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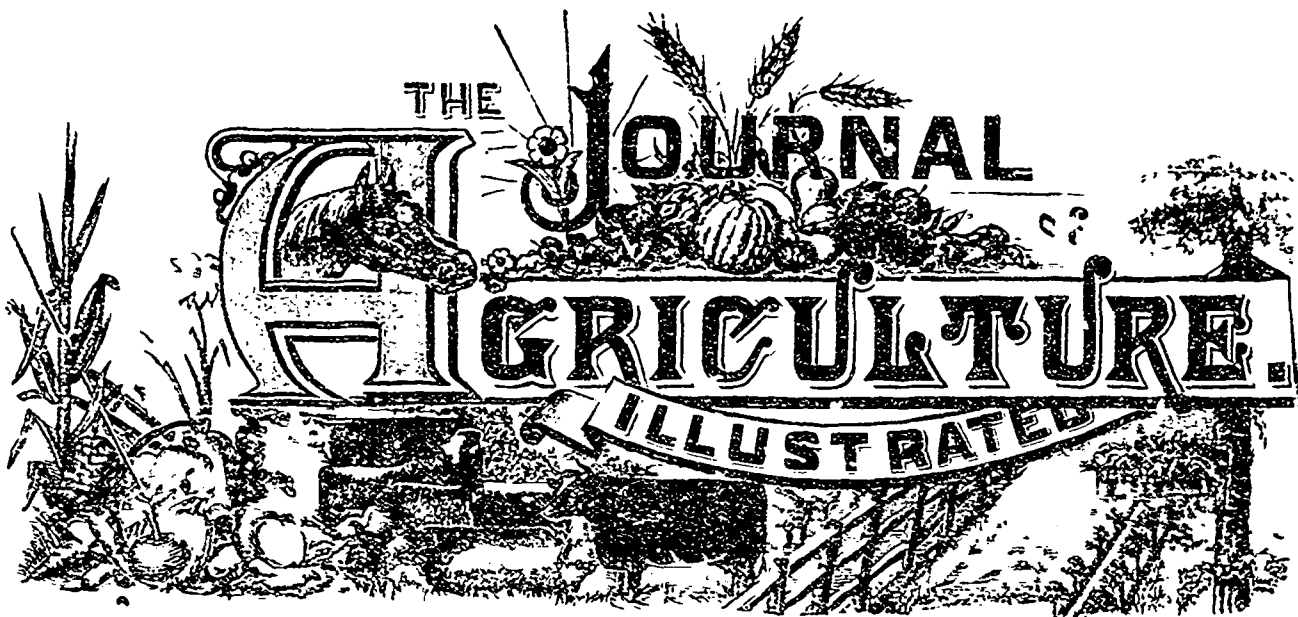
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**OUR AGRICULTURAL SCHOOLS.**

TO THE HONOURABLE J. J. ROSS

COMMISSIONER OF AGRICULTURE, &c., &c.

**PREFACE.**

Entrusted as the writer has been, since 1869, with the management of several Journals of agriculture, he conceives that he has had, more perhaps than any other person, the opportunity as well as the duty of studying the most pressing wants of our agriculture. He has already pointed out repeatedly that the most urgent of these are as regards our youths, a good system of agricultural instruction, and, as regards the more matured generation, the establishment of farmers' clubs, the circulation and study of good agricultural papers, and lectures on divers subjects connected with the farm given by enlightened practical men.

The writer believes that he has proved to demonstration in the *Illustrated Journal of Agriculture* and elsewhere: 1st. that our farms do not yield more than from one-fourth to one-third of their former produce; 2nd. that, nevertheless, the exhaustion of the soil is at present only superficial; 3rd.

that the restoration of the land to its primitive fecundity, and the consequent enrichment of the farmer is comparatively easy; 4th. that the annual products of the soil in the province indubitably exceed the enormous sum of seventy million dollars; 5th. that it is possible to double, triple, and even to quadruple this amount, to the great profit both of our own farmers and of the whole nation; 6th. that settling of new lands in our province cannot possibly be successful, as long as our farmers pursue their present system of completely exhausting the soil; since no one can fitly discharge the duties of a settler who only knows how to ruin the land, and, consequently to destroy the patrimony of his children.

If these things are so—and the writer solemnly affirms on his personal responsibility the truth of what he has stated—it is clearly the duty of all who are desirous of benefiting their country to devote themselves without delay to the study of the great national problem: the improvement of our agriculture, and of our system of farm-instruction.

**OUR AGRICULTURAL SCHOOLS.**

Sir,—In July last, I visited the provincial schools of agriculture at St. Anne Lapocatière, at L'Assomption, and at Richmond. I also inspected the agricultural establishment of the Trappist Fathers at Oka (Deux Montagnes), of the Marianite Fathers at Notre-Dame de Montfort (Wentworth, Argenteuil); and, at Sorel, I inspected, with great satisfaction, the system of cultivation pursued, with great success, under the management of the editor of our English Journal of Agriculture, Mr. Arthur R. Jenner Fust.

**ST ANNE AND L'ASSOMPTION FROM 1873 TO 1884.**

In 1873, I examined minutely the schools of agriculture at St. Anne's and at L'Assomption. This year, I found that a sensible improvement had taken place in the cultivation of the farm at L'Assomption, though there is much still to be desired. When this school was opened, the land attached to it—a too frequent case in the province—was covered with weeds, and

as poor as possible. To day, the crops are clean and fairly satisfactory. The live stock, too, is greatly improved since 1873. On the whole, I cannot praise too highly the persevering efforts of Mr. Marsan, the professor of agriculture and director of the farm, in spite of the numerous difficulties which he has had to contend with from the foundation of the school to the present time.

The school at St. Anne had, in 1873, been established for several years, and in that year I called attention to an evident improvement in the crops grown on the school-farm when compared with the crops in the neighbourhood.

The present manager, Mr. Roy, is a skilful and practical man, who is evidently devoted to agriculture. He seems to be determined to place the farm in the best possible condition. The wheat-crop appeared to me excellent, the root crops extensive and well grown; the pastures were good, and the yield of oats, barley, &c., promising. The garden is large and full of produce; the cattle were in good breeding-condition, the calves, especially, were wonderfully good, though reared with the strictest economy.

To say the truth, the practice in both these schools is on the road to excellence. With a little more encouragement the cultivation may become really a model, and the present managers seem to be capable of attaining this point, if means are granted to them, together with guarantees for the future.

