. to 75c. per 100 lbs. more than bulls. Lately, Mr. Nelson Morris has commenced castrating bulls to put in distillery sheds to fatten on slops. He puts them on hay in the open air for two or three weeks until they are healed before confining them.

Shortly after the holidays a western breeder of polled Scotch cattle, sent to this market a small lot of very extra fat steers of his favorite breed. The animals sold to a city butcher on the market at about $5.25, but as the cattle were sent in to act as a free advertisement of the breeder's business, he arranged to give the buyer a "rebate" and so the sale was reported at "$7, the highest price of the season," etc., but the reporters have a good deal of this kind of small crookedness to contend with, and lost no time in nipping the little scheme in the bud. "Honesty is the best policy," in all cases.

For the year, so far, all kinds of stock have sold better than last year. It is gratifying to stock feeders to have a change from the discouraging condition of affairs which prevailed last year and the year before.

It seems quite remarkable for Texas grass cattle to be coming to market in the dead of winter, but the receipts since January 1st have been from 50 head to 1,000 head per day, mainly of cows and largely of steers, which were ready to ship earlier, but which could not come because the Texas and Pacific railroad had no cars.

Owing to the heavy losses on the plains last winter by cold and last summer by drouth, and the forced marketing of unusual numbers of breeding cows, bulls, yearlings and calves, it is expected that there will be a very decided relief on the southwestern ranges during the coming year. The winter weather in the southwest has, so far, been very mild, while the western country is suffering from intense cold and excessive snow fall.

During January there have been several days when more than 11,000 cattle arrived, indicating that, although prices are improving, farmers and feeders are anxious to realize, and have not any too much faith in values materially advancing in the near future.

The following is a statement of the banner days, weeks, months and years for receipts of live stock at Chicago:

LARGEST RECEIPTS OF STOCK IN A DAY.

Cattle, Jan. 12, 1886	16,966
Calves, Sept. 1, 1885	1,173
Hogs, Dec. 5, 1884	66,597
Sheep, Feb. 24, 1885	10,937
Horses, Oct. 5, 1874	450
Cars, Dec. 10, 1884	1,522

LARGEST RECEIPTS OF STOCK IN ONE WEEK.

Cattle, week ending Oct. 20, 1883	52,192
Calves, week ending Sept. 12, 1885	4,369
Hogs, week ending Nov. 20, 1880	300,488
Sheep, week ending Dec. 19, 1885	32,027
Horses, week ending March 26, 1881	1,125
Cars, week ending Dec. 6, 1884	6,964

LARGEST RECEIPTS OF STOCK IN ONE MONTH.

Cattle, October, 1883	217,791
Calves, September, 1885	15,449
Hogs, November, 1880	1,111,997
Sheep, October, 1886	119,361
Horses, March, 1873	4,253
Cars, December, 1884	25,387

LARGEST RECEIPTS OF STOCK IN ONE YEAR.

Cattle, 1886	1,963,900
Calves, 1885	58,500
Hogs, 1880	7,059,205
Sheep, 1886	1,008,790
Horses, 1886	27,599
Cars, 1885	214,146

Last year's receipts of cattle from Texas and the southwest, and from the northwestern range countries, were 61,000 larger than in 1885, while the total arrivals of all kinds of cattle were larger than ever before.

A Chicago man recently sold several pedigreed Hereford bulls for less than $100 a-piece, just such animals as would have sold at two or three times that much a couple of years ago. When money is scarce and live stock and farm products bring small returns, as during the past year or so, it is not wonderful that the bull market is slow, even at prices that seem phenomenally low.

At the meeting of the Illinois State Board of Agriculture, the spirited contest between the breeders of draft horses brought from France was permanently settled by giving separate classification for Percherons and the French drafts. The Board decided to hold the horse show at the exposition building in Chicago, on the week commencing Nov. 7, 1887. The dairy show will be held during the same month, and no provision was made for a further exhibition of oleomargarine and butterine in connection therewith.

Since the butterine tax was adopted the price of natural butter has materially advanced, whether from that cause or not.

The Commissioner of Agriculture has gotten himself into an unenviable position by publicly questioning the integrity of the Illinois Live Stock Commissioners who manipulated the Chicago pleuro-pneumonia scare.

The Chicago horse market has been very good this winter for good, heavy animals. Good, heavy workers have sold at $150@$225 per head, with good street car horses at $125@$135 per head. Light and inferior horses are hard to sell.

Horace Stocking, of Holcomb, Ill., recently sent in 11 head of 1,599-lb., high grade Shorthorns, which sold on the open market at $5.50. There were 2 heifers in the lot, one of which was handsomer and firmer than any of the handsomest engravings we see. When heifers are as good as these were they sell as well as the steers every time.

Another Word About High Feeding for Exhibition Purposes.

Our policy on this subject is well known. We were the first to denounce the system of high feeding, basing our conclusions on physiological grounds, and we did so at a time when none of the organs of live-stock rings dared to raise their pen or voice in denunciation of the iniquities of the system. Notwithstanding the fact that its rottenness is now well known, the most debased of the manipulators still cling to it as tenaciously as ever, and our government is still squandering money to sustain the iniquity. Our readers expect us to be correct in our estimation of all these booms; we have taken a thoroughly independent course, basing our calculations on sound principles, and the results have proved that we have a sufficient number of independent, thoughtful farmers, who will not support organs which attempt to play upon their prejudices, to sustain us in the course we have pursued.

In our last July issue we published the views of Prof. Brown, veterinary to the Royal Agricultural Society, on the subject. Since the publication of his work on "Animal Life," other authorities have taken up the subject, and no authority of any distinction now conflicts with the views we expressed. Prof. Walley, of Edinburgh, another distinguished veterinary authority, has given the subject special attention, and although he does not use such vigorous language as Prof. Brown, yet his decisions are not less conclusive. Prof. Walley discusses the question as follows in an article contributed to the London (Eng.) *Live Stock Journal*:—

As the Christmas season approaches, one's thoughts seem naturally turned to the subject of fat, but the process of fattening claims less attention, seeing that it has become a thing of the past, and has been perfected or consummated in the huge mountains of flesh and masses of blubber which meet the eye at our Christmas shows, in the form of fat cattle, sheep and pigs. The world, it is said, is made up of contraries, and in nothing is this more apparent than in our national taste, as inhabitants of a temperate zone, for food usually supposed to be fit only for the denizens of the Arctic regions, and still more in the apparent anomaly to which few people, perhaps, give a passing thought—cropping up in the fact that it is not in the most northern parts of these islands, but in the mid and south-lands that fat is so much appreciated and valued. Aberdeen cattle, laden with adipose tissue; Welsh mutton, oftentimes so greasy that one is satiated with a modest chop even after a morning's ride in a snow-storm; and Yorkshire pork seem somehow or other to meet together in one central depot—the metropolis, and, coming nearer home, we find the fattest of the cows sold in the marts of the north are purchased for such markets as Preston, Leeds, and Manchester. The explanation is to be found, perhaps, in the fact that the stomachs of the southerners are more capable of digesting blubber than are those of the northerners, who, in the past, preferred to live on oatmeal and brose, and to convert their kine into the, to them, scarcer commodity—the bawbee.

I have said that the products of the fattening process are more thought of than is the process itself, and probably, in the great majority of cases, the fattener does not bestow a second thought upon the effects of his labors on the subjects upon which he operates, and if all feeders had the same good fortune as that enjoyed by one well-known breeder and feeder who, when I desired information as to the diseases from which, in his experience, fattening animals were most liable, curtly answered: "I never have any disease in my cattle," I might write here the legend, "I have finished," and lay down my pen; but experience teaches us that the process of fattening is not all profit, and that, too, very largely, because the subjects frequently break down in the training long before the desired amount of superfluous matter in the shape of fat has accumulated in their bodies. Fatty degeneration of the liver at two years old, as I have seen it in Polled-Angus cattle, or at four years old, as I have witnessed it in American steers; and encasement of the spleen and the posterior bowel (the rectum) in fat and fatty salts are, perhaps, the least of the evils which result from the system which we have learned to carry out of supplying fuel to a fire from which the products can not escape, but accumulate in and about the working gear and hamper its action, seeing that the ultimate and near destination of such monstrosities is the slaughter-house. Indigestion, which means incapability to prepare the mass of materials submitted to the digestive apparatus for its manipulation, is a much more serious evil, as its natural corollaries—tympany, constipation, and inflammation of the bowels, with, occasionally, congestion of the liver or the spleen—claim an annual tribute of victims. Of the more exceptional evils resulting from the system, sudden rupture of the weakened vessels of the brain and death from apoplexy, and of the minor evils, enlarged knees

and hocks from bruising, and rheumatic disease of the joints, little need be said—they are the products of an unnatural system, and will arise so long as that system remains in vogue; but the greatest of the evils resulting from the practice is to be found in the waste of nutritive matter, which again results from the introduction of more material into the stomachs and intestines than they are capable of dealing with in anything like a profitable manner, seeing that a large proportion of it is passed out with the stream of egesta, and only enhances the value of the manure heap; while a secondary source of waste arises in the manufacture of tons of grease, which not even the great maw of an insatiable community can consume.

When the lesson of regulating the supply by the natural demand, and by the capabilities which animals possess of utilizing it, has been learned, direct losses by the breaking down of the machinery engaged in the manufacture of blubber, and indirect losses resulting from waste of material, will cease. In the meantime all that one can do is to direct attention to the abuse of nature and nature's laws, and to advise feeders to master the elementary details of their business by making themselves acquainted with physiological and chemical laws, and to carefully study the results of such labors as those recorded in Mr. Warrington's "Chemistry of the Farm."

To the practical lessons therein taught I would simply add that, in order to preserve the animal body in a perfect state of health, judicious exercise is an absolute necessity, with careful attention to, and regulation of, the natural excretory organs (the bowels and the kidneys) by the occasional administration of laxatives, stomachics, and diuretics.

Shorthorn Committee Meeting.

At a meeting of Shorthorn breeders who suffered loss on account of their animals having been rejected from registration in the Dominion Shorthorn Herdbook, held in Guelph during the Fat Stock Show, the following change in the articles of constitution was proposed: "The animal must trace on the side of the sire and the dam to recorded imported English Shorthorns, or to pedigrees not false or spurious, already of record in the British-American Herdbook." The object of this resolution was that certain animals might be admitted for registration which were now rejected.

At a subsequent public meeting of the same parties in conjunction with other Shorthorn breeders, a committee was appointed to meet the committee of the Dominion Shorthorn Herdbook Association in order to discuss the propriety of changing the standard. These committees met in Toronto on the 7th ult., Mr. John Dryden in the chair. There were also present: Messrs. Gordon, Snell, Green, Shipley, Shaw, Rae, Fothergill, Davidson, Russel, Wade, Patterson, Cowan, Pettit, McQueen, Hunter, Linton, Laidlaw and Johnston.

The Chairman explained that they had met for two objects, (1) To petition the Dominion Government for a grant to aid in the publication of the Dominion Herdbook, and (2) To take into consideration the petition of the committee appointed to endeavor to obtain a change of standard.

Mr. Gordon said the Hon. John Carling could make no promises concerning a grant to the Association, but advised them to renew their petition. He asked for the appointment of a committee to draft a petition to the Minister of Agriculture. The Chairman named Messrs. Gordon, Shaw and Wade to act as committeemen.

Mr. Robert McQueen acted as spokesman of the committee appointed to endeavor to procure a change in the standard. He repeated the arguments used at the Guelph meeting, published in our last issue. Other speakers also forced their points upon the attention of the meeting.

The Chairman and others pointed out in reply that the resolution passed in Guelph was powerless, it being unconstitutional for them to change the standard, and notice would have to be given to the Association. Mr. McQueen then signed the following notice and handed it to Secretary Wade:

I hereby give notice that at the next General Annual Meeting of the Dominion Shorthorn Association it is my intention to introduce a resolution having for its object a re-consideration of the present standard for registration of the Association.

The Annual Meeting will be held in St. Lawrence Hall on Thursday, 24th February next, at 11 o'clock a.m.

Every Shorthorn breeder should attend this meeting and use his vote and influence to secure justice in the manner we have already pointed out. Special railway rates can be obtained by applying to the Secretary, Henry Wade, Toronto.

Clydesdale Association of Canada.

The annual meeting of the above Association was held in Toronto on December 30th, the President, Mr. McCrae, in the chair.

The following members were present:—Messrs. Smith, Vice-President; Moore, Jackson, Rennie, Doherty, Snell, Carstain, Stanford, Beith, Ormsby, Duff, Taylor, Geddis, McDermott, Hurd, Annan, Scott, Graham, Mair, W. L. Taylor, Brandon and H. Wade.

The minutes of the last meeting being read and adopted, the Secretary read the Constitution, which, after some discussion, was adopted in the form in which it is printed in Volume I. of Studbook.

The President then addressed the meeting, and spoke of the great number of good animals imported by ~~Canadians~~ this year, and hoped the quality of new importations would be as good. He was very sorry so many of them were afterwards sold to buyers from the United States. He also deplored the importation of horses with unregistered pedigrees, as it was generally found impossible to trace them when owners wished to have them recorded in our book. It was a rule for this Association to accept only such animals for registration as were already on record in the Scotch Studbook, or were certified to be eligible by the Secretary. He had been highly complimented while in Chicago recently on the good appearance and excellence of the first volume. It was a book of great value to the breeder, and he hoped any errors found in the book would be promptly communicated to the Secretary, Mr. Wade, in order that they might be corrected in the forthcoming volume of the Studbook. It was the intention to continue the appendix containing the pedigrees of all crosses appearing in the pedigrees of imported animals. This had met with considerable favor, as breeders did not need to consult the Scotch Studbook to trace the pedigrees of their importations. He hoped something would be done to relieve the great inconvenience and loss sustained by delays in transporting valuable stock. At the meeting in Guelph last September the subject of holding a Spring Stallion Show was broached, and it remained for this meeting to come to some definite conclusion about it. It had been discussed already at the Directors' meeting in the morning, and Toronto was thought to be the best place for the Show.

The report of the Secretary-Treasurer was next read, which showed the receipts for the year to have been $348, and the expenditure $248, thus leaving a balance of $100 to the credit of the Association. As the Association had no present use for this money, it was decided to collect no annual fee from the old members for the year 1887, unless it should be found necessary to raise more funds, when a small assessment would be found sufficient.

A letter from Mr. Mills, Secretary of the American Clydesdale Association, was read by the Secretary, offering on behalf of his Association two medals of suitable design for the best recorded stallion and mare bred in Ontario, to be competed for at the Provincial Fair of 1887.

After a lengthy discussion, in which nearly every man present took part, it was decided to hold a Spring Stallion Show, after the model of the Glasgow Fair, some time next March, before the 15th, in the City of Toronto.

The following officers for 1887 were elected:—David McCrae, Guelph, President; Wm. Smith, Columbus, Vice-President for Ontario; Hon. J. H. Pope, Compton, Quebec, Vice-President for Quebec; Robt. Ness, Howick, Quebec, and R. Conroy, Aylmer, Quebec, Provisional Directors; John E. Smith, Brandon, Man., Vice-President for Manitoba; Prof. Lawson, Halifax, N. S., Vice-President for Nova Scotia; A. C. Bell, New Glasgow, N. S., Provisional Director; J. E. Fairweather, Hampton, and Donald Ferguson, Charlottetown, Provisional Directors for New Brunswick; and the following Directors for Ontario: Robt. Graham, Claremont; Jas. Beith, Bowmanville; Wm. Rennie, Toronto; H. H. Hurd, Hamilton; John Jackson, Grahamville; Robt. Taylor, Harwick; John McMillan, Constance. Messrs. W. L. Taylor and J. C. Snell were elected Auditors.

Dominion Ayrshire Breeders' Association.

At a meeting of Ayrshire Breeders held in Guelph last September, it was agreed to hold a meeting for the purpose of forming an Association some time in January, 1887. Mr. David Nicol, of Cataraqui, was appointed President provisionally. In accordance with this, a meeting was held at the Walker House, Toronto, on 14th January last. The severe snow storm prevented as large an attendance as there would otherwise have been.

Mr. Nicol explained the object of the meeting in a letter, which ably dealt with all the matters of great importance to the Ayrshire breeder. He stated that the breeders in the eastern part of the Dominion had already organized, and it was time the breeders of the west should do something.

It had been suggested at the meeting of the other Association that branch Associations be formed in each Province, a vice-president and delegates to represent these at the annual meeting, when business affecting the branches would be transacted.

Mr. Nicol liked the scheme and hoped something could be done. It would be very unadvisable to have two separate Associations, each with its separate herdbook, so there should be amalgamation, and one herdbook for the Dominion.

Mr. Nicol then spoke at considerable length of the injustice done the Ayrshire at the exhibitions through incompetent judging. He hoped this could be obviated by the employment of experts, even if brought from a long distance, and in conclusion he eulogized this breed of cattle for unapproached excellence for dairy purposes.

Next came the election of officers. Mr. Nicol declined on account of pressure of business to act

as President, so Mr. James McCormick, Rockton, was elected. Mr. Thomas Grey, Oshawa, was the unanimous choice for Vice-President, and Mr. Henry Wade, Toronto, Secretary-Treasurer.