#### THE PUPILS.

Unfortunately, during the last eleven years, these schools have made no progress in the number and style of their pupils—they are still fed and taught gratuitously by the state. The present pupils are almost children, and a large proportion seem to have mistaken their vocation, for they do not appear at all suited to a farmer's life. This fact is abnormal, and deserves your attention.

No one can pretend that our people refuse all agricultural instruction, since, only last year, hundreds of applications were received for admittance into the school-farm at Rougemont. The rarity of pupils in the schools at St. Anne's and L'Assomption, then, must be attributed to the little encouragement given to the pupils by the agricultural authorities, and to the fact that these schools have been constantly threatened with abolition from the time of their foundation. It is easy to see that the farming population are not likely to view with favour institutions which are always on the point of being suppressed, to be replaced by others.

#### RICHMOND.

The school at Richmond I saw for the first time last winter; I returned there recently, and visited every part of the establishment: the older fields, the newly cleared fields, and the bush. In spite of all the troubles through which this school has passed, it is the most promising of the three, and for this reason: the farmers of the district now recognize its utility, and send their youths there as pupils in fair numbers. Not only are all the scholarships offered by government taken up by competent students, but, in addition to these, a good number of temporary students frequent the school during the winter, and attend assiduously the course of agriculture.

Still, the cultivation at Richmond is not more advanced than in our other two colleges, and the whole system followed is to-day in a transition state. In spite of this, the neighbouring farmers, many of whom I saw at the Dairy-meeting held at Richmond last winter, seem unanimous in saying that the system followed at the school is deserving of public support. Indeed, the progress already made is striking, and

the utility of the school will be placed beyond doubt as soon as its promoters shall be convinced that their pains will not be thrown away in the future. The manager informed me that the capital for the permanent improvements necessary to make Richmond an establishment of the first class, will not be wanting, as soon as there is no longer a possibility of our present schools being abolished to make room for others, and as soon as a guarantee to that effect is given by government. Mr. Ewing is waiting for this guarantee to begin some important alterations.

#### OUR SCHOOLS MUST BE MAINTAINED.

For my part, while pointing out certain important reforms, I do not hesitate to say that our three schools of agriculture ought to be maintained, and I believe it to be very advisable that government should at once give a guarantee of their maintenance for the future, with conditions acceptable to all parties.

Few things, comparatively, are wanting to enable the province to obtain from these schools the best results: they are all three situated at the centres of the three principal districts of the country; they differ, the one from the other, in the nature of their soil, in their climate, in their markets, and even in the customs of their people. All, or almost all, the farmers of the province are interested in the success of these institutions, and they ought to be able to find, in one or other of these schools of agriculture, information and instruction fitted to their peculiar wants. With this view, the public has a right to expect from each of them: 1. that their system of farming should be a veritably a model system; that is, that it should show itself to be really profitable in money-returns, while the soil is kept in a gradually improving state, instead of being harassed to death—the common condition of our farms; 2. that all desirable permanent improvements shall be made gradually, but year by year, bearing always in mind the profitable expenditure of the funds employed therein, as well as the precious lessons to be derived from the proper execution of such works of improvement; 3. that the instruction of the pupils shall be well suited to the circumstances of our farmers, and in agreement with the funds at their disposal; 4. that necessary means be employed to show our farmers how much they are interested in the work carried on in these schools.

On their side, the schools have a right to demand: 1. a grant of funds in proportion to the expenses they are obliged to defray in order to furnish to the pupils and the farmers of the country the instruction the schools are expected to afford; 2. a guarantee of the permanency of the grants, to recoup, later, the outlay necessitated by the improvements of the farm-expensive work, always—which is always an indispensable condition of sound instruction, even if elementary; 3. an understanding and a control, as direct as possible, between the government and these schools and their managers.

#### FAULTS TO BE AMENDED.

In justice, it must be admitted that none of the above conditions have been fully demanded or granted on either side up to the present time. No surprise then need be felt at the schools not being perfect.

And above all things we must remember that, after having established these schools according to law, those who were entrusted with the execution of the law of 1869 almost entirely neglected the right means of assuring their proper working. In a word, the law of agriculture which governs these schools has remained up to this day, altogether, or almost so, a dead letter.

In my opinion, that which has chiefly injured the schools at St. Anne and at L'Assomption is that the managers and assistant managers of these schools (ecclesiastics) have never previously gone through a theoretical and practical course of agriculture, but, on the contrary, up to the day of the beginning their novel duties, they generally knew very little about farming. The Superior of the classical college to which the school of agriculture is affiliated is, of right, the manager of that school. I may say, without injustice, that he hardly troubles himself at all about agriculture. The assistant-manager is an ecclesiastic whose duty seems to be to watch over the morals of the pupils: he, naturally enough, interests himself but little in agriculture, properly so called. Whence it follows that these schools have no real heads, and that very little, if any, mutual helpfulness (*cohésion*) exists between the managers, on the one side, and the professors of agriculture and heads of the practical departments, on the other. Yet, it is clear that, in order to conquer the popular prejudice in this country against intensive agriculture (*agronomie*), our schools must be supplied with heads who are thoroughly skilled in agriculture, men capable of showing by the most useful and profitable practice, that a man well taught in all that concerns his art can make a farm pay much better under his control than can the mass of the farmers of the country. (1)

But let me be well understood: far from objecting to the clergy directing these schools established for the benefit of Catholic youths, I am persuaded that the greatest services to be rendered to our French agricultural schools may come from the devotion of the ecclesiastics or the religious orders, who will do for agriculture what our clergy have done for classical education. Still, as no one can teach successfully what he has not thoroughly learnt himself, it follows that the managers of our agricultural schools must devote themselves entirely to agriculture, after having gone through a special apprenticeship to the practice as well as to the profounder studies of scientific agriculture. But the point on which I insist is, that our schools be as soon as possible confided to the care of ecclesiastics, the most competent that can be found, who will accept, for their whole life if necessary, the mission of successfully managing our schools of agriculture. This so special mission, of course, cannot be undertaken without the entire approbation of the ecclesiastical superiors. I do not hesitate to say that I have just indicated the special weakness of our schools of Saint Anne and L'Assomption; the want of a constant and energetic superintendence by devoted specialists, exclusively studying the interests of their schools; while on the contrary, the reason why I entertain good hopes of the Richmond school is, that the present manager of that establishment has the whole power of direction in his own hands: the cultivation as well as the teaching, the internal and external economy of the school, are all under his guidance. This is, in a word, the style of management which I believe to be indispensable in all our schools.

Another defect, a grave one in my opinion, at St Anne

(1) The originator of our agricultural schools is the Revd. Mr. Pilote, member of the council of agriculture, Curé of Saint-Augustin (Portneuf), and heretofore Superior of the college of Sainte-Anne. It is our duty to say that a man so devoted and energetic as Mr. Pilote, might, under favourable circumstances, be the Superior of a classical college and at the same time conduct with success an agricultural school created by his own exertions.

Unfortunately, Mr. Pilote himself, could not support the arduous labours which his double task imposed upon him; and after the struggles of many years against the numerous difficulties of all kinds which he had to surmount, he was obliged to retire.

But what we have said in praise of Mr. Pilote, to whom our province owes a deep debt of gratitude for the useful institution he has created, proves the truth of our thesis: that to be at the same time the manager of a really useful agricultural school and the effective head of a classical college and seminary, is almost impossible.

and L'Assomption, is that the pupils do not board at the college. They have to go elsewhere for their meals; and this causes a loss of time, the trouble of changing their dress, interruption of their studies, &c. Again, I observe that the pupils do not take a sufficiently active and defined part in the general work of the cultivation of the farm. The reason assigned for this is, that they have neither enough experience nor interest in it, and, therefore their work would be, if not injurious, at least almost useless. It seems to me that pupils supported by public funds at an agricultural school should be what the active, intelligent and earnest son of a farmer is: that they should do with their own hands any work that may be required. A watchful guidance is, no doubt, necessary; but the pupil who, under a good teacher, does not execute in a profitable manner the work entrusted to him, fails either in intelligence or in purpose. In neither case does he deserve to be boarded and taught at the public expense. According to my notions, no pupil should be admitted to our schools, unless he has practised, *bonâ fide*, the routine of agriculture for at least three years. Pupils of this class would be really useful in carrying on the work of the farm, and would be more likely to derive benefit from the study of intensive agriculture (*agronomie*) than the mere boys who, at present, constitute the mass of the students.

#### A DAIRY-SCHOOL INDISPENSABLE.

A third defect, common, indeed, to all three schools, is that instruction in the management of the dairy is almost entirely neglected. This department is intimately connected with the rearing of stock, even of those beasts which are intended for the slaughter-house, as the best milch-cows must end their career there. With the dairy, too, are connected almost all the branches of agriculture: the production of food for the cattle, straw for their bedding, and the utilisation of the inferior productions of the farm. The present visible improvement of our farming, it must be admitted, is almost entirely due to this industry. The pupil of our agricultural schools ought, then, to be allowed the opportunity of becoming a good butter- and cheese-maker, at the same time that he is learning to produce both animal and milk under the best economical conditions. I feel sure that our schools will have no difficulty in finding scores of pupils, as soon as this so paying a pursuit shall have become an essential part of their system.

To attach a good dairy-school to each of our three schools of agriculture would, probably, be impossible. It would triple the expenses, and where could competent professors be found? But a first-rate provincial dairy-school might be founded, with a model-farm annexed for the production of milk, the rearing of calves, &c.; and to this special school, pupils who had finished their course elsewhere might come to devote themselves to the study of this industry alone. The professional dairymen, too, would probably frequent this establishment to perfect themselves in their trade, and to take out diplomas, more especially if the profitable system of making butter and cheese all the winter were practised there.

Four schools like these, well managed, would and ought to bring about a complete change in our agriculture in a very few years. With fifteen pupils to each school—and thirty would be a more likely number—each county could secure the agricultural instruction of one of its most promising youths. Before long, every parish in the country would possess a model-farmer, a graduate of one of our schools, and a finished maker of butter and cheese. This would be the shortest, surest, and cheapest way of arriving at those model-farms in each parish which every patriot longs for, but which can never be realised as long as our schools are unable to

furnish us with a sufficient number of men skilled in all the essential branches of agriculture.

Thirty-five thousand dollars, at least, are given by the province to our agricultural societies! A dead loss, most of it. A comparatively small part of this, added to the grant already made to schools, would keep one or even two, pupils from each county at our schools. Would it not, we ask, be better that one-third of the grant to the societies be diverted from them, and that they should thus have the opportunity of having one of their number taught in our agricultural and dairy-schools? For us, who have probably had more experience in this matter than any one else, on account of our frequent meetings with agricultural societies and clubs, the reply is easy: the sums now granted to the agricultural societies cannot bring to the province the *one-hundredth* part of the benefit to be derived from the diffusion of a good system of agricultural education! And this education to be thorough, should carry with it encouragement to the agricultural clubs, in supplying them, from our schools, with suitable lecturers.

This, Sir, is my principal point. I know well your desire to improve the state of our agriculture. Well, improvement is there. It represents more millions of money than either you or I can mention. (1)

And this improvement, so desirable so sought after, may be realised without any additional expenditure of the public funds. It is for your, Sir, to endow us with that which will indubitably merit the gratitude of posterity.

#### ONE SINGLE SCHOOL.

Some persons, with, doubtless, good intentions, have, from time to time, strongly recommended the abolition of our present schools, for the purpose of replacing them by one single school, conducted on the same principle as the College of Guelph, Ont., and Lansing, Michigan. After much thought, and after having carefully examined these institutions and studied the course of lectures given there, I have come to the conclusion that the project is both unjust and impossible of realisation. Unjust, because our present schools have vested interests, and do not deserve to be abolished. Impossible of realisation, 1. because one single school however good, cannot give to our whole agricultural population, the practices of which are so varied, the instruction which three district schools can give, schools situated in totally different circumstances, following plans based on the respective wants of their particular districts, and offering by their system of cultivation those precious teachings which well managed model-farms are able to present. This latter point is the less to be despised, since our agricultural population does not possess the advantages common in Ontario and in the United States.

(1) To show that we do not at all exaggerate, we will cite the progress due to dairy-work in two parishes with which we are acquainted. At St Jean Baptiste de Rouville, six prosperous cheese factories are in operation. The revenue of the six exceeds, I am told, sixty thousand dollars a year. At St Justin, Trois-Rivières, three years ago, there was only one small factory. This year, two cheese and butter factories gave \$22,000 to their patrons. The parish, three years ago, was considered poor, and the farmers were in debt. To-day it is so prosperous that the real estate is worth twice as much as it was three years ago. This increase, equal to a million dollars and more, is due solely to the successful introduction of dairy-work, assisted by the efforts of the indefatigable Curé, Mr. Gené, and his intelligent parishioners.