The annual subscription fee was fixed at $3.00, and members were to be charged 50c. for each registration; non-members, 75c.; a certificate, 25c. additional in each case.

The following committee was appointed to meet the delegates from the Quebec Association: Jas. McCormick, Rockton; Thos. Grey, Oshawa; Chas. Drury, M. P. P., Crown Hill; D. Nicol, Cataraqui; Jas. Yuill, Carleton Place; H. Wade, Toronto.

The Apiary.

The Honey Flora of Ontario.

BY W. H. WATSON.

It is an acknowledged fact that Ontario is the garden of Canada, and rightly so, for from the time the snows of winter disappear we have a constant succession of beautiful ever-blooming flowers which grow wild along the road-sides. It is also a fact that the climate of Western Ontario is of such a nature that nearly all of the principal honey producing plants can be and are grown in the open air, and are therefore a great source of wealth to the province.

Some of the best flavored honey known to commerce is produced in this province, and as this delicious food is coming more and more into daily use, it is a matter in which we are all interested to know where and from what flowers the bees gather it. It is remarkable the amount of ignorance prevailing in regard to this matter. At the present day many persons can be found who do not know the difference between one kind of honey and another. In Ontario we have an almost endless variety of plants, shrubs and trees that yield a goodly supply of honey. The principal ones in the spring are first, the willow, soft maple, poplar, and silver maple, as well as the dandelion; later on we have the hard maple, which blooms usually about the first of May (according to the season). From the maple and fruit bloom quite a quantity of honey is gathered which is very useful to stimulate breeding, and if the colonies are strong a good surplus is obtained. It is of the utmost importance to every bee-keeper to be acquainted with the succession of bloom, so that he can take advantage of the honey flow, and obtain as much surplus as possible by working his bees right.

June yields the great honey crop of Ontario, and the beekeeper is as busy as the bee, if he is fortunate enough to possess a number of colonies at this season. White clover is in full bloom during this month, and is to be found everywhere, whether on the highly cultivated lawns of the millionaire in the city or on the road-sides of the back townships, and thousands of pounds of this delicious sweet are annually gathered by the bees; I might safely say that millions of pounds "waste its sweetness on the desert air." In July we are favored with another large yield from the linden or basswood; there is such a decided difference between the honey gathered from the clover and linden that beekeepers are, as a rule, careful to keep them separate as much as possible, as they sell better by doing so.

I must not forget to mention the melilot or sweet clover, which produces a honey very similar to the white clover, and some persons prefer it to white clover honey. Red clover also yields large quantities of honey, but the honey bees are not able to gather from it except in dry seasons (as a rule) on account of the shortness of their tongues. Another very valuable honey plant is alsike clover, and the growth of this plant should be greatly encouraged, as its seed brings a good price and it is valuable as a fall pasture. As much as seven bushels of seed per acre has been produced, which sold at $12 per bushel; so that it can be doubly profitable by the bees gathering honey and by the seed obtained. The Canada thistle also yields a very superior quality of honey, and in some localities quite a quantity, and the sooner the quantity is decreased the better for the country. Some very good honey, although of a darker color, is gathered from the backwoods, catnip, golden rod, asters and other fall flowers, which makes good winter feed for the bees. I have given the principal sources of our honey supply in Ontario, but of course I have not given all, as that would require more space than I would care to give in this article. As I remarked above, it is necessary that every one who wants to be successful with bees, should become acquainted with the flora and know just when the bloom appears in his own locality, so that he may prepare his bees accordingly, and thereby secure an extra large surplus.

Bee Notes.

Beekeepers should now decide on the kind of hives they are going to use during the coming season, and provide themselves with as many as they think they will require. In deciding, it is better to have a few more than you need than one less.

If you are going to work your bees for extracted honey make arrangements for your supply of cans or jars now. You will be able to buy to better advantage, as you can compare the prices of the different dealers.

If you winter your bees out of doors, see that the entrances are kept free from ice and snow, but do not disturb them in any way till the weather is warm enough for them to have a fly.

See that your agricultural society recognize the bee-keepers and have a class for bees and honey on their prize lists, as these shows help the sale of honey in your own locality and educate the people as to the great value of honey as a food as well as a luxury.

Proverbs for Bee-Keepers.

1. The ways of bee-keeping are not all ways of pleasantness, nor are all the paths thereof the paths of peace.

2. Man is to eat his bread in the sweat of his face, and there is no exception made in favor of the bee-keeper.

3. To work successfully a man must work wisely. To work wisely with bees one must know their nature and habits; these can be learned only by careful study and observation.

4. We live in progressive times, and the true bee-keeper must be progressive.

5. In bee-keeping, as in other things, the diligent are crowned with success.

6. The obstacles in the way of successful bee culture are ignorance, carelessness, being too eager to increase the number of colonies, and *cold winters.*

7. A fair knowledge of bees, faithful attention to the apiary, and a thorough and timely preparation for the honey-flow, swarming, and wintering, will make any man or woman a successful bee-keeper.

8. A tyrannical Pharoah demanded of his workers the full tale of bricks, but furnished them no straw. Do not demand from your little workers the full tale in pounds of honey, when there is none in the fields, or when you reside in a region poor in honey-yielding plants.

9. Carefully lay up your honey-crop where thieves (*especially robber bees*) can not break in and steal, and your empty combs where moth worms will not destroy them.

10. Profitable bee-keeping greatly depends upon a gathering-up of the fragments, that nothing be lost. Fragments of time can be used in caring for bees, fragments of lumber in making hives and frames, fragments of combs for wax; and every drop of honey is useful; even though mixed with dirt, it can be fed to needy colonies.

11. Some bee-keepers seek their profits in raising bees or queens to sell; but remember that the true aim of bee-keeping is to supply our markets with delicious honey.

12. Live not for self. Make your knowledge profitable to others seeking to learn bee-keeping, that the coming generation of bee-keepers may excel the present, increasing in numbers and in knowledge, until every pound of honey secreted by the unnumbered flowers of our land is gathered. —[Rev. W. D. Ralston in Gleamings in Bee-Culture.

Sheaves from Our Gleaner.

In this country corn is largely grown in latitudes where the winters are extremely cold, says the American Cultivator. No kind of grain is better adapted to keeping up the animal heat, and some proportion should be given even to horses that have to be out in cold weather. Oats are better for giving strength, but are not so good in cold weather as a part ration of corn. For cows giving milk the corn serves a double purpose. What is not needed for keeping the cows warm adds to the product of butter.

The manure made by mature animals is richer than that excreted by growing stock. The latter need material to increase their growth, while mature stock take only enough from their food to supply the wastes of the system and lay on some fat, the balance of the food material being cast off in the manure. Hence, the richest of all manure is that made from mature fattening cattle. This fact is one of greater practical value than it is generally credited to be. It is one of the points that should not be overlooked in considering the advisability of buying cattle to feed for the shambles.

To improve your herd, begin, not by buying a fancy bull, but by giving better care to what you have. Feed higher and more judiciously, stable better to protect against the changes of temperature, and in every way improve the conditions of life of the stock you have. Then buy better blood than you have. It is folly to expect stock, however well bred, to do well when under-fed and exposed to the weather. The conditions of life must be favorable to the development of the qualities you desire in your herd, and they must be kept so. The finer strains of milk and butter cows are necessarily more sensitive to abuse and exposure than are their "poor relations."

In regard to the value of liquid excrement, the Boston Journal of Chemistry says: "How strangely we overlook the value of the liquid excrement of our animals. A cow under ordinary feeding furnishes in a year 20,000 pounds of solid excrement, and about 8,000 pounds of liquid. The comparative money value of the two is but slightly in favor of the solid. The statement has been verified as truth over and over again. The urine of the herbivorous animals holds nearly all the secretions of the body which are capable of producing the rich nitrogenous compounds so essential as forcing or leaf-forming agents in the growth of plants. The solid holds the phosphoric acid, the lime and magnesia, which go to seeds principally, but its liquid, holding nitrogen, potash and soda, is needed in forming the stalks and leaves. The two forms of plant nutriment should never be separated, or allowed to be wasted by neglect. The farmer who saves all the urine of the animals doubles his manurial resources every year." He, then, who allows his liquid excrement to be wasted, wastes half his manurial resources, and it will require a large expenditure of commercial fertilizers to make good this loss.

Correspondence.

NOTICE TO CORRESPONDENTS.—1. Please write on one side of the paper only. 2. Give full name, Post Office and Province, not necessarily for publication, but as guarantee of good faith and to enable us to answer by mail when, for any reason, that course seems desirable. If an answer is specially requested by mail, a stamp must be enclosed. Unless of general interest, no questions will be answered through the ADVOCATE, as our space is very limited. 3. Do not expect anonymous communications to be noticed. 4. Matter for publication should be marked "Printers' MS." on the cover, the ends being open, in which case the postage will only be 1c per 4 ounces. 5. Non-subscribers should not expect their communications to be noticed. 6. No questions will be answered except those pertaining purely to agriculture or agricultural matters.

Correspondents wanting reliable information relating to diseases of stock must not only give the symptoms as fully as possible, but also how the animal has been fed and otherwise treated or managed. In case of suspicion of hereditary diseases, it is necessary also to state whether or not the ancestors of the affected animal have had the disease or any predisposition to it.

In asking questions relating to manures, it is necessary to describe the nature of the soil on which the intended manures are to be applied; also the nature of the crop.

We do not hold ourselves responsible for the views of correspondents.

Feeding Value of Oat and Pea Refuse—Economical Ration for Pigs—White Grub—Value of Straw and Chaff.—1. Please give the digestible constituents in the refuse of oat and pea mills, as oat bran, oat dust, pea bran. 2. What nutritive ratio is most economical for pigs? 3. The grub which a correspondent describes in the ADVOCATE has done considerable damage to fall wheat in this section. Will it continue its ravages in spring, and is there any remedy? 4. Does not straw and chaff mixed as found in farmers' barns contain more nutriment than given in the table in the ADVOCATE? —J. A. M., Mt. Elgin.

[1. and 4.—The following table gives the percentage of digestible constituents in the foods mentioned:—

Name of Foods.	Albuminoids.	Carbohydrates.	Fat.	Nutritive Ratio.	Value per 100 lbs.
Wheat straw.	0.8	35.6	0.4	1: 45.8	$0.37
Wheat chaff.	1.4	32.8	0.4	1: 24.1	0.42
Pea bran.....	4.0	36.2	1 2	1: 9.8	0 55
Oat hulls.....	1.6	36.6	0.6	1: 23.8	0.39

You should bear in mind that these are averages, and that a great deal of the wheat and chaff in the farmers' barns is much inferior, and very small percentage is superior, to the figures in the above table, the analyses being taken from German sources, where straw is preserved in a better condition than here, as the German farmers know much more about the feeding values of farm products than we do. Straw and chaff, when fed alone, or almost alone, has no profitable feeding value; on the contrary, a loss is sustained. The profits obtained in feeding them are based upon the knowledge of how to compound the rations. 2. If you want to feed pigs for wholesome lean meat for your own use, give a ratio of 1:2 or 1:3, or thereabouts, but if your object is to produce fat pork for the market, you may give a ratio of 1:4 or 1:5, which will usually be a little cheaper than the former ration. 3. When the white grub, or any other destructive insect, gets a foothold in a section, it is impossible to say when it will make up its mind to go; much depends upon the efforts made to destroy it. In spring we will give full and complete directions for destroying insects more satisfactory than we can here.]

Skim-milk for Foals—Restoring Fertility—Remedy for Bark-splitting on Apple Trees.—1. Is skim-milk good for foals after weaning? 2. Will it pay me to sell 3 bush. of oats or 5 bush. of potatoes to buy one barrel of lime, to keep up the fertility of my farm; soil, light clay. 3. What causes the bark-spliting on apple trees? Please give remedy.—W.C, P. E. I.

[1. Skim-milk in small quantities is good for foals, The best way to give it is to take oat or corn meal, or any other kind of meal which is rich in fat, and moisten it with fresh skim-milk. The milk should not be sour, and the mash should not be sloppy with an excess of the skim-milk. A small quantity of such a mash will go a long way, for it is a very rich and concentrated food. For unthrifty colts, a small quantity of skim-milk may also be mixed with the water which they drink—say ¼ skim-milk and ¾ water. 2. For feeding purposes, 100 lbs. of oats are worth about 400 lbs. of potatoes. You can't keep up the fertility of your soil by the application of lime; but phosphate of lime would likely be very beneficial to your soil. An occasional dressing of lime may be of some advantage, but you can only find this out by actual trial. 3. Bark-splitting at the base of apple trees is caused by sudden changes of temperature in spring. It is prevented by placing a piece of board or shingle between the base of the tree and the sun during the hottest part of the day.]

Various Horse Ailments—Veterinary Literature.—1. I would like your advice about two young mares I bought this fall. They have evidently been worked hard and badly abused. One is coming 5 and has had a bad callous on the lower part of the shoulder. How could it be removed? I tried a seton just below it, which I greased with red precipitate and hog's lard. It drew a little matter out, but not much. I had the seton in for 10 days. 2. The mare was also kicked on the side of one of its hind legs, just above the fetlock joint, and a swelling which feels as hard as bone has come. Could it be removed? It does not affect the animal at all. Would it be any good to apply iodine? 3. The other mare coming four, stocks slightly in the hind legs. 4. She also seems to have blood spavins or thoroughpin on each of her hind legs. Could they be removed, and how? 5. Would her stock be subject to the same disease, for otherwise she is a fine beast? 6. Have you any faith in Kendall's Spavin Cure? 7. What is the best work on the horse? 8. Which is the best magazine published on that subject in the U. S.?—E. S., Dunseith, Dak., U. S.

[1. Have the callous removed with the knife by some skilful veterinary surgeon; then treat as a common wound. 2. Would advise you to apply a blister to it once every couple of weeks (biniodide mercury 1 part, lard 8 parts); grease the part blistered the third day after each blistering. 3. Give a purgative drench to her once every week for about three times (Barbadoes aloes 6 drams, ginger 1 dram, carbonate of soda 2 drams, dissolved in a pint of water and poured down as a drench). Give her a dram of nitrate potash every night while the legs are swollen, and allow her to have plenty of exercise. 4. Use any strong astringent liniment; bathing with strong salt and water or oak bark tea is a good thing to use on them. 5. It depends a good deal on her breeding whether she would be likely to transmit it to her colts or not. 6. No. 7. Consult our advertising columns. 8. The leading agricultural papers are as good as any.]

Farmers, Grangers and Knights of Labor.—I have just read the remarks of Worthy Master Wilkie in his annual address to the Dominion Grange, regarding the condition and prospects of the farmer in this country, and his position and influence in the business and political spheres. I think he takes too pessimistic a view of our prospects, because from my observation I should say that to-day the future of the tiller of the soil looks brighter than that of any other occupation. Notwithstanding the low prices of the past few years paid for products of the soil, the price of land is as high as ever before, and when $100 per acre is readily offered for farms in Brant Co., there is the best of evidence that men believe that money is more safely invested in land than in buildings and machinery for manufacturing purposes. What if we do have at times scanty crops and frequently low prices for a few of our products? Our land will always bring a good fair price if brought to a sale. But give a factory a season or two of low prices and scanty orders, and the buildings, machinery, etc., could not be sold for more than a fraction on the dollar of their original cost. So if we do not receive the large occasional profits of the manufacturer, we have the certainty that depression in trade will not wipe out the greater portion of our capital. Then, again, our local taxes average not more than one-third of the dwellers in towns, so that our burden is considerably lightened in this way. To be sure, we are deprived of many of the conveniences and advantages of dwellers in towns, but I know that in this part of the country, with two considerable towns at no great distance, we even contrive to get a fair share of what is going in the way of literary, musical and social enjoyment. I protest against the prevailing custom of holding up town life as attractive and country life as dull and uninteresting, because it is such ideas that induce the country boy and girl to hanker after pleasures which they imagine are necessary to existence, but too often prove an injury. I come now to a point upon which we agree, that is, the necessity for united action through organization for the protection of our interests. Other businesses are organized, ours has not been successful in doing so. The Grange, of which Grand Master Wilkie is the head, has proved a failure, at least in this quarter, because it frittered away its energies in the pettiest details, by interfering with other interests unwarrantably, and instead of spending the time in mutual improvement and the discussion of subjects bearing on the art of agriculture, officers and members had only one object in view, the purchase of groceries, tinware, pens, ink and paper, lead pencils, etc., etc. Here and there through Dumfries are to be seen small storehouses, where the enterprising and for a time enthusiastic secretary and treasurer would deal out sugar, tea and other eceteras at supposedly wholesale prices. For a time the members appeared to be content under the full impression that they were saving money; but the delusion was dissipated after two or three years' trial by the conviction which slowly but certainly gained ground that the Grangers were victimized in the "house of their friends" by being charged full price, and by finding that we had middle-men among ourselves, who were as much "birds of prey" as the old-fashioned agents and dealers. When the members of our Granges found themselves sold in this matter, which they had unfortunately made the primary object of their organization, the interest in the meetings fell off, and Grangeism became a thing of the past. Now we find in our towns and cities an organization which is formed on a somewhat similar basis to the Grange—I refer to the Knights of Labor—but they are working on different lines, and I think threaten to wield an influence which will be inimical to the interests of the farmer. For instance, they assume that all wealth should be equally divided among those who create it. The young men who join are learning to look upon the owners of factories, &c., as robbers, who have possession of wealth which should be divided up. They therefore combine to raise wages regardless of the ability of the wage earner. They seek to coerce the employer, establish a system of espionage so that people outside of their Lodge soon become suspicious of every one, and there is mutual distrust in the community. In the neighboring town of Paris they have exhibited their power in a sudden and unexpected manner; but nevertheless in such a way as to furnish food for serious thought. Up to the end of December the fact of such an organization being in existence in the town was not publicly known, still they are believed to have polled over 125 votes in a solid body. Then, again, manipulated by two or three well-known sporting characters in the interest of the Licensed Victuallers' Association, they threw their whole vote (barring a half dozen or so, who had become convinced that the liquor interest was making use of them,) into the municipal contest, and made an almost total sweep of the Town Council from the Mayor downward, defeating a number of the most capable men in the town and putting in their places a lot of inexperienced and untried men, some of them being mere lads. In Brantford they threw their vote against the excellent man who had filled the position for the past year, and who represented the solid business men of the city, and working with the liquor interests, defeated him. Such combinations will soon be made to attempt the control of political elections as well, and it is well for farmers to consider what they should do in the premises. Divided as we now are we are powerless; but the Knights of Labor working as a unit, and bringing organized effort to bear on Parliamentary elections, will soon have a controlling influence. At their present rate of increase the Parliamentary elections four years hence will be largely controlled by them. I will delay further remarks on this head to a future number.—CANADIAN, South Dumfries, Ont.