Lastly, it appears by indisputable official documents that the annual value of the agricultural products of the province exceeds \$70,000,000, and that it is very possible to double and triple this amount by a well planned system of farming which will necessarily follow a practical and thorough system of agricultural instruction.

where the farms of skilled European agriculturists offer models of cultivation to every passer by. For this reason, Ontario especially may well content itself with one institution, based rather on the study of the sciences attaching to agriculture and on new experiments in cultivation, than on sound practice only, such practice as all good farmers are supposed to follow on their respective farms; 2. Still more difficult of realisation, because Lansing and Guelph cost at first a sum of money almost inconceivable to us (about \$500,000 and \$350,000 respectively), and still cost for their annual expenses a sum equal to four times as much as our three schools together cost this province; 3. Not to be realised, since our people do not yet feel the need of, and consequently do not desire an agricultural education rather scientific than practical, such as is given to the sons of English and Scotch farmers, who are, for the most part, accustomed from their childhood to view daily the best practical cultivation in Europe; and lastly, because of the two distinct peoples of which the population of this province is composed—different in religion, in language, and in habits—differences which would render impossible, or nearly so, the proper direction of such an establishment.

#### OKA, WENTWORTH—SOREL.

I cannot finish this report without expressing the pleasure I felt during my visits to Oka, Wentworth, and Sorel. I do not hesitate to say that our province has just been enriched with three institutions where agriculture of the most advanced and most profitable, and therefore of the most model kind, is put in practice, to the benefit of the neighbouring people and even of the whole province.

The Trappist Fathers, at Oka, and the Marianite Fathers, at the agricultural orphanage at Notre-Dame-de-Montfort, have not yet been two years in the province. Nevertheless, any one passing near these establishments must see at once that the good *fathers* are thorough masters of agriculture, and that they hold this art in high esteem, for the *fathers* themselves work for a great part of the day in the fields, while the *brothers* labour still longer than our most earnest farmers, in addition to the time spent in their religious duties. The progress they have made since their arrival in the county is quite astonishing, and promises much for the future.

I can say the same of the farm attached to Lincoln College, Sorel. Mr. Jenner Fust, our very able editor of the English Journal of Agriculture, took the management, only last spring of a farm of sandy soil, excessively foul and completely worn out by frequent cropping. He has already transformed it to such a point that one sees there a great and successful variety of hoed crops; there are plants quite new to the country, such as *rape* for fattening sheep, and new varieties of cereals, the success of which shows how well our editor understands the wants and the circumstances of this province. Already a considerable number of pupils attend, of their own accord, the very interesting course of lectures which Mr. Jenner Fust continues to give at the college.

Later on, I will return to the instruction which these three last institutions afford us. In the meantime, the whole country may well be glad to see the precious gift it has received in the establishment of such places, devoted to the teaching of the best agricultural processes without the expenditure of a single dollar of the public funds.

ED. A. BARNARD.

*From the French.*

Since writing this report, Mr. Jenner Fust informs me that he too, is trying to bring to perfection our excellent

breeds of Canadian cattle, by a careful selection of females, to be crossed with a Guernsey bull. The produce of this cross must assuredly be remarkable for richness of milk, and, at the same time their being of an increased size, as compared with the pure Canadian, will render them more sought after by the butchers. The sacrifices, entirely personal, imposed on himself by Mr. Jenner Fust certainly deserve more than this simple passing notice.

Quebec, 2nd January 1885.

E. A. B.

#### VETERINARY DEPARTMENT:

*Under the direction of Dr McEachran, F. R. C. V. S.*

##### Dropping after Calving, or Milk Fever.

As the calving season is at hand we think that a few hints regarding the nature, treatment and preventive measures to be adopted in guarding against the occurrence of this too common malady will not be amiss.

"Parturient apoplexy" is a disease affecting the brain and spinal cord, of a congestive and apoplectic type, affecting the cow, and associated with parturition. The increased frequency of this disease has kept pace with the improvement in the breeding and feeding of stock rendered necessary for the demand for fast growing breeds, and it is our opinion that the most numerous and important class of cases met with owe their cause to an advancing civilisation indicated by the rage for early maturity in our flocks and herds demanded by the progressive tendencies of the age in which we live. For in districts where agricultural improvements are not very manifest, and where the improved breeds are not found, milk fever is rarely met with, indeed, it seems to follow the tract of civilisation and improvement. It is most largely seen in certain breeds of cattle; Dutch Alderney, and Shorthorn, are, we think, the most liable—the coarser the breed the less liable to the disease. It is seldom seen till after the second or third calf and the older the cow the more liable is she to take Milk Fever, occurring, however, most frequently between the third and seventh year. Heavy milkers are highly predisposed. An increased vascularity of the system is necessary for the production of the fluid Providence has destined the cow to supply, and this is perhaps the reason why she of all our animals is subject to this disease. The largely developed and excitable state of the nervous system consequent thereon, added to the superabundance of the nitrogenous element in the blood necessary for its production and not being eliminated, soon undergo decomposition and the development of a poison which is known to have an affinity for the nervous textures. This peculiar disease is seldom seen in lean animals, but largely in plethoric cows: this we think is easily accounted for, as the progeny of fat stock are usually of small size and are calved very easily, the circulation being thus in no way stimulated. Fat cows are also of a very sluggish disposition and the circulation becomes sluggish. We have noticed that when a case occurred in a practice, two or three turned up in the same week. This shows that weather has something to do with the causation of this disease. It is said by some to occur most frequently in summer, but we have met with it oftener in early spring than at any other season (1) Heat, nevertheless, we believe to be a predisposing cause. The predisposing cause is a previous attack of the disease or indeed any of the brain or spinal cord. Animals are less likely to die from the first attack, but generally succumb the year following. In the human subject emotion has largely to do with such attacks, and this is seen to a degree in cattle when excited

(1) Naturally, as 9 cows out of ten calve in early spring.

A. R. J. F.

and exerted in travelling by rail and sea. The exciting cause is the act of parturition, particularly if the animal does not strain. We have seldom seen it after labored calving, as during delayed labour there is loss of blood and using up of the inordinate amount of nitrogenous materials in the blood, and the animal excitation is kept up more than by calving easily. *Hefing*, i. e. plugging up the orifices of the teats with "cobbler's wax" for show purposes, brings about, more frequently than farmers are aware of, an attack of milk fever. Herds when allowed to calve on our hills and prairies are never known to suffer from it. Parturient apoplexy may occur during parturition, the day prior to parturition, or a few days subsequent to the act. The duration of the disease is from a few hours to several days. The more apoplectic the attack, the shorter the duration. It is in our opinion the most fatal disease to which cattle are subject.