[You are mistaken about the views of the Knights of Labor as a class. Many workingmen have socialistic tendencies such as those you mention, but a large majority are followers of Henry George, who is a political economist and not a socialist, and who contends for a principle and not for a party or faction, viz., the enjoyment of every citizen to the fruits of his own labor, which principle is as advantageous to the capitalist as to the laborer. He instigates labor and capital against monopoly. We admit the necessity of organizations amongst farmers, but warn them against being led away by cries; they should discuss these questions on their merits. Farmers cannot defend themselves against all these burdens and evil influences without organizing.]

Effects of Forests on Vegetation and Health—Being one of the pioneer settlers on the shores of the Georgian Bay in the year 1844, when the vast country north of Guelph was in a manner a primeval wilderness, and having carefully observed the gradual change that has been going on, climatically speaking, my observations are tendered in a local point of view. The climate in this district has during those forty-three years undergone a perceptible change in respect of cold in winter and withdrawal of moisture in summer. During the first decade the mercury seldom if ever fell under twenty below zero, till about the year 1860 it fell to twenty-four, and in 1875, Feb. 6th, to twenty-eight, and in 1885-6 to thirty-five and thirty-seven respectively. The high winds which now sweep the snow into blocking up highways and causing much inconvenience to all concerned, were but little felt in early days. And to how "Jack Frost" was kept in check by the surrounding forest:—Potatoes came out of the pit unscathed in spring with a slight covering of straw and a few inches of surface mould; and turnips, if covered out of sight was sufficient. In respect of clothing, farmers went about their outdoor work with little over one-half the weight they now require. A home-made woolen shirt, coarse brown linen jacket and satenette pants, no

drawers and frequently no vest, was our usual outfit. Another noticeable feature is the effect of the increasing severity of our winters upon fruit trees. Peaches could be grown in abundance in the early stages of the settlement, the trees coming through the winter scathless, and would burst into full foliage in the spring. Of late years they can only be grown in well protected spots, and that with partial success. The spring season remains much the same as formerly, the snow perhaps going earlier, but vegetation starts about the same time. Summer, on the other hand, though not affected to the same extent as that of winter, still there is a very perceptible withdrawal of moisture from the ground. Surface springs, that while under cover of the forest afforded drinking places for cattle during the whole season, now dry up entirely, and large springs that would flow over a mile from the fountain-head, now disappear in a short distance, and summer and autumn droughts have of late years become more frequent and of longer duration. In a sanitary point of view, the change is obvious, perhaps more so in rural districts than in towns and cities. Twenty years ago bronchial and catarrhal ailments were of small account, and of late years such ailments are growing alarmingly prevalent. That exposure to the cold winter winds is conducive to such ailments I can speak experimentally, as until twelve years ago our family occupied a position well protected by bush on three sides, and enjoyed the best of health during the winter season, but since removing to a much exposed position the opposite has been the case. Our family doctor, who has had long experience in this locality, and bases his opinion on close observation, says that the above ailments have kept pace with the denuding of the forests from the shores of the lake, and recommends as the best preventive the planting of belts of evergreens on all available places, especially around the most exposed sides of dwellings. Of course we cannot expect that our forests can ever be replaced to the extent of remoulding our climate back to its primary state, but there is little doubt that wholesale tree planting on all available spots and extensive drainage would have a very beneficial effect towards that end.—A. R., Annan.

Stone Basements for Stock—Ventilating Stables.—I intend to build a bank barn next spring, and have always heard people say that a stone basement under a barn is not as healthy for stock as an upper ground stabling, which I think must be from improper ventilation. I intend to build 40x60, two-foot stone work all around, and nine feet high. Will you be kind enough to allow space in your next ADVOCATE for a full description of how to ventilate such basement stabling so as to be healthy for stock. I send a rough sketch how I intend to arrange the stabling.—[F. C., Lion's Head,

[The healthfulness of stone basements depends upon the drainage or the kind of soil in which the stonework is built. If the soil is loose, no artificial drainage being required, or if the soil is stiff, but well drained, stone basements are quite healthy, providing the ventilation is good and the floor is of such a nature as will not suck moisture from below. The extent of the ventilation depends more upon the quantity of stock in the stalls than the size of the stable. For a basement of your size you should have four ventilators on each side, running up the sides of the barn and running out just below the eave troughs. The size of each ventilator may be say 5x18 inches, with a slide to regulate the draft and temperature. Any good mason or contractor should be able to give you details about the building, and by referring to back numbers of the ADVOCATE you will find suitable illustrations and descriptions.]

Planting Grapes in Pear Orchards—Norway Spruce.—1. How would it do to plant pear trees 24 feet apart in rows, and plant two rows of grape vines between each row of trees eight feet apart? Would the trees and vines do well together? 2. Where can I get Norway Spruce by the thousand, from 2 to 5 inches high?—C. G. K., Ancaster, Ont.

[1. If the orchard is well cultivated and manured, grapes will thrive very well between the rows of trees. While the trees are small, two rows of grapes may be planted between each row of trees, but when the trees are large, they shade the grapes too much. The two rows should then be removed, and one put in their place. All fruits, however, should have plenty light, and the best practice is to keep the small and large fruits separate. 2. Write to the nurserymen whose advertisements appear in the ADVOCATE from time to time. They will quote their prices for you, and you will then be able to make a better bargain than when you depend upon one nurseryman whom you are not acquainted with. The leading nurserymen of Canada and the United States advertise in the ADVOCATE.]

Items from Manitoba.—Your kind letter and book came safely to hand. I was very much pleased at receiving such a reward for my few letters to the ADVOCATE, and did not expect any recompense, so this kindness on your part seems doubly valuable. My letters have not always pleased all your subscribers, but I have written only what I believed to be the truth. I will continue to write so long as you think my letters worthy of insertion. At the commencement of another year we ought, like other business men, to take stock and see what progress we have made. Very many of us would come out this year with a very poor balance sheet. The last year was an exceptionally trying one on account of its extreme dryness. On looking back at my notes through the year, I find that we did not get a single day's continuous rain, and further still, I doubt very much if we put all the showers that we had together, if they would equal in volume a good solid day's rain; so we need not wonder at light crops being the rule. But what there was of it was good—no frozen grain, so farmers have received fair prices. I should think that, taking one grade with the other, wheat has averaged about fifty cents per bushel for the season. Another great drawback to many has been heavy losses through prairie fires; these seem to have been general throughout the country, and the total losses from this cause must be something very considerable indeed. We have had a good many suggestions put forward for their prevention, but I think a good remedy would be to get a good settler upon every quarter-section of land. The prairie would then be more broken, and thus present more fire breaks to check the progress of the flames. Besides the losses sustained by individuals in buildings, grain, hay, etc., there is a heavy item of loss which affects the whole district, and that is the destruction of growing timber. That item in this part of the country, where you can ride for miles east from the Pembina Mountains, and north from the international boundary line, without seeing a bluff of timber, is an extremely important one. If something is not done to protect existing trees, or to encourage tree planting or culture by individual farmers, this part of the country will in a very few years be altogether denuded of its growing timber. —R. C. B., Stodderville, Man.

Renovating a Worn-out Soil.—Lately purchasing a farm, I find one of the fields to be light clay loam. As near as I can ascertain it has been cultivated upwards of 25 years, and with the exception of once, no manure. The last ten years it has been cropped with oats. Last harvest the oats grew about eighteen inches long, and yielded about fifteen bushels to the acre. Can you instruct me how to enrich that field? There is manure on the farm. It was plowed twice last fall.—G. L., Belton, Ont.

[Your soil requires renovation in various ways. Give it a liberal dressing of barnyard manure, and if the manure is much leached by rains, use plenty of unleached ashes to supply the potash which is lacking in the manure heap. If you can't get plenty ashes, use commercial potash, such as the muriate of potash, or sulphate of potash. Plow under liberal quantities of clover, and top-dress the clover crops with land plaster. An occasional dressing with bone dust or superphosphate will also be profitable. Cultivate thoroughly and keep the land clean. Don't use too much of one fertilizer at a time, but apply a small quantity of each. From 100 to 150 lbs. per acre of the commercial potash fertilizers, and 200 to 300 of the phosphates in one season, will be enough if applied with barn-yard manure. You can renovate with barn-yard manure alone, but not so economically as by the addition of the commercial fertilizers mentioned.]

Regulating the Rate of Interest.—How are farmers to secure a lower rate of interest on farm property in Ontario? High rates are killing the Canadian farmers.—B. B., Teeterville, Ont.

[There is no way of regulating the rate of interest—not even by legislative enactment. Interest is governed by the same laws as wages or farm products, over which the law has no control. By organizing, however, farmers could lessen their burdens in many other respects, which might ultimately affect the rates of interest. Farmers are helpless against rings and monopolies, which grind them down so long as they remain unorganized.]

Canadian Phosphates.—Has phosphate from Ottawa mines been prepared for use in Canada? How is it compared with the commercial preparation of superphosphate for our use as to economy and value in application? And where is either to be obtained of the best?—D. E. B., Cobourg.

[Our phosphates are extensively manufactured by Messrs. Brodie & Harvie, Smith's Falls, Ont. This fertilizer is a commercial preparation, which cannot be manufactured by farmers for their own use. You probably refer to bone superphosphate, which any intelligent farmer can make for himself. Phosphate fertilizers from our apatite rocks are valued by the percentage of phosphoric acid which they contain, and a pound of soluble phosphoric acid from these rocks has the same value as a pound derived from bone, but the insoluble portion from bone has a greater value. Write to Messrs. Brodie & Harvie, mentioning our name, and they will give you a first class article.]

Our Live Stock Policy Criticised.—Enclosed you will find my subscription for 1887. This will make the ninth year I have taken your paper. Should be sorry to be without it, although we do not agree on the stock question. I am not a speculator, but a farmer. I am trying to grade up and improve my cattle from year to year. I keep a Durham bull. I think you are doing harm amongst that large class of men whose cattle are a disgrace to the country, and who are eager to seize anything to bolster up their careless way. I have heard you quoted more than once as authority for the present state of things. Such men as I speak of are not the ones to select and test their native cattle; the only course for them is to use the thoroughbred bulls of their neighbors, and your style of writing, seems to me, is calculated to prevent them from doing so. The point I want to make is this, that you are too sweeping in your condemnation of pedigreed cattle, and should write more plainly for the very plain men who need to be urged on to improvement of some kind, and not confused and frightened by a war of words.—SUBSCRIBER, Cainsville.

[We are always ready to publish criticism on our policy, and we thank you for your letter. We have written as plainly as possible, but there are people who are ready to distort anything to injure us. We have only been contending for fair play, and we desire that trustworthy tests be made of all breeds, our natives included, before any of them are condemned. There are influential breeders who want to destroy all breeds but their own, and take it for granted without testing that their breed is best for all purposes. They even invoke the Government to their aid. Is this fair for our farmers, or even for our live stock interests? We have also denounced the general purpose cow, and we have proved our points. Why do the advocates of such animals not honestly contradict us before they commence their abuse? We can never do harm by insisting upon right and justice,]

Land Plaster—Fence Posts—The Farmer Hiring out—Horses vs. Oxen.—Times are very hard in New Brunswick, I have been farming for 35 years, and never saw produce of so little value as at present. I am well pleased with the ADVOCATE, have learned much from its teaching. Please answer the following questions through the ADVOCATE: 1. Will land plaster mixed with barn manure add anything to the value of the manure? 2. Which is the more durable for fence posts, wood, cedar or tamarack? 3. When times are so down that farm produce will not pay for raising and marketing, had not the farmer better hire out and let the wife and children run the farm? 4. Which is the more profitable team on a farm, horses or oxen? I can run a mower with oxen.—G. W. B., Petitcodiac, N. B.

[1. Yes; but will be more valuable for some soils and crops than for others. Read first article in our January issue entitled "The Uses and Abuses of Land Plaster." 2. Cedar. 3. The times must be hard, indeed, when the farmer is forced to hire out, leaving his wife and family to manage the farm, but such an extremity may sometimes be justifiable. The children should go to school, and the mother, poor creature, is already overburdened with household cares. If there is a grown up boy or girl in the family, he or she would be ungrateful to permit a parent, especially an aged parent, to hire out by the day or month, he or she doing the lighter work at home. If the farm is small and the family large and young, dire necessity may sometimes compel the father to earn a few dollars from his neighbors; but he should not, if possible, allow the farm to become so exhausted in fertility that the family will suffer in after years; nor the fields be permitted to run to weeds by imperfect tillage. It would be better to sell out than to permit these calamities to happen. Without knowing your circumstances more fully, we cannot give you a satisfactory answer. Much depends upon what your soil is adapted for. If you live in a good dairy district, we would suggest that, should urgent necessities compel you to hire out, you go extensively into dairying in such a manner that the children can do the burden of the work before and after school hours; or if you live near a town, could your family not raise fruits and vegetables for the market? We suppose it would be useless to talk about renting your farm, or a portion thereof, for if you can't make it pay, it is not likely that a tenant could raise the rent, and he would be sure to leave the land in a bad condition. Whatever you do, keep up your courage, for there is a better time coming. 4. The prejudice against oxen on the farm is too great, and horses are kept because the system has become fashionable. The farmer who is struggling for a living should break these prejudices and go for profit every time. Oxen, to be profitable, should be of native stock, or of the Devon breed; Shorthorn oxen would be a failure. Oxen are more easily kept than horses, make less labor in every respect, often do as much work, and are usually less liable to accidents and diseases.]

Swelling of Horses' Legs in the Stable—Points of Ayrshires — Thermometers and Lactoscopes.—Kindly answer the following questions:—1. What is the cause of my mare's leg swelling in the stable? I give her exercise once a week, and feed on boiled oats with a small quantity of linseed meal, also a few grains of saltpetre and sulphur occasionally in her food. She does not lie down in the stable. What will induce her to do so? 2. Kindly give me the points in an Ayrshire cow, shape of horns, size of milk veins, escutcheon, etc.; also points in bull, color preferred, etc.? 3. Can you give me the address of any breeders of Ayrshires in Manitoba or the N. W. T., also any reliable breeder of Berkshire pigs in this country? 4. Kindly inform me where I can procure a good dairy thermometer, and price; also where I can procure a lactoscope, and price of same?—J. E. W., OSPREY, Man.

[1. If she is not in foal give her a purgative ball or drench, the following being a good one:—Barbadoes aloes 7 drs., carbonate of soda 1 dr., ginger 1 dr.—mixed with 1 pint of water for a drench, or with lard for a ball. Follow this up with saltpetre and sulphur as you have been doing. Give her more exercise or more work. 2. The points of breeds vary in different associations and countries. We don't think our Ayrshire breeders have adopted a set of points yet. Write to David Nicol, Cataraqui, Ont. 3. We know of none; if there are any, they don't advertise. 4. Several dealers have reliable thermometers, but Messrs. J. S. Pearce & Co., of this city, are the only firm we know of who handle lactoscopes. They have also guaranteed thermometers at various prices. Write to them for price list and other particulars.]

Butter Workers—Fleshy Growths on Cows' Teats.—1. Please say what kind of butter worker is considered the best? 2. If butter be made in the granular form and well washed, will it keep long if packed solid in a cask, and should it be covered with brine or salt? 3. Is there any machine for packing in two-pound rolls instead of by hand, which could be driven by the power working a separator? 4. One of our heifers has several fleshy growths on a teat, interfering with milking—not warts, but more like small teats, the largest about half an inch long. Would it be advisable to cut them off and touch with butter of antimony or blue-stone?—J. B., Riverside, B. C.