*Symptoms.*—These depend greatly on the attack and manner of invasion. One of the first things to attract attention is the indifference shown to the calf, the mammary gland is big and secretes no milk, and the cow refuses all food, and the eye is wild, full and bright. In a very short time the animal becomes uneasy on her hind limbs, moving them restlessly about. First one hock then the other assumes a straight and rigid appearance; if made to move she pucks them up as a horse does when suffering from string-halt; if she is forced to move, she does so with uncertainty, and staggers. The respiration is hurried and as the disease goes on the countenance becomes more anxious. The pulse runs up to about 60 or 70 beats per minute. The animal tumbles over on her side. In most cases attempts are made to regain standing position; in this they usually succeed and balance themselves for a short time and then fall over. After going down they generally go into a state of delirium, throwing the head from side to side, dashing it up against the chest, lashing the tail, sometimes belching, goring, champing of jaws &c. The pulse is here oppressed, and the secretion of milk arrested, bowels constipated and eye extremely anxious. This condition is usually followed by unconsciousness. Then the animal is incapable of rising and refuses all food; if the bottling of gruel be tried, she swallows it with great difficulty. There may be complete inability to swallow. Very often the animal dies from asphyxia, "choking," caused by foreign bodies, as medicine gruel, &c., getting into the lungs. At the commencement of the disease, if we find all secretion of milk arrested, and if the patient becomes quickly comatosed, with violent constipation of bowels, we do anything but encourage the owner, and if he wishes to kill his animal we never try to prevent him. Treatment: if noticed before the animal gets down, blood should be taken from the jugular vein to the amount of three quarts. A purgative should be given in every case, composed of one pint of raw linseed oil, one drachm calomel, and thirty drops croton-oil—this is to be followed up with stimulants as spirits of ether nit., or whiskey, in two ounce doses every few hours. A stimulating liniment composed of linseed oil 4 pts., spts. of hartshorn 1 pt., and turpentine 1 pt. should be applied along the course of the spine. The patient of course should be placed in a comfortable loose-box with plenty of clothing, and the attendant should have instructions to move the animal about, and if down, from one side to the other, removing feces and milk if necessary. When the patient is down before the disease is noticed, bleeding should not be attempted. If there be much difficulty in swallowing medicine,  $\frac{1}{2}$  ounce doses of carbonate of ammonia should be given in the form of a ball every three hours. As soon as signs of recovery are apparent, 2 drachm doses of powdered nux vomica should be given twice a day, and for a time, after apparent recovery, small doses of stimulating medicine should be given.

*Preventive measures.*—All fat animals prior to calving

should if possible be put in a loose box and walked out occasionally. If the animal is very plethoric, bleed and give one or two doses of physic. If the animal is in the field it should be put on bare pasture. The calf should never be removed for at least twenty four hours after it is born. Owners should always fatten and sell their cows which have recovered from an attack of Milk Fever and never again try to breed from them.

C. McEACHRAN V. S.

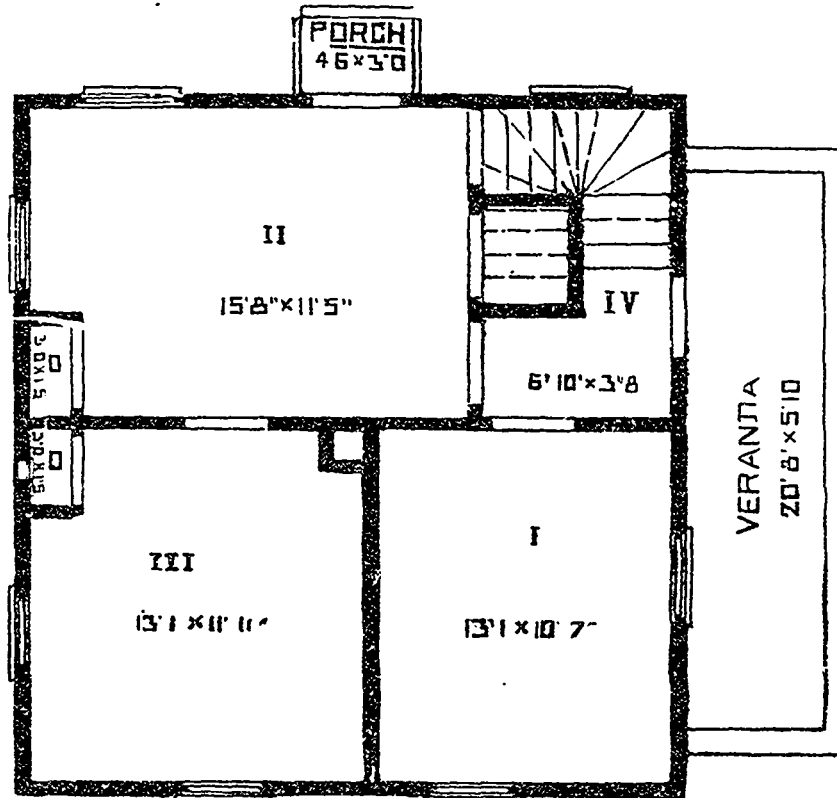
How the Farm pays; By William Crozier and Peter Henderson, New York;—Peter Henderson and Co.: 1884.

Lincoln College, Sorel, January 2nd, 1885.

I have read most of the books on farming published within the last hundred years, and, with the exception of Henry

I may as well say at once, that the illustrations, as far as regards the plants and implements of husbandry described, are very well executed; but those representing the types of the different sorts of live-stock usually kept on the farm—barring the portrait of the Guernsey cow, Countess of Fernwood, p. 155,—are below criticism; the Hereford bull, p. 160, is a specimen of bad drawing seldom equalled in a respectable publication.