[1. In reality, butter should not be worked at all, but if you are tied to the fashions, you may get one made as follows:—Make a structure in the shape of a three-cornered stool, with one of the angles sharper than the other two. Attach one end of a piece of timber, shaped like a roller, to the acute angle, and let the other end project over the floor of the stool-shaped structure. This roller, by catching the unattached end, can be moved in all directions, and the butter, which is worked under it, can be squeezed in any manner desired. The foot of the stool at the acute angle should be shorter than the other two feet in order that the other butter-milk may drain as it is worked out. 2. In preparing butter you must study the tastes of your market, and know whether or not the butter is intended for immediate consumption, taking also the season of the year into consideration. When the butter comes in the granular state, cold water should be added to harden it, and dilute the butter-milk, making a more perfect separation. Then draw off the butter-milk and add cold water, at the same time churning gently for a minute or so. Repeat this operation until the water runs off perfectly clear. Then add brine at 60°, giving the churn two or three occasional turns, and leaving it to soak for half an hour or so. The butter may then be packed without being worked at all, providing it is salt enough for your customers, and will have good keeping qualities. Salt is used to cover butter in tubs, but it is apt to break up if shipped long distances. The best covering is paraffine paper. 3. We know of no such machine. 4. Remove the growths with a knife, and then cauterize with butter of antimony or muriate of iron; blue-stone is rather a mild caustic.]

Variety in Winter Feeding—Getting Cows in Calf — Over-feeding Hens.—1. In sowing grain for green feed—that is to cut green, dry and put in mow for winter feed for cows—what grains mixed would give the heaviest crop and make the best feed for butter? What time should it be sown and at what stage should the feed be cut? Is there any difficulty in keeping it through the winter months? 2, I have several thoroughbred Jersey cows that have been milking, since calving, for from five to ten months, and I cannot get them with calf. Is there anything in the way they are fed, or can you give any information that would assist? They are young cows, not very fat, and are fed on dry hay, wheat-bran and smashed oats and peas. 3. Are hens that are over-fed as good layers as those only moderately fed, or is there such a thing as over-feeding hens?—GREENHORN, Upper Stewiacke, N. S.

[1. The foods that give the heaviest crops have usually the lowest feeding value. Corn and the grasses make the best quality of butter, but these rations are not good for quantity of milk. You should take a medium course. Peas and oats go well together, the former being good for quantity and ~~the latter~~ for quality. Any mixtures of clovers and grasses, which are suitable to your soil and climate, will answer. Corn is very useful when fed with such foods as bran, peas, and clover; but no matter how you feed, if you do not give succulent foods in winter your rations will be a failure in these days of keen competition, You must depend upon your climate and locality as to time of sowing; make the harvesting come when the weather is likely to be most propitious for securing the crop in good condition. For quantity and quality combined, cut when in full bloom or just when the seed is beginning to form. The feeding value depends upon the curing of the fodder as well as upon its composition and other qualities. If well dried, it should keep well all winter. 2. High feeding prevents breeding, but we can see no reason, from the information you give, why your cows should not get calves. Do you know anything about the ancestors? Is the bull a good getter? Your ration lacks in succulent food. 3. Over-fed hens are apt to be bad layers; over-feeding hens is just as injurious as over-feeding any other class of stock.]

Indigestion in the Cow.—Will you please reply to the following in the February issue of the ADVOCATE:—I have a valuable cow that has a cough. It appears to be getting worse. The first I noticed of her being unwell was that rumination had ceased. She was slightly feverish and muzzle hot. I have given her physic—¾ lb. Epsom salts with ginger—she has had also two doses of nitre. Yesterday she did not have any symptoms that I could detect of being sick. Root of the horn had ordinary warmth, the muzzle cool and moist. To day the symptoms are the reverse, muzzle dry and frequent coughing. She has a warm stable and is well cared for; is let out for water and exercise once a day, on cold days she is put back in the stable as soon as she has got water, which is just at hand, pure and running. She gets eight quarts of bran per day and half a pail of mangel wurzels night and morning and good hay. She has noticeably failed in flesh, but not in flow of milk.—I. D. B., Woodstock, N. B.

[Your cow most likely is troubled with indigestion. Give her 1 quart of raw linseed oil as a drench about once a week, and continue until she shows signs of improvement. Also give 2 drs. saltpetre, 1 dr. pulverized digitalis, and 1 dr. pulverized nux vomica every night in bran mash until you find improvement.]

Horse Bleeding at the Nose.—I have a driving mare which I have noticed twice to have bled a little at the nose during a hard drive on a cold day. There may not have been more than one or two drops of blood. I give her about three quarts of oats three times a day, with all the clean hay she can eat, also all the pure water she wants. She is a good feeder, has good life, and appears to be quite healthy. Please let me know if there is anything wrong with her. She is with foal.—J. C. L., Desford, Man.

[There is nothing the matter with your mare. A vein in the nostrils may have been ruptured, but it will heal up all right.]

German Millet.—Do you know anything of German or golden millet grass? Would it be a good variety to sow in spring for hay crop? At what time should it be sown, and in what quantity per acre?—P. S., Vesta, Ont.

[German millet is not extensively grown in this country, common millet or Hungarian grass being used in its place. The only objection raised against golden millet is that the seed is too expensive; but if the season is favorable, so that the seed can be properly ripened, there is profit in raising it for seed, which is extensively used as food for canary birds. The quantity per acre and time of sowing are the same as for common millet or Hungarian grass, viz., 2 to 3 pecks per acre sown between the 1st and 20th of June, or even, in some seasons, as late as July 1st.]

Sulphur for Horses.—Will you please answer through your paper to the under questions:—Is sulphur a good medicine for a horse, and what is the dose? Can a horse be worked or drink cold water when eating sulphur?—H., St. Therese de Blainville.

[Sulphur is good for various ailments, especially skin diseases, a dose being a tablespoonful three times a week. Cold water does no more harm with sulphur than without; but horses should not drink very cold water under any circumstances.]

Stock Notes.

Mr. James Cowan, West End, Guelph, has purchased from Mr. F. W. Stone, Guelph, the finely Bates-bred Shorthorn bull, "Baron Craggs 6th," a very promising animal.

Attention is directed to Mr. J. G. Snell's advertisement which appears in this issue. Mr. Snell is well known as a breeder throughout Canada, and should have a good attendance at this sale, as many choice animals are to be disposed of.

Mr. T. Hodgens, of this city, has sold to Mr. Samuel Staples, of Ida, his imported coach horse, "Lord Sudley," an illustration of which appeared in the December issue. We regret that this fine horse has left this county, and congratulate the inhabitants of Durham upon securing such an animal.

John Quering, of the township of Stephen, Ont., has 12 ewes that gave birth to 34 lambs, 30 of which lived and sold for $3.25 a piece. Timothy Lynch, also of Stephen township, has a sow that gave birth to 22 pigs in one night, 21 of which came alive, and 14 lived and did well.

From our advertising columns it will be seen that Messrs. Cowan & Patteson again purpose having a joint sale of Shorthorns, and after their experience in 1885, provision will be made for holding the sale under cover, in case of unfavorable weather. Galt is a convenient shipping point for east, west, north or south, and the cattle are of fashionable pedigrees. The stock is said to be in good, healthy condition, not over-fattened or under-fed.

The following sales of imported Clydesdales are reported by Wm. Rennie, Esq., of Toronto: To Wm. Mulock, M. P., Newmarket, Ont., "Viola," foaled 1st May, 1884; sire, "Springhill Darnly" (2429); dam, "Turnloch Belle" (2681); sire of dam, "Luck's-All" (510). Also to Mr. M., "Bella," foaled 1884; sire, "Sunbeam" (1834); dam, "Nancy"; sire of dam, "Lord Clyde" (477). To Chas. Nelson, Madison, Wis., U. S., "Wattie," Vol. IX., foaled 25th May, 1885; sire, "Maclean" (2991); dam, "Belle of Ascog" (833); sire of dam, "Surprise" (845). To Henry King, Priceville, Ont., "Dandy Boy," Vol. IX., foaled May, 1884; sire "Harold" (2854); dam, "Darling" (2837); sir of dam, "Old Times" (579). To David Shaw Albion, the imported Clydesdale stallion, "Donald," Vol. IX., foaled 2nd June, 1885; sire "Lord Erskine" (1744); dam, "Love Cecil" (4377), by "Lord Cecil" (1192). The balance of Mr. Rennie's imported Clydesdales, eleven in number, are doing well.

Much of the future value of the horse depends upon the care given it during its first winter. There is apt to be a sudden check to growth when the change is made from weaning and from green to dry food, and unless this is prevented by good, substantial food, what is then lost will never be regained. Exercise is also very important, so that liberal feeding will result in a proportionate development of muscles instead of all fat, as it might if the colt was kept tied all the time. The value of a horse is largely in its muscles, and these are made by exercise quite as much as by the character of the feed. With little use of the muscles the strength-giving food will not be assimilated, but will be passed out with other matter not needed by the system in the excrement.

Notices.

Our readers will see in this issue the advertisement of the Acme Pulverizing Harrow and Clod Crusher. This implement is spoken of in the highest terms by many who have used it.

The attention of Carriage Builders and users is directed to the advertisement, in another column, of the Adjustable Sand-Box and Improved Concord Axle. These Axles are far superior to any hitherto placed on the market, and are so acknowledged by all practical carriage builders who have given them a trial. The increasing demand for them proves their superiority over all others. Anyone addressing A. F. Miles, Stanstead, Que., will receive a cut showing the adaptibility of the Sand-Box, and the preference for the Axle.

Poultry.

Edited by J. W Bartlett,

The Poultry Shows.

The show of the Ontario Poultry Association was in every way a success. The display, although not as large as we have seen, was uniformly the best we ever saw. Birds scoring 98 points were moderately plentiful, and very few birds were disqualified; in fact, we learned of but one.

The St. Thomas show was also a grand one, but being almost the last of the season, there were few birds but the winners at previous shows on exhibition, thus reducing the entries below the expectations of the committee. The door receipts were also very light, thus making the show, financially, somewhat of a failure. We very much regret this, as the committee were indefatigable in their efforts to make it a success.

Questions and Answers.

For each thirty fowls I have a pen six by ten feet filled in for them to roost in, and feed them on a large floor. Feed bran and shorts mornings, with salt and pepper; wheat, noon; peas or corn, night, and keep clean water before them all the time. Some of them look very white in the face, and some get light headed. I lost some last summer by it. I thought there was something on them and so burnt sulphur in the house, but they do not get any better. Please let me know where I can get best game cockerel for fighting purposes.—[J. D., Warkworth P. O.

ANS.—You did not give us the breed you keep. MANY pure bred fowls and more mongrels get white in the face naturally. Do not feed corn or peas at all, try beans and shorts scalded, in the morning; feed lightly of this, and by ten o'clock feed liberally of oats, burying them in straw a foot deep on the large floor, and let them scratch for it; give a moderate feed of wheat in the evening. Chopped carrots two or three times a week, and chopped meat scraps as often, in very moderate quantities. Free access to clean gravel and apply sulphur to the fluff of the birds, and the trouble will dissappear, unless there is some local cause, which we suspect from the fact that they were troubled the same way last summer. We do not keep posted in fighting stock.

Culling and Selecting.

Cull off the inferior stock and use only the best for breeding purposes, whether breeding birds to sell as breeders—for exhibition stock—or for market. It is much better to select half-a-dozen of the very best fowls about the farm and mate them to a strong, vigorous cockerel, to secure the eggs used for hatching. If it is desirable to keep a great number of fowls for producing eggs and to raise chicks, do so, but it is not necessary to feed half-a-dozen cocks, as the hens will do equally as well, and some claim better, without them. Try to mate up the breeding-pen by the middle of February, and the eggs will be all right for hatching by the first of March, and if a suitable place is available for the hen and chicks, begin hatching at that time, but if not, better wait until the first of April or even later. The trouble of such selection and isolation is not great, and the result will be an increase of from ten to twenty percent in the value of the young stock in autumn. This is a good time, too, to introduce new blood. A cockerel costing two or three dollars will often increase the value of the flock ten dollars the first season, but be sure to get good stock in thi case, and recollect that such can not be bought at slaughter prices.

Early Chicks.

Get the chicks out early, whether for producing eggs or for market. It pays much better to get them them out in April, and, if possible to care for them and make them comfortable, even earlier. The March and April pullets will, with most breeds, begin to lay in September or October, and until mid-winter if given comfortable quarters and properly fed, and the difficulty of getting early setters is greatly obviated. Again, the cockerels, if hatched in March, are fit for broiling by the latter part of June, and will usually fetch as much in the market at that time as the same birds if kept until the following autumn, by which time they will have eaten their heads off; and if this matter were given more attention and the market supplied with a finer class of broilers, there would be many more used and better prices paid. There are, no doubt, obstacles in the way of this, but they can be overcome with a reasonable amount of energy and common sense, and certainly the inferior quality of the poultry in our markets is to a considerable extent the cause of the low prices.

BOHEMIAN OATS.—This swindle, which seems to have had its day in Ohio, Pennsylvania, and a few other States, is now having a run in other parts of the country, says the National Stockman and Farmer. We hear of it in New York, where, the people having been put somewhat on their guard through the press, it should not be very successful. It is also reported from Iowa and Indiana, the farmers of which States have no more excuse than their New York brethren for being taken in by it. In these days when such rascally schemes are exposed all over the land by the watchful and progressive agricultural press, it is strange that enough gullible victims should be found to make them profitable.

There never was so large an exhibit of self-binding harvesters made as at the late exhibitions. Perfection appears to be so near attained that for the sake of claiming some new improvement some of the old plans have to be rejuvenated. Most of the firms make a good implement. All the manufacturers of harvesters have greatly reduced their prices; $140 to $160 appears to be the price of implements that formerly sold at $300. In purchasing, if possible, write direct to the firm from which you intend to buy; be sure that they sanction the statements made by the agents, and it is well that you should be sure that the firm is a responsible one and that their machine is a good one. You cannot depend on what all agents tell you, however plausible they may be; in fact, the readiest talkers are often the most subtle. Do not think of buying an implement because it is cheap; the best is the cheapest. All will try to make you believe theirs is the best, even though they know it may be the most defective implement made. We would expose some of the fraudulent operators, but, to our cost, we mentioned such a case once, and had to pay for it. If our Board of Agriculture and Arts were to devote some of its energies in attempting to protect farmers from frauds and giving a warning, having the Government at its back, it might do more good than asking for increased grants. It is not the quantity of money that does good, but the judicious use made of what we command.

Honors for Canadian Harvesting Machinery in Europe.

It will be remembered that when Lord Lansdowne visited the Machinery Court at the Indian and Colonial Exhibition held in London last season, he expressed his appreciation of the excellence of many of the Canadian machines, and his intention to direct his bailiff to make an inspection of them with a view to purchases. This has since been done, and one of the self-binders made by the Massey Manufacturing Company has been bought for use on the Marquis' estate in England.

It may not, perhaps, be out of place to mention here that many of these self-binders underwent trial at Edinburgh, Campbelltown and elsewhere in Scotland last harvest. A local journal, speaking of one of these trials, all of which were most successful, this particular trial being that of the machine purchased by the Marquis of Lorne, says:

"Altogether, although the test applied was of the severest character, the results of the trial were most satisfactory, and the agriculturists present expressed themselves as highly gratified and pleased with the ease and completeness with which the machine performed its work."

Canadians have every reason to be proud that Canadian machinery, produced solely by Canadian industry, should have won such laurels.

The following article we quote from the North British Agriculturist of Sept. 8th, '86, which is the representative agricultural paper of Great Britain North. At this trial a large number of distinguished scientific agriculturists were present.

In response to a public invitation, over fifty prominent agriculturists and other gentlemen visited the farm of Fentonbarns, on Thursday last, to inspect two of the Massey Manufacturing Company's Toronto Light Binders at work. Although these machines have for some years been well known throughout Canada, where several thousands of them are every season said to be at work, they have not until this season found their way into Britain. Along with a number of other machines by the same makers, one of them was sent from Toronto as part of the Canadian exhibit at the Colonial Exhibition in London. It was there that Mr. Ford, who has introduced the machines in Scotland, saw them for the first time, and, being favorably impressed with their light and compact appearance, ordered a consignment of them from Toronto. Seven of these binders are now at work on farms in the Hadding district.

The field in which the binders were in operation on Thursday consisted of a heavy crop of wheat, which was cut round about, forming a capital test of their strength and efficiency. The sheaves they threw out were neat and firmly bound, and the stubble was left very even and clean. The tilt of the machine, it was explained, permits of the cutters being lowered very close to the ground, and instantly, while in full motion, they may be raised to cut a stubble of 16 inches.

Mr. Bradley, the Massey Company's expert, who has been sent to Scotland to assist in the starting of their binders, was in attendance during the day and pointed out and explained to the onlookers the various parts of interest about the "Toronto." Some of its peculiar attachments attracted special attention. Among others may be mentioned a very useful invention called the "relief rake." It is located in the front inner corner of the platform, and by its peculiar shape and motion serves to push the butts in line, keeping the corners clear at all times, and preventing any delay in the upward flow of the grain.