The authors seem to have a profound contempt for gentlemen-farmers. Mr Crozier says: "I do not, of my own knowledge, recall a single instance where such men have ever got their original investment back." I do not think it signifies two straws whether gentlemen-farmers get their money back or not; but the real misfortune is, that the almost invariable failure of such men in their plans of cultivation leads the neighbouring farmers to conclude that all innovations on the old routine of husbandry are wrong, and I can hardly wonder



Stephens' marvellous work, "The Book of the Farm." I do not think much real good can be derived from them. They fail from one or the other of two causes: either the scientific writer is not a practical farmer, or the practical writer is unscientific. In the publication before us, we have an attempt to combine all the useful experience of two men who have, for more than forty years, been engaged in the cultivation of the soil in the State of New York; both of them well known, the one as a rearer of stock, and the other as a nursery-man. In fact, the book has been composed in rather a curious form, a series of conversations between the two authors having been taken down by a stenographer. The benefit of this plan is supposed to be derived from the fact that the answer often suggests a question, just such as the reader would be likely to ask, but with no one at his elbow to reply.

at the feeling, knowing the intense follies and obstinate persistence in absurd practices that may be seen every day on farms belonging to retired merchants, lawyers, and others, in this country especially; where good farm-bailiffs are so difficult to find

I regret to differ from Mr Henderson in a material point, connected with the state of agriculture in Britain. "While in Europe," he says, "on an extended tour in Great Britain and the Continent, I observed that, although the lands in all these regions had been cultivated probably for five hundred years, wherever the soil was naturally fertile there were found good farm-buildings, good fences, horses, wagons and harness, everything to indicate prosperity. On the other hand, wherever a poor, sterile soil predominated, there were found farm-buildings, fences and cattle that indicated poverty"—p. 13

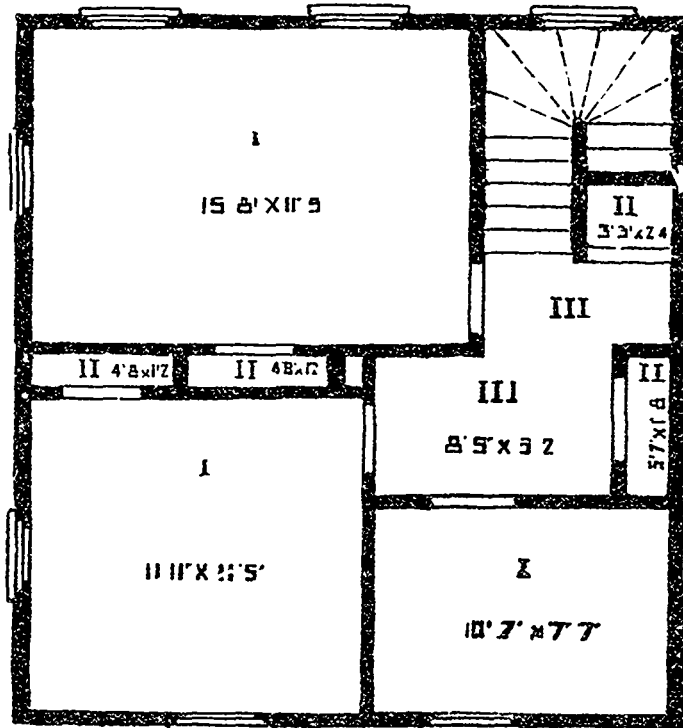
The former of these propositions may be well founded, but the latter is, generally speaking, wrong. On poor, undrained heavy land, like the Weald of Sussex, we shall, doubtless, meet with a few wretched instances of poverty-stricken tenants, and for a reason: the farms are small, the landlords are non-resident, and the occupiers are men without much capital. But, on the other hand, if we take a trip over the chalk hills of Kent, Surrey, Sussex, the wolds of Lincoln and York-hire, or the sands of Suffolk, Norfolk, and Cambridge-shire, we shall find land, sterile enough in its natural state, which, under the intelligent management of the best farmers in the world, now produces abundant crops of every descriptions of agricultural matters; the buildings are sufficient for all practical purposes, the horses and implements superb, and as for the stock, nine-tenths of the short woolled sheep, the Downs, are bred and fed on these once sterile soils. If Mr. Henderson had ever seen *Chrysal Grange*, 2,200 acres of red sand, farmed in my time by Mr. Samuel Jonas, he would not have made this mistake. The rent was \$3.00 an acre,

yearly continued; for no ordinary amount of manuring or cultivation will maintain the fertility of any soil over two years....." p. 13.

Of course, if Mr. Henderson is here speaking of the amount of fertility required for a market-garden, he is right; but, if he speaks of the fertility of an ordinary farm, I entirely disagree with him. Given a crop of rape, grown with 12 bushels of bone-dust (unboiled) to the acre, and fed off with sheep eating a pound of oil cake, or an equivalent amount of grain, per head per day, and I should expect, on an average of seasons, 40 bushels of barley, 3½ tons of hay (clover, out twice), and at least 50 bushels of oats, per acre, in the 3 subsequent years; and I should not fear to take a crop of pease, drilled and horse-hoed, after the oats.

Mr. Crozier prefers turnips for "adhesive soils overlying clay," and mangels for lighter soils! Eccentric, certainly.

If drains (p. 22) are to be made "not more than twenty feet apart," I fear we shall never get much draining done in this part of the world. I have seen no land on this continent



and the average yield of wheat nearly 40 bushels an acre; 4000 sheep were annually turned out fat, and about 250 large bullocks. I could show Mr. Henderson many an extensive district of the same sort, and, on the whole, I should say that the naturally poor soils of England are farmed by a superior class of men, and that the cultivation of them, as well as the stock of all kinds kept on them, are very far in advance of the cultivation and stock on the naturally fertile soils. Devonshire is naturally a fertile county, Norfolk a very poor one; compare the present state of the two, and no further argument will be needed: the sheep-fold has done it all, and until this is thoroughly understood here in this province of Quebec, I confess I despair of seeing any real progress towards profitable farming.

Again, "it is a delusive belief, that manuring or tillage, no matter how good, will ever bring a poor thin soil into permanent fertility, unless the application of manure is

that could not be dried with drains four feet deep and 40 feet apart.

Mr. Henderson's remarks on the importance of "firming" the soil after sowing or planting (p. 47), deserve attention. The use of the roller after grain-sowing seems unknown here, at least I have never seen it practised. I should as soon think of leaving my seed unharrowed as unrolled. Both Mr. Henderson and Mr. Crozier agree in the opinion, that planting one eye of a potato for seed is a dangerous practice. The latter chooses the largest tubers for seed, and "cuts them from the top-end through to the butt, straight, making two pieces of each, thus giving the seed ample substance." I don't think much is gained by choosing the largest potatoes, but I am sure I would not risk planting less than two eyes to the set, and I prefer a moderate sized, well shaped tuber; but the whole question needs deeper investigation and more accurate experiments than it has received. My friend, Mr. Barnard