Another special feature pointed out was the construction of the cutter bar, which permits the platform canvas to run within half an inch of the cutters. The advantage of this arrangement is that it allows the canvas to receive short or angled grain more quickly, thus keeping the

cutter bar clear. The attention of the onlookers was also directed to the peculiar make of the belt guides. These are fitted with self-adjusting springs that receive and relax the tension resulting from wet and dry weather.

About mid-day, one of the binders was drawn out from the grain for the purpose of giving an illustration of the way in which the "Toronto" may be transported from field to field. For this purpose, a triangular truck with three cast-iron wheels is used. The rapidity with which the binder was placed upon this truck was quite surprising.

The special feature of the "Toronto" appears to be its extreme lightness of draught; the two horses that were yoked to each machine drew it with remarkable ease. The practical agriculturists present expressed themselves thoroughly satisfied with the way in which the binders did their work, and Mr. Ford was congratulated upon the marked success of his introduction. Sir. Hugh Dalrymple and party were among those who visited the field.

A New Independent Paper.

We welcome to the ranks of independent journalism the newly established paper, *Arcturus*, published in Toronto, and edited by Mr. J. C. Dent, one of the most talented and brilliant of Canadian writers—our national "Junius." We judge from its high moral tone that it seems destined to become a moulder of Canadian sentiment, and cannot be questioned as an authority in politics, literature and art. We wish it success.

We have just received from the publishers, Messrs. O Judd & Co., New York, a revised and enlarged edition of "Gardening for Profit," by Peter Henderson. This work contains the experience of the well known author for the past eighteen years as a practical and successful cultivator. It can be had at this office. Price, $2.

The Household.

Advantages of Crying.

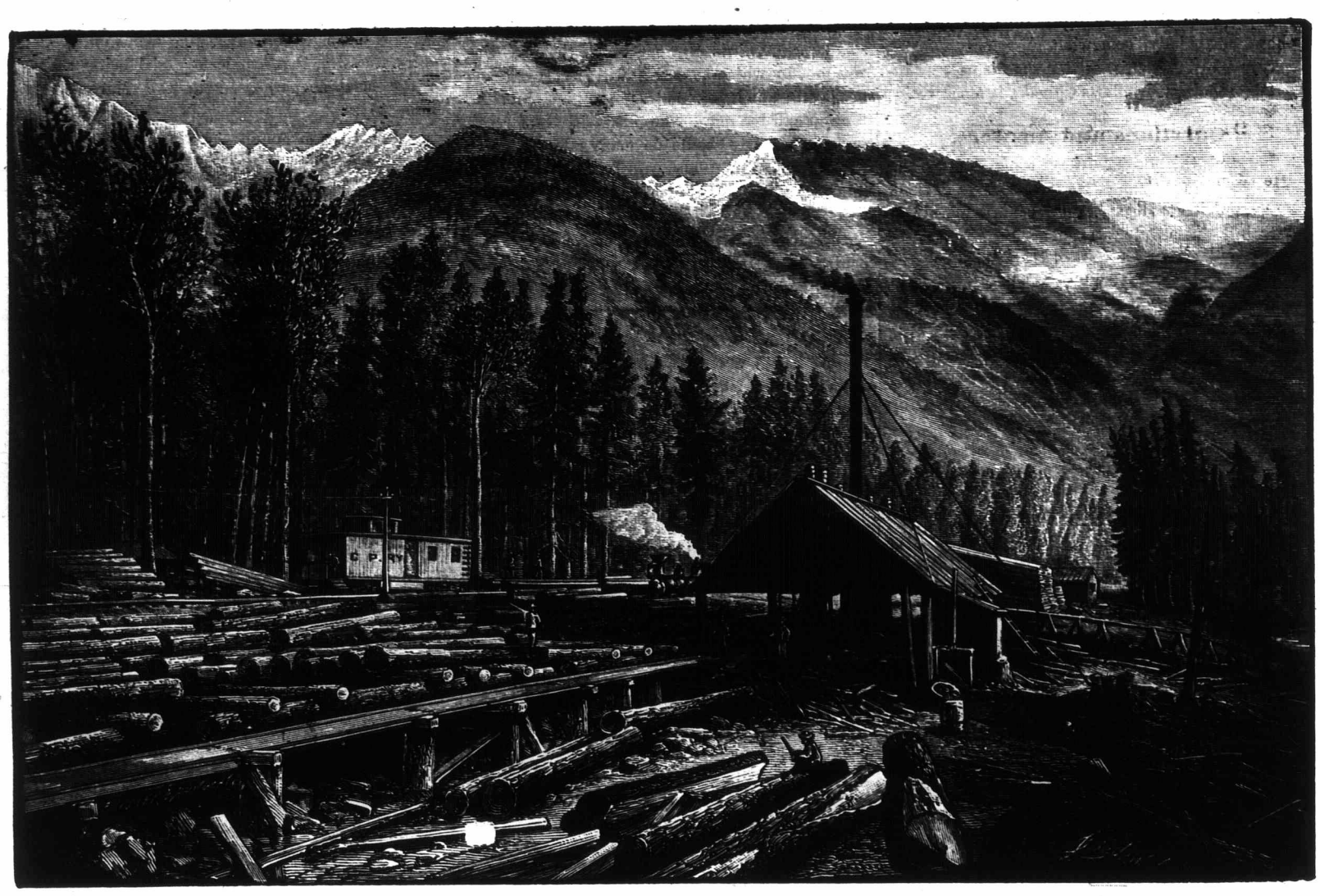
A French physician is out in a long dissertation on the advantages of groaning and crying in general, and especially during surgical operations. He contends that groaning and crying are two grand operations by which nature allays anguish; that those patients who give way to their natural feelings more speedily recover from accidents and operations than those who suppose it unworthy a man to betray such symptoms of cowardice as either to groan or cry. He tells of a man who reduced his pulse from one hundred and twenty-six to sixty in the course of a few hours, giving full vent to his emotions. If people are at all unhappy about anything let them go into their rooms and comfort themselves with a loud boo-hoo and they will feel a hundred per-cent. better afterwards.

In accordance with the above the crying of children should not be too greatly discouraged. If it is systematically repressed the result may be St. Vitus' dance, epiliptic fits or some other disease of the nervous system. What is natural is always useful, and nothing can be more natural than the crying of children when anything occurs to give them either physical or mental pain.—[Good Health.]

Boots and shoes may be made waterproof by soaking them for some hours in thick soap water. The compound forms a fatty acid within the leather and makes it impervious to water.

The Solitude of Sleep.

Seek some spot where no foot of man has trod. There the wild bird gives you shrill, sweet greeting, and the cheery insect vibrates in its hidden nook with a murmur of companionship. Forsake humanity as far as may be, and the echoes of the great, pulsating machinery, of which, even against your will, you are a part, will never leave you. You may be lonely—lonely in the heart of a crowd. You may in the circle round the fireside, in the busy streets, in great assemblies or friendly gatherings, feel yourself utterly alone. That is a different thing; it is loneliness, not solitude. Life has no solitude save the strange, sweet solitude of sleep For it is only in the sleep-world, so Sphinx-like in its reserve, so grave-like in its absolute silence, so death-like in its complete separation, that we go away off by ourselves, leaving even our nearest companion this dearly cherished body of ours, and wandering, who knows where?



SCENERY ON THE C. P. R., BRITISH COLUMBIA—THE FIRST CONSTRUCTION—SAWMILL—See page 39.

An Applicant.

An applicant for a school in the backwood was a man of about forty years, with a cheap cast of feature and a body half as broad as it was long. He said he didn't claim to know "everying;" he "wa'n't a graduate," but that he did know enough to teach "them heathen in that back country town, 'cause he'd teached there four years, and they didn't know nothin' yit."

The examiner said he'd ask a few simple questions, and began with,—

"What is a letter?"

"A thing crooked sometimes, and sometimes 'taint."

"What is a syllable?"
"A word split in two."
"What is a verb?"
"Hit's suthin' that tackles onto suthin', or shows that suthin' tackles onto hit."
"What is reading?"
"Hit's talkin' from a book."
"How do you teach reading?"
"Sometimes by coaxin', and sometimes by a board."
"What is geography?"
"Hain't no classes in that."
'But you might have. How would you teach it?"
"By askin' 'em questions."

Obituary.

In deep sorrow we announce to our readers in this issue the death of Mr. Henry Weld, third son of the editor of this journal, which occurred at the family residence, Ridout street, London, on Monday, 17th January last. This is the first death which has occurred in the large family of eleven children. In his youth he had the misfortune to contract a very severe attack of fever and ague, which weakened his constitution. He went to Texas, where he engaged in fruit farming, but his predisposition to fever and ague rendered that climate unsuitable to him, and he was obliged to return home. He then entered into the seed and commission business in this city. This undertaking required considerable travelling in the country districts, and on one occasion he passed the night in a damp and unaired bed, from which it is firmly believed he contracted a cold which settled on his lungs and ultimately caused his death. From this time he never recovered his former health, and although the winter of 1884 was spent in the Bermuda Islands, and the following winter on the Pacific Coast and New Mexico, he considered that any benefits derived from these climates were obtained at too great a cost in the sacrifice of home comforts. The last year he spent at his home in Westminster, near London, conducting his business and in hope of recovering his strength, but during the last few months he became weaker and weaker, and finally passed peacefully and quietly away on the morning above mentioned. How true it is:

"What shadows we are and what shadows we pursue."

Deceased was for many years connected with this journal, and will, no doubt, be kindly remembered by many of its readers, having travelled largely in its interests throughout all the Provinces of Ontario, Quebec, Nova Scotia New Brunswick and Prince Edward Island, and his many friends in connection with the seed and commission business (from which he retired some time ago) will hear of his death with regret. Mr. Henry Weld, in his business career, was energetic, honest, courteous and successful, and was highly respected by all who knew him. He was a sincere Christian. His loss has created a sad blank in the family and is deeply mourned by many relatives and friends. He was married about five years ago to a daughter of the late John McDiarmid, of Westminster, who, with one son, survives him. Deceased was 34 years of age; his remains were interred in Woodland Cemetery, and were carried to their last resting place by six of his brothers.

"Thou art gone to the grave; but we will not deplore thee,
Whose God was thy ransom, thy guardian and guide;
He gave thee, He took thee, and He will restore thee;
And death has no sting, for the Saviour has died."
—*Bp. Heber.*

Minnie May's Dep't.

MY DEAR NIECES,—According to promise, we give this month the result of the competition on "The Sayings of the Wise on Conduct and Character," which was far from being an easy one, as our younger readers evidently found, there being no papers, we are sorry to say, in either the 1st or 2nd class, but some excellent ones in the 3rd class. Of course success could not be hoped for without much time, thought and perseverance; and we are glad that so many at least of our older nieces have given evidences of industrious research, which, doubtless, has had an improving effect on their own "conduct and character."

We feel great satisfaction in stating that the prize of $3 has been awarded to Miss Agnes M. Craig, Cornwall, Ont., whose paper, as a whole, was good both in quality and quantity, as well as the various works consulted.

We have one fault to find with nearly all the competitors, that they had no title page, or even a head-line to say what the paper was about.

Some papers were very promising at first sight, judging by their formidable appearance, but upon examination were quite disappointing. The quotations were frequently incomplete; others, though they contained the *word* asked for, did not illustrate really *that* particular point in conduct or character. All quotations should be passed over unless they contain some "truth or beauty" relative to the subject that makes them worth remembering. It would be better in some cases had the contestants been satisfied with doing less and been more discriminating in their choice of passages.

I would hint here that the use of different kinds and sizes of paper, as well as careless corrections, make a manuscript look very unattractive.

A few papers were sent in with simply the class, and not the age of the competitor, according to rule 10. And other contestants went to a great deal of unnecessary trouble by writing their name, age and address on the back of *each* page, instead of on the *last* page. One paper was arranged in alphabetical order, to be sure, but backwards from "H" to "A," which was exceedingly awkward.

Some of these points would not be worth mentioning had we not taken pains to draw up rules about them, so we ask our nieces to be more careful about little details, the observation of which add grace and elegance to whatever we undertake.

As the younger nieces have taken no part in this competition, we will make a change in the prizes this time, and offer a 1st prize of $3 and a 2nd prize of $2 for the two best collections (irrespective of age) of quotations on the remaining list of words, which we will again publish, with the rules, for the sake of some who may be new subscribers to our magazine. The list for the present competition is as follows:—

Idleness,	Purity,
Ignorance,	Revenge,
Independence,	Self-control,
Innocence,	Self-knowledge,
Jealousy,	Self-love,
Kindness,	Selfishness,
Modesty,	Simplicity,
Perseverance,	Suspicion,
Piety,	Truthfulness,
Pride,	Vanity,
Prudence,	Virtue,
Punctuality,	Wisdom.

The rules are:—

1st. The quotations are to be arranged in alphabetical order.

2nd. Quotations from either prose or poetry may be given, but *must* be worth copying and worth remembering.

3rd. The collection of quotations *must be* solely the work and in the handwriting of the competitor.

4th. The meaning must in all cases be complete—that is to say, it must never be necessary for any one reading the quotations to turn to the author to complete the sense.

5th. The length of each separate quotation, as also the number of quotations under each separate heading, is left to the judgment and industry of the competitors. (We will here suggest that quality and not quantity is of greatest importance "That it is better to do little well than a great deal carelessly.")

6th. The competitor must give, at the end of each quotation, an exact reference to the source from whence it is obtained. This reference must state the author, the work, the edition of the work and the page, except in the case of the Scriptures, when the book, chapter and verse will do. The edition is to be indicated by giving the date, or, if no date, the publisher's name. A quotation, followed only by the author's name, will not count for very much.

7th. Quotation books may be made use of, but a reference to the page of a quotation book will not secure so many marks as a reference to the page of the original author.

8th. Four marks will be allowed for quotations, given correctly and according to our rules, on each subject, with extra marks for spelling, neatness and variety of authors consulted, and the two gaining the greatest number of marks will be awarded the prizes.

9th. Competitors must write on one side of the paper only, and fasten all neatly and securely together at the left hand top corner.

10th. The full name and address of the competitor must be written upon the back page of each collection of quotations.

11th. The papers *must* be sent in by April 20th.

12th. Send the papers (without letters) for a one cent stamp, marking "Printers' Manuscript" on the upper left-hand corner of the wrapper.

We hope that, as the holding of festivities are past, more of our readers will be induced to enter this competition; even those who have now failed, try again. To all such Longfellow gives the following encouraging words:—

**"No endeavor is in vain,
Its reward is in the doing;
And the rapture of pursuing
Is the prize the vanquished gain."**

We also offer this month a prize of a handsomely bound copy of Longfellow or Tennyson's poems for the best "Essay on Gratitude," the papers for which *must* be sent in by February 25th.

To clean hair brushes. The best way in which to clean hair brushes is with spirits of ammonia, as its effect is immediate. No rubbing is required, and cold water can be used just as successfully as warm. Take a teaspoonful of ammonia to a quart of water, dip the hair part of the brush without wetting the ivory, and in a moment the grease is removed; then rinse in cold water, shake well, and dry in the air, but not in the sun. Soda and soap soften the bristles and invariably turn the ivory yellow.

Work Baske .

A USEFUL TABLE SCARF, and one that is particularly pleasing to the eye, because it does not suggest almost endless labor, is made by taking a strip of all wool Java canvass of the proper length for the table on which it is to be used. Line it with some stiff cloth and then with silesia. At about three inches from the outer edge sew on two strips of black velvet ribbon two inches wide. Through the centre work a handsome scroll pattern, using bright yellow silk; the velvet stripes may be put on perfectly plain, or may be worked in old-fashioned cross stitch, or in some modification of feather stitch. Finish the bottom of the scarf with yellow silk balls. This is suitable for the common sitting-room; it is so bright that the dust can be shaken from it with ease.

CROCHETED SHAWL.—Material: six ounces of Shetland wool.

Make a chain the length of the longest edge of the shawl, which is three-cornered. The chain should be a multiple of six. After making the chain * throw the thread over the needle and catch into the third stitch from the needle, draw the thread through, thread over, draw through two, thread over, through two. This is the treble crochet stitch. Make eight more of these stitches in the same chain stitch. Put the needle through the third stitch from the shell and draw the thread through this stitch and the one on the needle. This is single crochet stitch. Repeat from * to the end of the chain and break the thread.

2. Catch the thread in the middle stitch of the first shell of the preceding row * Make three chain stitches, thread over the needle, put the needle through the next stitch to the one in which the thread is fastened, draw thread through, thread over, through two; keeping this loop and the former one on the needle, put thread over and make the same kind of stitch in the next stitch of the shell. Continue in this manner until there are ten stitches on the needle, then throw the thread over and draw through all the stitches, four chain and single crochet into the middle stitch of the next shell. Repeat from *.

3. Catch the thread in the same stitch as the preceding row and * make nine trebles in the middle of the first shell of the second row, single crochet into the single crochet at the end of the first shell in second row. Repeat from *.

4. Like second row.

5. Like third row.

A DAINTY TOILET SET, the materials for which cost only about one dollar and a quarter, can be made as follows:—The foundation of silesia being of any color that suits the fancy or the room for which it is intended. The one I saw was blue. Take a piece of silesia twelve inches square for the large mat, and cover it with cheese cloth, turning in the edges of both neatly. Gather a piece of lace one and one-half inches wide, allowing one-third extra for fullness, and baste it between the edges, feather-stitching the whole together with silk the color of the silesia. The two small mats are the same, except that they are only six inches square. Make a cushion nine inches square of the silesia, and at each corner place a bow of satin ribbon one and one-fourth inches wide, with the loops the same length as the ends. A five-inch square of cheese cloth, unlined, edged with lace and stitching, placed cornerwise on the top, completes it. The materials required are: One yard of silesia, one yard of cheese cloth, four and one-half yards of lace, two and one-half yards of ribbon. The lace is of the coarse kind used for trimming summer dresses, and costs twelve and one-half cents a yard.

A KNITTED RUG.—Take a clean piece of old carpeting twice the size of the mat which you wish to make; double this and baste the edges together after turning them in. Then take any pieces of zephyr wool that you possess, join them together without any regularity as to color, although if you have enough of blue, white and yellow, or dark and bright red, pink, green and a small proportion of other colors, it will be richer and handsomer. The border is to be knit first, and is to be of black or of some very dark color. Use ordinary small steel knitting needles, putting on twelve stitches, knit backward and forward, garter fashion, until you have a strip as long as the longest side of your rug; then bind off, dampen thoroughly, and press until quite dry with a moderately hot iron. If your mat is to be a large one, you will need seven of the strips; if smaller, five will do. In knitting the stripes for the center, you begin and finish them with black to the length of three or four inches, according to the width of black allowed in the border. When all the stripes are knit and pressed perfectly dry, cut each one lengthwise right down the middle, thus making two strips from each. Ravel the stitches to within one or two stitches of the edge, leaving just enough to sew on the carpet you have already prepared. The ravelled wool will have a crinkled appearance, which is very pretty. Sew on the half strips of black, using coarse black thread, and allowing the outer one to extend beyond the edge of the carpet, thus concealing it. Next sew on the colored rows, the length of black at either end serving for the border at the sides. There must be enough strips to have them placed very closely together when sewed on, so that they may form a heavy mass, not separating and showing the carpet foundation. You may use in knitting these stripes any old wool articles that you have—old mittens, nubias, hoods, comforters, sontags, shawls, bright-colored stockings and socks. If any wool has to be bought for this work, get the heaviest Germantown or Atlantic.

A HOME-MADE PLAQUE.—A pretty plaque is first painted in a light blue, deepening color toward the lower end. When quite dry, a photograph, which has been removed from the card by placing it in tepid water for half an hour, is cut into an oval and gummed on, and surrounded by a wreath of tiny flowers and leaves painted in oils, and the whole varnished with a clear white varnish. Another pretty ornament made from photographs is to arrange them on cardboard with a surrounding composed of dried flowers and grasses, and then placed in a deep velvet frame.

A waste-paper basket in the library is a necessity, and may be a pleasant object to contemplate as well. Choose a well-made basket, and one that stands squarely on the bottom. One way to ornament the basket is to trim it with three bands of ribbon, of different colors; on the upper band embroider a vine of something green with ox-eyed daisies to brighten it. Where the ends join, cover them with a large and handsome bow. If inclined to take so much trouble, line the basket, and finish the upper edge with a puff of satin or of heavy silk. A handsome basket may be lined with cashmere with a ruching around the top, and hanging over the edge a sort of lambrequin made of strips of red and white cashmere, rounded at the bottom and pinked on the edge, and completed by having a bouquet of flowers in applique or in Kensington embroidery. A tassel on the bottom of each piece is a good addition; the pieces keep their shape better with a tassel. Another pretty way is to put a band of canvass, either drab, blue or scarlet, around the basket; below this put a band of black velvet; brighten both by embroidery; one design to work on the velvet is a procession of Kate Greenaway children. A handsome ribbon bow adds to the good effect.

Recipes.

MOCK TURTLE SOUP.—In four or five quarts of water boil a calf's head and harslet until tender; cut the meat, the light part of the heart, part of the liver into pieces about an inch square; put these into the liquor, with two onions cut very fine, a few cloves, a little mace, pepper and salt to your taste; boil gently one hour and a half. Put the whole yolks of four eggs boiled hard, and the whites cut fine. Pour the soup in boiling hot. One or two lemons cut in slices and put into the tureen will add richness to the flavor and give a delicate relish. Take the remainder of the harslet and chop fine half a pound of lean veal and a slice of salt pork; add the brains, pepper and salt, sweet herbs and sage; break in one egg and mix the whole well together, and then make them into balls the size of half an egg, and fry them in butter, a delicate brown; put part in the soup and serve part on a dish garnished with curled parsley and slices of lemons.

CELERY SOUP.—Take a chicken, boil it all to pieces and strain. The next day put into it small pieces of celery; simmer till thoroughly cooked; then add a cup of cream or milk; thicken it with a little flour; add pepper and salt.

OYSTER PIE.—Having buttered the insides of a deep dish, line it with puff-paste rolled out rather thick, and prepare another sheet of paste for the lid; put a clean towel into the dish (folded so as to support the lid), and then put on the lid, set it into the oven and bake the paste well; when done remove the lid and take out the towel. While the paste is baking, prepare the oysters; having picked off carefully any bits of shell that may be found about them, lay them into a sieve and drain off the liquor into a pan; put the oysters into a skillet or stewpan, with barely enough of the liquor to keep them from burning; season them with whole pepper, blades of mace, some grated nutmeg and some grated lemon-peel (the yellow part only) and a little finely-minced celery; then add a large portion of fresh butter, divided into bits and very slightly dredged with flour; let the oysters simmer over the fire, but do not allow them to come to a boil, as that will shrivel them. Next beat the yolks only of three, four or five eggs (in proportion to the size of the pie), and stir the beaten eggs into the stew a few minutes before you take it from the fire; keep it warm till the paste is baked; then carefully remove the lid off the pie and replace it after you have filled the dish with th oysters and gravy. Oyster pies are generally eaten warm, but they are very good cold.

ICING THAT WILL NOT BREAK.—1 cup of white sugar, white of one egg; put water enough to the sugar to dissolve it; put it on the fire and let it boil till it will hair. Beat the white of the egg to a stiff froth, pour the heated sugar on the froth and stir briskly until cool enough to stay on the cake. The icing should not be applied until the cake is nearly or quite cold. This will frost the top of two common-sized loaves.

PUFF PUDDING.—1 quart of boiling milk, 9 tablespoonfuls of flour; when cold add a little salt and four well-beaten eggs. Bake in a buttered dish and serve with lemon juice thickened to a paste with brown sugar.

GELATINE APPLES.—Peel and core the apples, leaving them whole; put in a kettle and boil, adding a slice or two of lemon, a little green ginger and sugar. Cook the apples till tender. Take them up carefully, boil down the syrup, and add two tablespoonfuls of gelatine, which has been dissolved in four spoonfuls of water, to a cup of this syrup. Pour this over the apples and set where the whole will cool.

"Home, Sweet Home."

BY S. J. ADAIR FITZGERALD.

I have often wondered whether John Howard Payne, the rather unfortunate author of perhaps the sweetest song in our language—a song that will only cease to live when all nature is dead and Time is no more—whether he ever read the old holiday and breaking-up song, "Dulce Domum," so popular at Winchester school. For it certainly contains all the elements of Payne's plaintive ballad. Here is the first verse with its chorus :

"Sing a sweet melodious measure,
Waft enchanting lays around,
Home! a theme replete with treasure!
Home! a grateful theme resound.

CHORUS.

"Home, sweet home! an ample treasure!
Home! with every blessing crown'd!
ome! perpetual source of pleasure!
Home! a noble strain resound."

Brand says, in speaking of "Dulce Domum," which was originally written in Latin and translated into English by a writer in the *Gentleman's Magazine* for March, 1706, that "it is doubtless of very remote antiquity," and that "its origin must be traced, not to any ridiculous tradition, but to the tenderest feelings of human nature." The story runs as follows: Upwards of 250 years ago, a scholar of St. Mary's College, Winchester, was confined for some misconduct, by order of the master, just previous to the Whitsuntide vacation, and was not permitted to visit his friends. He was kept a prisoner in the college, tied to a pillar. The reflections on the enjoyments of home inspired him to compose the well-known "Dulce Domum." The student must have been of a very sensitive nature, for he died soon after, "worn down with grief at the disgraceful situation he was in," as well as disappointment. In commemoration of the event, the masters, scholars and choristers of St. Mary's College, the evening preceding the Whitsun holidays, attended by a band of music, walk in procession round the court of the college, and the pillar to which it is alleged the scholar was tied, and chant the verses which he composed in his affliction.

Payne, as far as can be gathered, wrote the words of "Home, Sweet Home" one dreary day in October, 1822, when he was particularly depressed, but whether he was acquainted with the above it is difficult to say. John Howard Payne was the son of William Payne, a school-master, who was favorably known as an elocutionist in New York, where young Payne was born April 9, 1791. Much against the desire of his father, the future author abandoned commerce, for which he was intended, and took to the precarious profession of actor. He was not without ability, for he made a very successful first appearance at the Park Theatre, New York, in the character of *Norval* in "Douglas." This was in February, 1807. For some years Payne continued to act in various parts of America, and occasionally contributed articles to New York papers and journals. Not satisfied with his successes in America, he was anxious to secure the verdict of a British audience. He entered the metropolis with excellent credentials, having letters of introduction to John Kemble, Coleridge, Lord Byron, and other celebrities of the day. In 1813 he made his bow at Drury Lane, choosing for his *debut* his former *role* of *Norval*, and, according to all accounts, he greatly pleased the critics as well as the playgoers. But it was very difficult in those days to continue a favorite with the fickle public, nothing short of a genius—which Payne was not—being required to satisfy their desires. So Payne deserted acting for writing, and took to translating French melodramas and operas. "The Maid and the Magpie" was his first offering, and it enjoyed a very fair meed of favor at Covent Garden Theatre. Edmund Kean made "Brutus," a tragedy by Payne, a success by the force of his subtle and dexterous rendering of the title part; but it was a bad play. For a great number of years he still continued to adapt pieces, and although over two score of his dramas were produced, they have nearly all been relegated to the chambers of forgetfulness. As a matter of fact, very few of his pieces exhibited great literary skill or power.

As to "Home, Sweet Home," it is doubtful whether the version as written by Payne originally, was ever set to music. In its revised and condensed form it was sung by Miss Maria Tree, in "Clari, the Maid of Milan," also an adaptation, for which Charles Kemble paid Payne £260; not a mean sum for a libretto at that period, 1823. The music of the opera was composed by Henry Bishop, who adapted an old Sicilian air to the words of "Home, Swee Home." Miss Tree created quite a furore by her singing of the touching melody, and the words going straight home to the audience, it was not not long before the song became marvellously popular all over the country, soon to penetrate to the farthermost parts of the world. It is stated that more than a hundred thousand copies of "Home, Sweet Home" were sold the first year of publication!

Affairs seem to have gone badly with Payne after this, for in the year 1832 we find him in New York almost penniless, and having a benefit got up for him at the Park Theatre to start him afresh. He then subsisted on the income derived from journalistic work until he was appointed Consul at Tunis, but he soon lost his appointment owing to the change of government; and he once more contributed to the press. However, some good friends used their influence, and in consideration of the fact that he was the first American dramatist who had made any name at all, Payne was eventually reinstated at Tunis. But he had barely undertaken the duties a twelvemonth when he succumbed to the grim king. He died on his sixty-first birthday, April 9, 1852, and was buried at Tunis. His remains, after a lapse of more than thirty years, were removed in 1883 to Oak Cemetery, Washington, where a monument, erected by public suscription, marks the spot where rest his ashes.

For the benefit of those who have not read "Home, Sweet Home" as it was first written, I quote the words entire :

'Mid pleasures and palaces though we may roam,
Be it ever so humble, there's no place like home;
A charm from the sky seems to hallow us there,
Which, seek through the world, is not met with elsewhere.
Home! home! sweet, sweet home!
There's no place like home, there's no place like home.

An exile from home, splendor dazzles in vain;
Oh, give me my lowly thatched cottage again,
The birds singing gayly, that come at my call—
Give me them with the peace of mind, dearer than all.
Home! home! sweet, sweet home!
There's no place like home, there's no place like home.

How sweet, to sit 'neath a fond father's smile,
And the cares of a mother to soothe and beguile:
Let others delight 'mid new pleasures to roam,
But give me, oh give me! the pleasures of home.
Home! home! sweet, sweet home!
There's no place like home, there's no place like home.

To thee I'll return overburdened with care;
The heart's dearest face will smile on me there.
No more from that cottage again will I roam—
Be it ever so humble, there's no place like home!
Home! home! sweet, sweet home!
There's no place like home, there's no place like home.

The sweet sadness that pervades this simple little poem is exquisitely expressive of the malancholy felt by poor Payne when he penned the lines, alone in a foreign country, away from all that he held dear.—[*London Musical Society.*

The Duty to be a Lady.

It is the first duty of a woman to be a lady; good breeding is good sense; bad manners in woman is immorality; awkwardness may be ineradicable; bashfulness is constitutional; ignorance is etiquette, and is the result of circumstances. All can be condoned, and do not banish man or woman from the amenities of their kind, but self-possession, unshrinking and aggressive coarseness of demeanor may be reckoned as a state prison offence, and certainly merits that mild form of restraint called imprisonment for life. It is a shame for women to be lectured on their manners; it is a bitter shame that they need it; women are the umpires of society; it is they to whom all mooted points should be referred; to be a lady is more than to be a prince; a lady is always in her right inalienably worthy of respect; to a lady prince and peasant alike bow; do not be restrained; do not have impulses that need restraint; do not wish to dance with the prince unsought, feel differently; be such that you confer your honor; carry yourself so loftily that men shall look up to you for reward, not at you in rebuke; the natural sentiment of man toward woman is reverence. He loses a large means of grace when he is obliged to account her a being to be trained into propriety. A man's ideal is not wounded when a woman fails in worldly wisdom; but if in grace, in tact, in sentiment, in delicacy, in kindness, she should be found wanting, he receives an inward hurt.—[Gail Hamilton in the Dorcas.

God made sunsets and flowers and all things beautiful, to be enjoyed as such, and the girl who can note all these things around her will be contented amid the humblest surroundings. The soul which can observe and enjoy the beauties to which every being has access more or less, unle enclosed in dungeon walls, is lifted greatly above the common cares of life,

Answers to Inquirers.

W. O. U.—White satin neckties are not considered good form, sheer lawn ones being given the precedence.

SUSIE K.—1. When a gentleman has specified a certain hour for the drive, the greatest politeness is shown by your being entirely ready when he calls, so that he may not be kept waiting. 2. A first call should be returned in person within two weeks; if then the acquaintance is not desired, no other visit need be made. 3. It is a mere matter of taste whether gloves are removed or not when refreshments are served.

ECONOMY.—1. We can recommend no method for renewing worn silver-plated ware, except to have them re-plated by some reliable manufacturer of such wares. 2. We think the best way to secure your chromo to a card-board mat is to use common flour paste; put all over the back of the picture and then put on very smoothly, pressing with a clean cloth all over, then place under an even weight until thoroughly dry. We are glad that you find our department a help to you.

E. A. M.—The following makes a simple but very pretty bootee for the baby. Two colors of saxony are used, say white and pink. Make a chain of 33 stitches with white wool.

First Round.—Join the chain in a circle and work a short (or single) crochet stitch in every chain, the next fourteen rounds are made in the same way, only you take the front part of the horizontal stitch and not the back or both upper parts of the stitch. This may give the work a vety pretty appearance, entirely different from the ordinary short crochet stitch. For the instep, work ten short crochet stitches, taking the back part of horizontal stitch, back and forward twelve times; break the wool. Fasten on the pink wool and work six rows in short crochets around the instep and leg, always taking the back part of the stitch. Sew the foot neatly together; finish with a shell edge around the top, and a cord and tassel drawn around and tied on the instep.

A. J. P.—We cannot tell you how to mend overshoes when the rubber begins to break, but would be very glad if some reader could provide us with information on this subject, as we have thrown away many pairs of overshoes for the same reason.

Unslacked lime cleans small articles of polished steel, as buttons, nickles, etc. To remove grease from coat-collars, apply benzine, and after an hour or so, when the grease has become softened, rub it or remove with soap suds.

An Old Dutch City.

Twenty minutes by rail from the heart of Rotterdam, or seventy minutes by steamer from the Boompjes, lies the most pictorial of all the old towns in southern Holland. Whether or not it be true that Rotterdam is more picturesque than Venice, Dordrecht is certainly more picturesque than Rotterdam. It is a typical Dutch town in almost every aspect. If it has not the historical associations of Leyden or Haarlem, it is cleaner than either, livelier than either, and, to all appearance, more prosperous than either. Grass does not grow between the stones of the principal street at Dordrecht, as it does at Leyden. That famous university city is a mere ghost of itself, an echo of the day before yesterday. Dordrecht is ghostly likewise, in a sense, for in the Middle Ages it was the wealthiest of Dutch cities, rivalling in its trade Amsterdam itself, whereas now it counts no more than some 25,000 or 30,000 inhabitants, and its trade is almost entirely in timber. But Dordrecht, although eclipsed, is not ruined like Leyden. The commerce has mainly gone, the population has dwindled, but there is not the sense of loneliness and emptiness which chills one at Leyden. Its streets are busy and full of attractive shops, the fairly-laden tram-car runs from the river-side to the old gates, and there are no rows of empty or half-furnished palaces, as in the city of the seige.