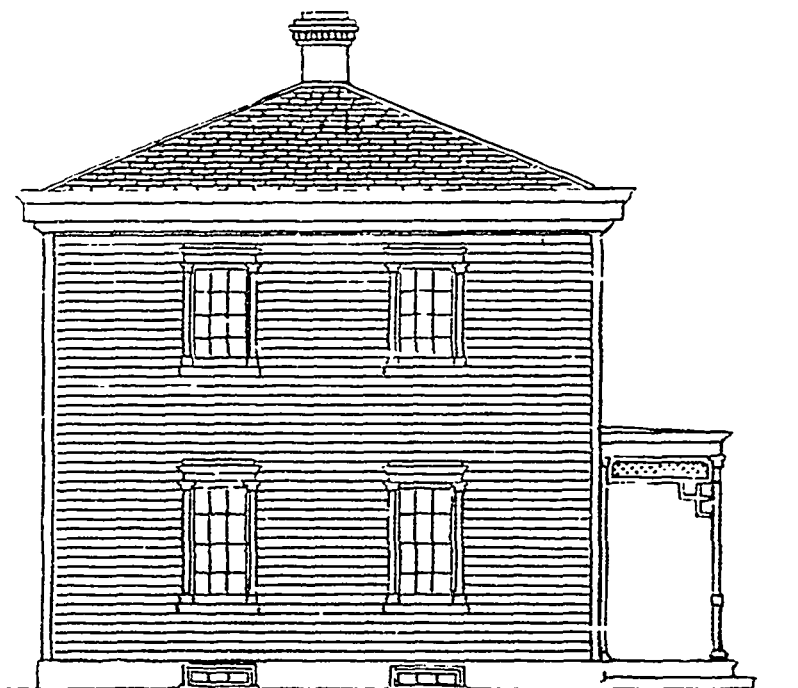
expresses himself as being thoroughly satisfied with one eye to the set, and where doctors dis-agree, &c.

Mr. Crozier thins out his mangels from 12 to 14 inches apart; I prefer 9 inches, as I am convinced that a thick-set crop of moderate sized roots is not only heavier, but contains more nutriment per acre than a thin-set crop of large roots. If sown by hand, Mr. Crozier recommends the use of from 12 to 18 pounds of mangel seed per acre, which is simply childish. Mangels, parsnips, and carrots, should *invariably* be soaked before sowing.

Of Hungarian grass Mr. Crozier speaks very highly, as being the best forage crop to stand heat. I must warn my readers, however, not to sow it as a succession crop, unless it can be got rid of before danger of frost. My late-sown Hungarian was destroyed on the 19th September. But fodder corn seems to be Mr. Crozier's favourite soiling crop. "I consider it," says he, "the most valuable of all on account of the

quence. What can Mr. Crozier mean by "I plough for roots a furrow *nine* by *ten* inches, p. 40"?

Like myself, Mr. Crozier keeps his milch-cows always in the stalls, and his reasons for so doing are generally sensible: "Cows with calf are apt to be abused by the other cows, and if they are fresh in milk, the less exercise they have, the more milk they will produce, as they are more contented when in their stalls and at rest. It is a common practice with many farmers to let their cattle run about the stack-yards all winter through. In the spring they are in a sad condition from poverty, and little can be expected from them the following summer" p. 104. This is a very correct view of the case, and if it could be brought home to the apprehension of our farmers, our senses would not be so shocked, as they sometimes are in the Spring, by the sight of a yard full of wretched beasts hardly able to rise from their lairs, and whose staring coats and bare ribs show but too plainly that



great length of time we can feed it in its green state, from July to frost, and at the very time when in most cases grass and all other green feed is withered and dried. The first crop is sown at the end of May, and others every two weeks in succession until the middle of July. He gives this, cut with a machine, mixed with meal and pulped roots, to his cows after being allowed to stand and ferment for 24 hours. Since his last visit to Europe Mr. Crozier no longer gives boiled food to his milch cows, though for cows intended to produce milk for sale he still prefers it, as do I. Mr. Crozier finds that fermented food causes his stock to do much better, and that the calves are healthier and stronger; the cows giving less milk but more butter. I don't like the fermented food for in calf cows, and I remember, in 1872, Mr. Cochrane, of Hillhurst, losing a great many calves, a loss which, after a good deal of consideration, I attributed to the use of the fermented food. On Mr. James Cochrane's return from England the following year, this system was given up, and I believe the percentage of loss was very much lowered in conse-

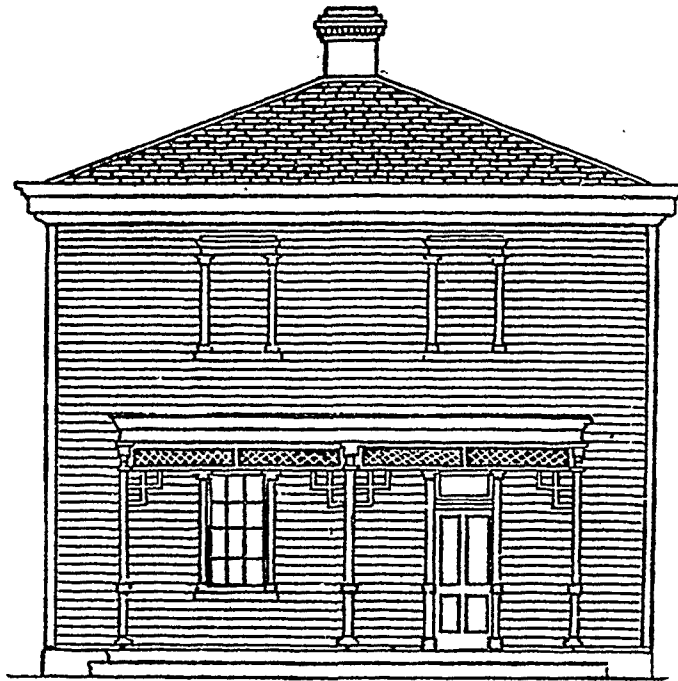
quence. The first two months of the grass-season will be passed by them in striving to regain the condition they have lost during the winter. And the upshot of it all is, that the yield of butter per cow is eighty pounds, instead of what it really ought to be, even on this poor soil, viz., one hundred and sixty pounds. I don't indulge in exaggerated estimates; they do nobody any good, but surely a cow, on any decent feed, should give four pounds of butter a week for forty weeks of the year—one hundred and sixty pounds in the season. It is not, believe me, the least use endeavouring to introduce improved stock into the country, unless the system of feeding is improved to meet the better bred animals. Butter goes in at the mouth.