Dordrecht is not a city of sights. It has no famous cathedral, no Renaissance Hotel de Ville, no museums, no historic remains in particular. Its interest is purely pictorial. I do not pretend to an extensive knowledge of Holland; but I am told by those who do possess that knowledge that this quaint old place is to this day more like an old Dutch city than any other south of the Zuyder Zee. I do know that, in the course of a long day's wanderings through the narrow streets and beside the shady canals, I counted less than a score of houses which looked new, and that I took note of so many dozens of buildings bearing dates prior to 1650 that at last I lost count. Dordrecht is a paradise of old houses, brown, red and yellow, brought together in tangled confusion, large and small elbowing each other like people in a crowd.

A DUTCH WINDMILL.

Dort is picturesque as approached by steamer from the river, but it is a picture indeed when first seen from the railway station. The railway is not ten years old at Dordrecht yet, and this is, of course, the newest end of the town. Two or three of the brand-new French villas which are such hideous abominations in the outskirts of every Dutch town, dot the road and damp the ardor of the visitor. But soon the true Dordrecht reveals itself, lying straight in front, the delicate spire of the cathedral rising from the midst of crow-stepped gables and autumn-tinted tiles. It is useless to adopt landmarks or to take bearings here. Make up your mind to be lost at once and you will have no further anxiety.

In Dordrecht there is something new, or rather something very old, in every street. The houses are tall and fantastically gabled, and as the streets are mainly very narrow, one can take a walk in the grateful shade on the hottest summer day. Nine-tenths of the houses are at least two hundred years old, and many of them are a century and a half older. In many of the busier streets and along most of the canals, the old gables lean totteringly forward, as though to meet their venerable friends on the other side of the way. The builder's men were very gingerly demolishing a fine gabled old place, colored a mellow russet-brown, which was in danger of falling down, owing to some settlement in the sandy shifting soil. Great figures of beaten iron upon the front attested that it was built in 1580. Every now and again, in the streets of Dort, I came upon a house large enough to have looked well in an English park. A double flight of steps, well-nigh wide enough for the traditional coach-and-six, led up to a massive front door, behind which, when it was occasionally open, I caught a glimpse of a hall ample enough to hold an "eligible detached villa residence." There are very few old towns anywhere which have retained the olden homes of the departed merchant princes in such numbers or in such admirable preservation as Dordrecht.

Many of the buildings are contorted as though in agony; some overhang the water, into which they seem ready to fall. Fantastic little balconies, seemingly hardly large enough for the owner's long pipe and flagon of beer, are perched outside the windows. So vividly do they remind one of the embellishments of a doll's house, that one is startled when a servant-maid trips

out upon the balcony and sets to beating a brilliant Eastern rug.

One long, narrow, tortuous street bisects the whole of Dort. It runs from the banks of the Maas, where the Rotterdam steamer lands you, right away to the Vuilpoort (the Dirty Gate) at the opposite end of the city. No other street leads anywhere, so far as I could discover, and this one soon takes us to the Market Place. There is nothing remarkable about this stony square but a fine statue of Ary Scheffer, who was a native of Dort. It was a very commendable thing for the Dordrechters to put up a statue to their famous townsman; but they need not have allowed it to become covered with contumely, in the shape ef spiders' webs.

That French will carry one all over Europe is quite an idle legend. Since I made the acquaintance of Holland I know better. When I lunched at Dort I did it in this wise. I first assaulted the landlord of the hotel in the most guttural of French, for I thought he would be more likely to understand French spoken with what I conceived to be a Dutch accent, than the elegancies of Parisian diction. But it was useless. I was courteously waved into a seat; the landlord disappeared and presently introduced his little son, aged about twelve, who, between the whiffs of a cigar, informed me that he spoke French. I soon found that he had been taught one sentence in that language upon each birthday. He took my order for lunch with professional alacrity, but it was never executed. I got a lunch, and a very fair one, too, for Holland, but of what it consisted I have never discovered—certainly not of what I had ordered. My young friend was very talkative but our method of communication was cumbrous. Having come to the end of his French, he brought out a huge volume of dialogues in French and Dutch, and pointed to the sentences which most nearly represented what he wanted to say, and he desired to say so much that I had to read most of the sentences in that book before he had done with me.

Every one who goes to Holland should see Dordrecht, particularly if he does not intend to penetrate to the north of the Zuyder Zee. It is as characteristic a bit of Holland as Amsterdam or Haarlem. The traveller may see sights there, in the midst of that environment of rivers, which he cannot count on seeing elsewhere in the Netherlands. At the proper season the rivers which flow into and around the town are blocked up with the huge rafts of timber which have been floated down the Rhine from the Black Forest. Timber is the staple trade of Dort now, and the hundreds of windmills in the outskirts are merrily occupied nearly all the year round in sawing up Swiss and German logs. The picturesque might almost have had its birth at Dordrecht. There is a flavor of the Dutch school about it, which the nativity there of Cuyp and Scheffer may perhaps account for. There is many a "bit" in the streets of Dort which might have been taken bodily from an old Dutch picture. Strolling in the outskirts of the town I came upon a smithy which looked familiar. Not that I had ever before physically beheld it; but it reminded me vividly of many a little masterpiece. The tall gables of an opposite granary threw the entrance into shadow which deepened into gloom within the open door. In the mysterious twilight the sparks flew vividly around the wiry smith, as upon an enormous anvil of ancient make he fashioned the heavy shoe of a draught horse. The scene lacked but two or three armed loungers at the door and a litter of rapiers, arquebuses and dinted breastplates, to recall an armorer's shop as it must often have appeared little more than two hundred years ago in the streets of Dort.

J. PENDERAL-BRODHURST.

The Great Ant-Bear of South America.

The species are few of the ant-bear. They are perfectly toothless, their food being insects, and particularly ants, which they procure in large numbers by thrusting among them a very long cylindrical tongue, covered with a viscid saliva, and then retracting it into the mouth. The tongue is doubled up in the mouth when not in use for catching prey. The ears and eyes are very small. The toes differ in number in the different species but are united as far as the base of the claws, which are very large and strong, adapted to tearing up the habitants of ants. The great ant-eater is a native of the warm parts of South America and called in Demerara the ant-bear, as here given, is about 4½ ft. in length from the snout to the origin of the tail, which is more than 2 ft. long, and is covered with very long hair. The body is also covered with very long hair, particularly along the neck and back. It spends much of its time in sleep, the long snout

THE GREAT ANT-BEAR OF SOUTH AMERICA.

concealed in the fur of the breast, the hind and fore claws locked together, and the bushy tail thrown over all, as if for a shade from the sun. It is very unsocial in its habits, and is regarded as a very stupid animal. It has great strength in its fore-legs and claws and is said to hug like the bear, so as to crush an enemy to death. The female produces one young one at a birth, and carries it about for some time on her back.

Something About Washing.

A very good washing fluid may be made by bringing to a boil one pound salsoda, half a pound unslaked lime, a small lump of borax and five quarts of water. When cool, pour off and bottle. Use one teacupful to a boiler of clothes. This will not injure the clothes. To wash blankets, put boiling hot suds into the washer with a tablespoonful of borax to each gallon of suds. Put in the blankets, one at a time, and wash each five minutes, adding more liquid soap (that is, soap dissolved in hot water) as is needed. Wring from the suds and put into a tub of scalding water. Rinse thoroughly in this, sousing the goods up and down with the clothes-stick. Pass through the wringer and hang upon the line. Quilts can be washed in the same way easily. The soap in which flannels are washed should contain no resin, as resin hardens the fibre. If this precaution is used and bluing put in the scalding rinse-water, blankets may be washed a great many times, and still retain their original softness and whiteness. The nap on them may be raised, as it wears off, with a pair of fuller's cards. These are excellent to raise nap on the inside of woollen hose, thus adding greatly to their softness and warmth.—[Chicago News.

Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES,—With what a wintry greeting has 1887 come to us! For weeks the snow-blockade has been "boycotting" the farmers; only the bravest of lads and pluckiest of lasses dare brave the storm-king and venture to school. I hope my boys and girls were not easily daunted in this respect. When I was young our teacher used to say it was an indication of character to brave the storms—that it made one stronger in the determination to overcome obstacles and conquer difficulties in life. Experience has taught me that our wise old master was right. A boy or girl who is afraid of a little extra exertion to get to school need not hope to accomplish much as a scholar. A man or woman who fears any extra exertion in the work of life must be content to remain at the foot of the hill while his or her more energetic fellow-travellers reach the top. You remember how a few months ago, when the autumn leaves,—beautiful even, though that beauty meant decay—dropped from the parent-tree, carpeting the earth below, Uncle Tom found "tongues in trees." Since then other wonderful little voices have whispered to him and bidden him tell their message to the nephews and nieces he loves so well. I think we shall have to name our little messengers "Whispers from Whirls," for it was when passing a huge drift of snow, *whirled* there by the east wind, that I heard the wee wintry voices. I am sure you must have observed the chaste sculpture in the curved and fretted banks, spotless in their purity and defying imitation of design. As I looked upon this workmanship of the Divine artist upon marble created by the northern frosts with chisel of eastern blasts, the setting sun gilded the fretted work with a golden roseate hue which a Raphael might strive in vain to paint, so delicate were the tints. Although the frost-elfin pinched my cheeks and ears, I lingered to gaze upon the picture, giving audible expression to my thoughts in the following words:—

"How the winters are drifting like flakes of snow,
And the summers like birds between,
And the years in the sheaf how they come and they go
On the river's breast with its ebb and its flow,
As it glides in the shadow and sheen."

And then more softly "Wash me, and I shall be whiter than snow." I turned to go, but a strange impulse made me stand and gaze again, and then it was that the voices, in tones as soft

as the falling of a snow-flake, spoke to me: "We have heard thy words, O! mortal," we have seen how thou hast admired our marvellous purity, and we would tell to thee the story of our wonderful birth and mission here. We are pure, because we come from God—has thou not read "He giveth snow like wool, and scattereth the hoar-frost as ashes?"—we know not of sorrow or sin. The Almighty One breathed and behold we were. He wanted a mantle to enwrap and protect the beautiful earth He loves so well. We flew to do His bidding—thus it is we have come to thee. Learn for thyself and tell to others—to those whom thou lovest. If thou wouldst be pure, live near to God; if thou wouldst be useful, do His bidding." A merry peal of silvery bells, a fleet horse, a kindly hand, and I am soon borne away. As I got the message earnestly do I give it: *"If thou wouldst be pure, live near to God; if thou wouldst be useful, do His bidding."*

UNCLE TOM.

Puzzles.

1—ENIGMA.

Puzzled, bewildered, mystified am I,
As though I had fallen down from the sky;
Of my central letters take four in your hand,
And, surrounded by water, alone I do stand.
Nor do I grumble at my fate,
For armed men upon me wait.
Five hundred behind and a thousand before
Stand in the water around my shore.

ADA ARMAND.

2—SQUARE WORD.

1, to clothe; 2, limit; 3, ardent; 4, an exhibition; 5, a fragment. ARTHUR T. REEVE.

3—CROSS.

1, artful; 2, to spread; 3, arid; 4, firm; 5, long and slender; 6, separation; 7, frequently; 8, not on; 9, by; 10, a shriek; 11, a metal; 12, an animal.

My centrals name one of the most popular Governor-Generals that ever governed Canada.

HENRY REEVE.

4—NUMERICAL ENIGMA.

My 11, 17, 8 is an animal.
My 7, 4, 23, 18 is to convey.
My 16, 12, 15, 14 is part of the body.
My 1, 13, 21, 10 means to stir.
My 9, 2, 19, 5 means sacred.
My 6, 20 means that is.
My 22 is a vowel.
My whole is a wise saying.

WM. H. WHITTEKER.

5—CHARADE.

Come one and all, raise a hearty cheer—
FIRST, our beloved Queen so dear;
This is the year of Jubilee—
Join in the song with mirthsome glee.

Draw near, my puzzleistic friend,
And a moment with you I'll spend;
I think you are sadly out of LAST,
Ye act so down-hearted and overcast.

Cheer up, and join us in our song,
Ye may your TOTAL find ere long;
Hark! hear the beating of the drum,
The year of Jubilee has come.

FAIR BROTHER.

6—DROP-VOWEL PUZZLE.

Th- h-m-n m-nd -s l-k- - f-rt-l- s--l, c-p-bl- -f pr-d-c-ng -ll k-nds -f fr--ts. S- b- n--th-r -ff-nd-d n-r s-rpr-s-d w-th th- -p-n--ns -f -th-rs; n-rr-w m-nds th-nk n-th-ng r-ght wh-ch -s -b-v- th--r c-p-c-ty. HY. REEVE.

7—TRANSPOSITION,

Payph si het amn heows odog tinnetinos vaeh rebon thur ni esdde nad eshow live gottshuh achv shipreed ni cht soobmsl.—[Tostc.

8—CROSS READING.

Here are two stanzas of poetry with the words placed in a certain way out of order. Read it.

Come, fed, little be birdies, and come
I've bread, brought crumbled you a nice of
lapful.

Then tree, fly the away, on birdie, perch and
While me you and sing Alice a dear sweet
for song. A. C. WHITTEKER.

9—ILLUSTRATED REBUS.

10—ARROW-HEAD.

Diagram.

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1, a consonant; 2, an interjection; 3, supreme power; 4, to make void; 5, a brownish-red mineral; 6, the act of stopping; 7, not understood; 8, the American ostrich; 9, a plant, native of America. My primals is superior to all others, and my centrals is a small present. FAIR BROTHER.

Answers to January Puzzles.

1—Seek to be doing, but aim not to be great.

2—The same littleness of soul which makes a man despise his inferiors and trample on them, makes him obsequious to superiors.

3—Self interest rules the world.

4—The fruits of true wisdom are modesty and humility; a vain or proud man is in a positive sense an ignorant man.

5—The most innocent pleasures are the sweetest, the most sensible, the most affecting and most lasting.

6—Uncle Tom's Puzzledom.
7—Welcome.
8—Persist.
9—Good luck.
10—

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  A G E
  E R R
  H E N
P R O P A G A T E
S W E E T N E S S
L I Q U E F I E D
  R A T
  U S E
  A T E
  T E N
  O R B
  E N D
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Names of Those who Sent Correct Answers to January Puzzles

Drusilla A. Fairbrother, Topsie, Harry Pepler, Stella Pepler, Robert Wilson, Annie Lackie, Wm. H. Whittaker, A. C. Whittaker, Louise F. Redmond, A. Hawkins, Henry Reeve, F. J. Robinson, Marie Deering, Emma Dennee, Wm. Faris, Gertrude Pomeroy, Eulalie E. Farlinger, Ada Armand, Helen Corinell, A. R. Boss, Arthur T. Reeve, W. B. Anderson, Mary Morrison, Wm. Webster, E. Manning, Orrie Dixon.

Mothers, give your daughters a good practical education, such as you see their *needs* call for, but do not, as you would have them *contented*, fail to develop in them in every way a sense of the beautiful.

A sense of beauty lightens the "load of human misery" beyond belief.—*Home Journal.*

Commercial.

FARMER'S ADVOCATE OFFICE,
London, Ont., Feb. 1, 1887.

The three first weeks of the month of January have seldom, if ever, been equalled for cold, rough weather, accompanied by a very heavy fall of snow and heavy drifting. So bad has this been that nearly all the country roads have been impassable, and even now that the snow is nearly all gone, many roads cannot be travelled unless with an empty sleigh or wagon.

WHEAT.

The sudden January thaw which set in on the 22nd caused some little flutter among the wheat gamblers, but has again subsided. Cables the past few days are somewhat easier in tone, with the reports at best no more than quiet and steady. The visible supply has begun to decrease, having declined 520,000 bushels during the last week, but yet it is 5,750,000 bushels larger than the corresponding time last year.

The receipts of wheat at winter and spring wheat centres in the West for the weeks mentioned and the weekly average previously have been as follows, as compiled by the Cincinnati Prices Current:

	Winter.	Spring.	Total.
Week ending Jan. 15...	386,000	1,291,000	1,677,000
Week ending Jan. 8....	478,000	2,108.000	2,586,000
Week ending Jan. 1....	414,000	1,911,000	2,325,000
Average weekly, Dec..	579,000	2,174,000	2,753,000
Average weekly, Nov..	598.000	2,96,000	3,565,000
Average weekly, Oct..	705,000	2,813,000	3,518,000
Average weekly, Sept..	1,296,000	2,850,000	4,146,000
Average weekly, Aug..	1,749,000	1,053,000	2,802,000

Notwithstanding the favorable influence of decreased visible supply, and liberal export movement, prices of wheat have not been sustained. It is remarkable that, with foreign markets showing so much confidence and strength, there should be so much lethargy and weakness in the markets of this country; this condition of things gives color to the reports that a large part of the visible supply in this country is owned by exporters, who consequently are not obliged to cover their shipments by purchases in the market.

Local markets in Ontario are firm, owing, to some extent, to the very meagre deliveries by farmers, owing to the impassable state of the roads from snow drifts.

The London, Eng., Miller, of Jan. 3rd, in its weekly review, says:

Fog and frost, markets moving, wheat and flour advancing in price, made the closing days of 1886 remarkable. If the physical aspects of last week were depressing, commercial aspects were really quite cheerful. Political economists could not refrain from saying (as if the contrary would be a pleasure) that, "all round, business and the prospects of business were better than they had been for some time." Thanks, then, for 1886 plucking up spirits and saying "good-bye" cheerfully. Doubtless 1887 will have enough to do to hold its own without a legacy of leaden dullness from 1886. In the Miller, an advance of 5s per quarter on wheat was anticipated several weeks ago. Readers solemnly shook their heads, and only hoped the forecast might come true. Here reference is made to the opinion expressed in order to point out that the present advance, 8s to 9s per quarter on many samples of English wheat, must not be attributed to luck, but to logic; there were good reasons that prices should advance, and these good reasons are now acknowledged by the market. It is no

from the action of a ring of speculators that wheat is now 39s per quarter, but to the action of a hundred thousand men, sellers and buyers, who are agreed that they may and can do business safely on the level to which prices have advanced, because for the winter of 1886-7, 32s for wheat was really a ridiculous quotation. Anyhow Christmastide has been rendered cheerful to the wheat markets by the reconstruction of confidence. Buying and selling have resumed animation, and the exchanges are no longer gloomy gatherings of disappointed men. And yet, on all sides only moderate views are expressed. No one desires value to rise and fall spasmodically, and each shilling per quarter advance during the past seven weeks has been satisfactorily established before a fresh advance was attempted. With stocks in granary diminished in Liverpool by 100,000 quarters, with a decrease in London and other ports, and with imports regularly below current needs, the situation has gone on gaining in strength, whilst wintry weather has placed its barriers to transport in various quarters. Accordingly, the disposition of millers to buy wheat, of merchants to speculate in cargoes, of retail dealers to replenish stocks, has become pronounced enough to support the advanced quotations now realized. There has been quite an awakening of interest throughout the English markets.

Present firmness and demand are doubtless justified by the belief that the first three months of 1887 can not suffer from any heavy receipts, a glut appears impossible, whilst a scantiness of supply is not at all improbable. Besides, the autumn value of wheat and flour, and of maize and oats, barley and beans, appears lower than reasonable for the mid-winter campaign.

SILVER AND INDIAN WHEAT.

Very nearly 44,000,000 bushels of wheat were shipped from India during last year. A little less than half of this went to Great Britain, but the effect of the whole was felt in competition with the wheat and flour of the United States, as the latter would have been taken by Italy had she not been able to buy the other on cheaper terms. Lying much nearer to India, by the Suez Canal route, than England does, "the boot of Europe" naturally takes supplies from that source, and will continue to fill its deficiencies in spite of a protective tariff, though probably on a smaller scale. Similarly it may be reasoned that the Indian growers of wheat will obtain as much as possible for their property, whatever may be the price of silver, and will do precisely as American wheat-raisers do in ceasing to offer the property only when the price bid to them is less than the cost of production. It needs no consideration of the silver problem to tell how much wheat is likely to be offered by India on the world's market of the future. The ordinary principles of commercial economy will dictate in case of India, as in that of all other countries which have anything to sell, and the idea of making her an exception to the rule is so absurd that it is a wonder the talk about the price of silver in connection with wheat was ever indulged in by merchants except as a matter of exchange. —[Chicago Tribune.

LIVE STOCK.

The following is from the Montreal Gazette:

Our special advices of the British cattle markets, dated yesterday, indicate that the trade is in no better condition than at the close of the shipping season. During the past week receipts from Canada and the United States have been heavy for the time of year, added to which there have been large arrivals from other quarters. The demand in Liverpool yesterday was slow, with buyers indifferent and the market weak in tone. Finest Canadian steers were at 10½c., good to choice grades at 10c., poor to medium at 9c., and inferior and bulls at 6½@8c. The sheep trade has shown no important fluctuations of late. Supplies have been fair and demand steady. At Liverpool yesterday best sheep were cabled at 13c., secondary qualities at 11@12c., merinoes at 10½@11½c., and inferior and rams at 8@9½c.

DRESSED HOGS.

The market for dressed hogs has ruled firm and steady, and will in all probability continue so for the balance of the season. Montreal prices are: Car lots, $6.00@6.10, and jobbing lots up to $6.20@6.25 per 100 lbs.

CLOVER SEED.

The trade in clover seed rules very quiet and there seems to be very little doing. Dealers do not seem anxious to buy, and farmers are laboring under the impression that seed will advance later on in the season. Whether this idea will be realized will depend on the export demand (of which there is little as yet) and the range of prices in the States. At present prime seed is only worth $4.45 to $4.65 in Toledo. At $4.50 seed can be laid down here for $5.30. Our readers will see from this that at the prices now offered them they are making 75 cents to one dollar per bushel more for their seed than American farmers are realizing. The quantity of seed in this country is much larger than for two or three previous years.

CHEESE.

The cable has moved up 6d. to 63s. 6d., which naturally has a stiffening effect on holders, who seem determined to secure full prices. The situation has a healthy look, and if holders will be content to take a fair profit and keep stocks moving and decreasing so that we shall have a clean sheet by the time new cheese begins to move, we may look for a healthy trade next Spring.

BUTTER.

The butter market was quiet but firm in appearance, although the actual demand was restricted to jobbing lots. There is no doubt that the advance is well maintained, and if the accounts from the country are borne out subsequently, it is reasonably sure that butter will not go off in price and is more likely to advance. Some choice Townships in good-sized tubs have sold at 24c. for local distribution, while fancy creamery is quoted as high as 26c. Culls have sold at 14c.

	c.	c.
Creamery, fancy	25	@26
" choice	24	@24½
" good	22	@23
Morrisburg, finest	00	@20
" fair to good	17	@19
Western, finest	17½	@18
" fair to good	15	@17

[Montreal Gazette.

Elgin, Ill., January 24.—The offerings of butter to-day were in excess of the demand, and the market ruled weak, with sales at 28@30c. Cheese quiet and unchanged. Full creams at 12@13c.; quarter skims at 5@10c.

Chicago, January 24.—A special to the Inter-Ocean from Elgin, Ill., says: On the board to-day 6,880 pounds of butter sold regularly at 28@30c, with several late offers unsold. Private sales were 1,712 boxes of cheese and 42,621 pounds of butter reported sold. Total sales, $23,757. Market ruled weak.

PRICES AT FARMERS' WAGONS.

Toronto, Jan. 27, 1887.

Wheat, fall, per bushel	$0 81	0 82
Wheat, spring, do.	0 83	0 86
Wheat, goose, do.	0 70	0 74
Wheat, red winter, per bushel	0 83	0 86
Barley, do.	0 48	0 59
Oats, do.	0 35	0 36
Peas, do.	0 53	0 54
Dressed hogs, per 100 lbs	6 00	6 50
Chickens, per pair	0 45	0 55
Butter, pound rolls	0 22	0 25
Eggs, fresh, per dozen	0 26	28
Potatoes, per bag	85	0 95
Apples, per barrel	2 00	3 00
Onions, per bag	1 75	2 00
Carrots, do.	0 40	0 50
Turnips, yellow	0 30	0 40
Turnips, white	0 30	0 40
Cabbage	0 30	0 50
Hay, per ton	9 00	15 00
Straw, "	7 00	10 50

MANITOBA MARKETS.

The prices below are corrected for each issue of the Manitoba News, just before going to press:

Morden, Thursday Dec. 30, 1886

Wheat, No. 1 hard	$0 55
Wheat, No. 2 hard	0 52
Wheat, No. 1 northern	0 52
Wheat, No. 2 northern	0 50
Wheat, No. 1 regular	0 49
Wheat, No. 2 regular	0 46
Oats, good	0 34
Flax Seed	0 80
Flour, patent process	2 35
Flour, strong baker's	1 85
Flour, Snow-flake	1 50
Shorts, per cwt	0 50
Butter, per lb	0 20
Lard, per lb	0 10
Eggs, per doz	0 20

NEW ADVERTISEMENTS.

THE CLYDESDALE ASSOCIATION OF CANADA proposes holding its

FIRST ANNUAL SPRING STALLION SHOW,

At Toronto, on Wednesday, March 16th next. Liberal premiums will be offered for the following three classes: 1st—Stallions foaled previous to 1st Jan., 1884, 5 prizes. 2nd—Stallions foaled in 1884, 5 prizes. 3rd—Stallions foaled in 1885, 4 prizes. Entries to be made by the 1st of March, in order that a catalogue of exhibits may be made. N. B.—Further particulars will be sent by circular on application to the Secretary. D. McCRAE, President; WM. SMITH, Vice-President; H. WADE, Secretary. 254-a

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FRESH and GENUINE

SEEDS

FOR THE FARM, VEGETABLE AND FLOWER GARDEN,

are unrivalled for **Purity, Vitality and General Excellence.** The thirty-sixth annual edition of our descriptive Priced Catalogue beautifully illustrated, will be mailed **free** to all applicants, and to customers of last year without ordering it. Every market gardener in the Dominion will find it to their interests to use our Seeds. 254-b

John A. Bruce & Co., Hamilton, Ont.

It is impossible to over estimate the value of warm feet at this season of the year. Thousands of valuable lives are sacrificed every year in consequence of damp, cold feet. Cold feet lay the foundation for Pulmonary Diseases, so fatal to the people of our land. Could we make the world know how valuable *our Magnetic Foot Batteries* are for keeping up a warm, genial glow through the feet and limbs, none would be without them. These Insoles warm the whole body, keep the vital forces up, magnetize the iron in the blood, and cause a feeling of warmth and comfort over the whole body. If no other result was produced than to *insulate* the body from the wet, cold earth, the Insoles would be invaluable. In many cases the Insoles alone will cure Rheumatism, Neuralgia and Swelling of the Limbs. $1 a pair, or three pairs for $2, to any address by mail. Send stamps or currency in letter, stating size of boot or shoe, and we will send free by mail to any part of the world. Send for our book, "A PLAIN ROAD TO HEALTH." Free to any address.

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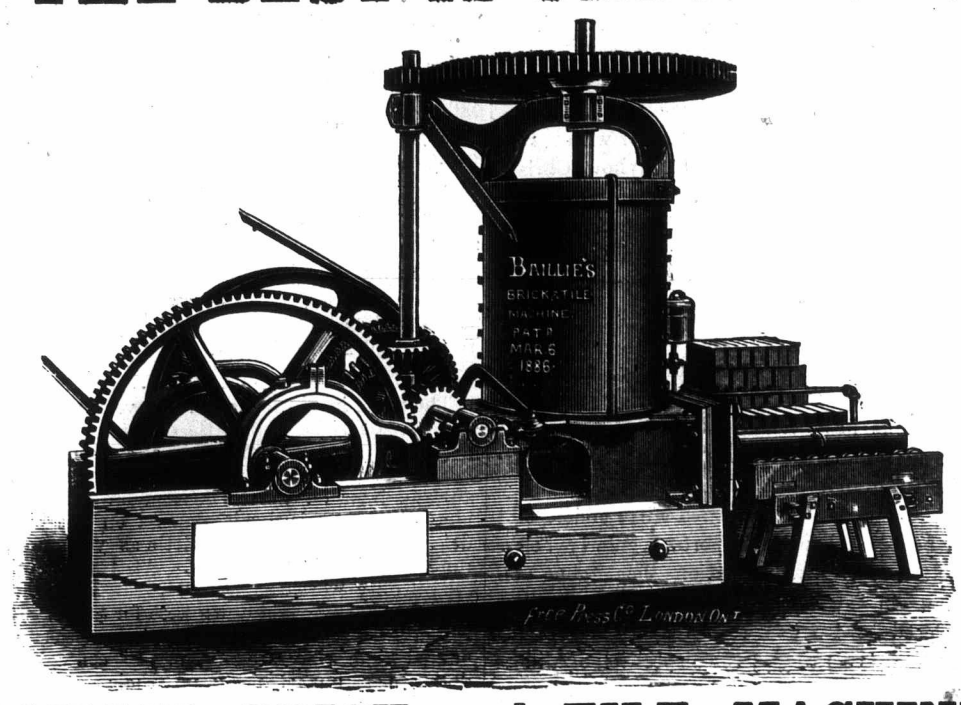

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☞ We also make a specialty of manufacturing the Western Empire Double Traction and Portable Threshing Engine and the celebrated J. I. C. Separator.

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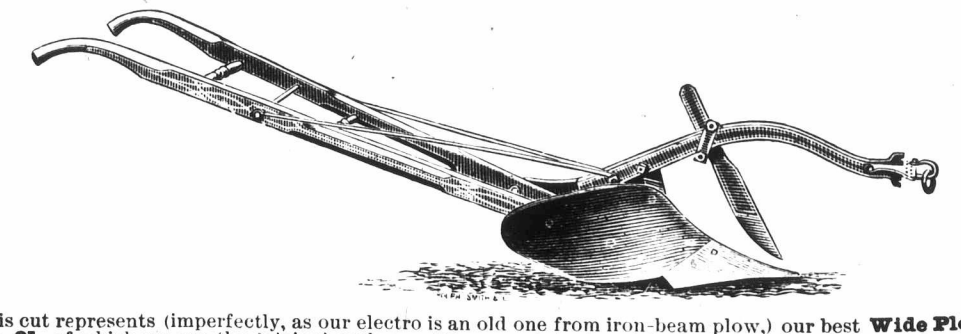

This cut represents (imperfectly, as our electro is an old one from iron-beam plow,) our best **Wide Plow, No. 21,** of which we are the original makers. Wherever introduced in Ontario it has at once taken the lead of all others. We believe the mould-board to have the best shape for Ontario work of any used on a wide plow. It is *not* made to compete in price with *cheap material* and *thrown together* plows, but is made to **excel** them in every point, in quality of steel used, in temper, in finish and in work. It has **steel beam** and **steel coulter**—a simple and perfect skimmer. Besides this plow we make a variety of narrow and medium width plows; some specially made for the trade in the Maritime Provinces, others for Ontario, for Manitoba and British Columbia. AGENTS WANTED, but none but those who can give best references need apply. If we have no agent in your district, write us for circulars. See November, December and January ADVOCATES for Straw Cutters, Root Cutters, and Grain Crushers. Correspondence solicited.

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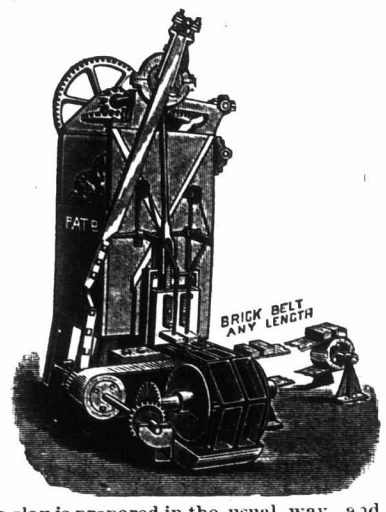

The clay is prepared in the usual way, and used much stiffer than in a stock Brick Machine. Will work either strong or quick-sand clay; can be driven either by horse or steam power. The clay is pressed in the moulds, which are connected together, forming a revolving chain of moulds, lubricated with either oil, water or sand—the moulds passing through a tank or trough, which thoroughly lubricates them, so that the bricks leave the moulds perfect and smooth, being pressed on the revolving carrier, which extends any length on the yard. The brick is equal to any re-pressed brick. The bricks are taken from the carrier and put on the achs, requiring no man to sand the moulds, striker-off, or setting on the barrows, and the wheelers,—which is a saving of three or four men. Capacity: No. 1, 8,000; No. 2, 16,000; No. 3 24,000 per day, making a perfect pressed brick, superior to either stock or wire cut brick, which are apt to warp, and are difficult to cut

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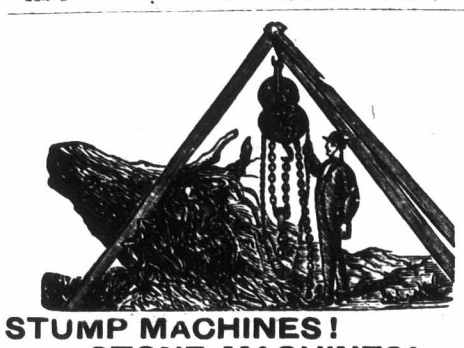

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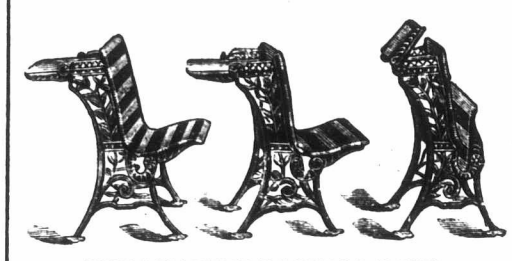

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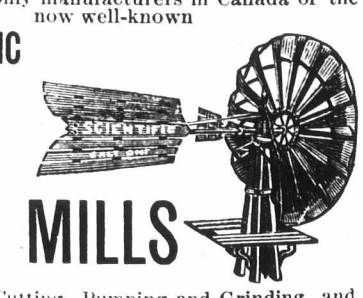

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