The chapter on grass and its Management, p. 110, should be attentively studied. I am glad to find that I am not alone in my opinion that the most valuable grass we have, both for pasture and hay, is the orchard grass. The authors place it far above Timothy, and the reasons they give for the preference I quite agree with: "Any one acquainted with the

growth of roots will see by a glance at the illustration, that it is a plant better fitted for permanency than almost any other. In addition to that it has a merit which places it far above all the rest; this is the early date at which it is in a condition to be cut for hay, whether sown alone or in mixtures. It is found it can be cut between three and four weeks before Timothy is ready." Mr. Crozier appends to this chapter a list of grasses he recommends for sowing—for permanent pasture I presume—but as the cost of the mixture comes to twenty five dollars an acre, I omit the passage. It comes to this: Timothy is the slowest grower of all the grasses, and the most utterly unfit for pasture; Orchard Grass is the quickest of all the grasses—barring Italian Ryegrass, which is unfit for this climate—and cannot be fed down too often. (1)

Clover-hay, Mr Crozier thinks, is especially valuable for cows or sheep, but should never be given to horses on account of its dustiness! My goodness! Why every horse in England is fed on clover-hay; it is considered far too valuable to be given to any other stock. If it is dusty, that proves

elements of a complete food." But it is evident that Mr. Crozier's opinion is theoretical and not practical, for, as he says, "I have had nothing to do with ensilage," and, further, "the whole claim of the system, as I understand it, is that it is used instead of fresh green feed," which is very far from being the whole claim of the patrons of the system. They say that not only does ensilage cause cows to yield a better butter than any other winter-food, but that its great advantage is that it renders the seasons of less importance to the farmer. It is easy to see that, whereas making hay requires fine weather, ensiling can be carried on at almost any time. The chemical analysis of ensilage, on which our author, though generally anti-scientific, lays some stress, may show that ensilage contains only 6% of solid food (p 141), but, as in the case of the varying qualities of swedes, of which I have so often spoken in this Journal, I do not think that chemists have got to the bottom of this question. Mr. Crozier, in 1881, expressed an opinion that ensilage was not being used in England or the Channel Islands, and he was right to



that it has been badly made; good clover, as I have said before, is always worth 25% more than good meadow hay in the London market.

As to *ensilage*, I regret to say that Mr. Crozier looks upon it as a mistake. "I cannot understand why a green crop, which we know contains from 90% to 95% of water, preserved by the ensilage system, can be equal to the same fodder from which the water has been expelled by drying, and which, when mixed with roots, as we do it, contains all the

a certain extent; but what would he say now? There are more than 600 siloes in England alone: the Channel Islands (Guernsey, Jersey, &c.) keep their cattle out all the winter, in the day time at least, and their custom of growing parsnips, which require no storing, but can be dug every day in that mild climate, renders them independent of root-houses or siloes. See p. , of this number.

(1) Mr. Henry Stewart says that, when changing the feed of his cows from hay made from Orchard Grass and Clover, to Timothy hay of good quality, the tri-weekly churning of butter fell off from 26 lbs. to 17 lbs., and no increase of grain food that could safely be given would restore the loss. Also that the same difference has occurred when changing from Orchard Grass to Timothy in pasture or soiling. The cost of Orchard Grass is at present \$3.00 a bushel—I should sow two bushels of the grass and seven pounds of red clover, per acre, after the grain is harrowed in, and cover with a bush-harrow, followed by a roller.

A. R. J. F.

I have received a Guernsey bull from the Hon. J. J. Abbott. I don't intend to mention the price, but I append his pedigree &c.

No 925. —Sire...*Rufus*, by *Presto of Préal*, 571, imported.  
 Dam...*Rougette* 2nd of *St. Andrews*, 896, imported.  
 Dropped...23rd March 1884.

*Rufus* is a very well grown animal, remarkably good in every point, and, allowing for age, the picture of his sire, who

was the finest Guernsey bull I ever saw. I have, already, about 20 subscribers among the neighbouring farmers—quite as many as I intend to take the first year. I expect he will make a great alteration in the stock of the district.

Not much doing on the farm, except drawing dung from the village. Roads all icy; snow all gone; good skating on pools formed, I am sorry to say, on my Lucerne. There will be terrible damage done to the grass where the land lies flat, and, dreading a bad hay crop, I am feeding my cattle largely on oat-straw. They don't fall off much in their milk, if at all, but the carrots and mixed meal will account for that.

Two Berkshire sows arrived, of the Dawes' stock. Small for their supposed age, but doing well and very handsome. The College opens, after the Xmas holidays, on the 16th, and I am glad of it, as I have had a dull, lazy month to get through.

ARTHUR R. JENNER FOST.

#### OUR ENGRAVINGS.

Plans of barn for a sixty acre farm of rich land

Elevation of barn.

Elevation of house to cost from \$800 to \$1000.

#### English Gooseberries.

EDS. COUNTRY GENTLEMAN—These generally do not succeed well during our hot, dry summer, suffering from mildew, and shortly degenerating. Mr. Robert Hunter, an enthusiastic amateur fruit grower, and neighbor of mine, has had good success with them, and every season produces some excellent fruit, in size and quality equalling what are produced in their home on the other side the Atlantic. He grows them on a clayey, cool soil; keeps the plants open in the centre by pruning. When they start into growth in the spring, he immediately disbuds, to prevent them from getting too dense, and thereby admits a free circulation of air through them. He also mulches heavily during summer. With this treatment he has good success in freedom from mildew.

The varieties Mr. Hunter has been most successful with are: Whitesmith, a large fruiting, white variety; the surface of the fruit downy; of excellent flavor, and an abundant bearer.

Red Warrington, a pendulous growing, late variety; fruit round, hairy and thick skinned; an excellent sort.

Early Sulphur, an erect growing sort, hairy, bright yellow, thin skinned fruit; very sweet.

Ironmonger—spreading branches; fruit small, round, hairy, dark red, of good quality.

He made, this fall, an importation of a good many of the other leading English varieties, intending to test their qua-

lity and adaptability to this climate. I shall report his success. (1)

Mahoning County, O., Dec. 15.

M. MILTON.

#### A BARN FOR SIXTY ACRES.

EDS. COUNTRY GENTLEMAN—Will you give a plan for a barn to accommodate a sixty-acre Ohio river-bottom farm, to be built on a hillside, the basement to have a silo and room to accommodate 25 cows, 4 horses, 25 sheep, with such dry feed as hay and grain, but no roots?

F. C.

Marshall County, W. Va.

As we have frequent inquiries of a similar character, or more or less resembling this one, and as the information sought is of much general interest, we give the answer somewhat in detail.

Before adopting a plan, it is necessary to ascertain what crops and their amount the barn must contain. We suppose the river-bottom to be quite productive, that a full estimate must be allowed for the crops it grows, and that the animals named will have all the food from it which they will require. They should have about enough to carry them through six months, with dry fodder, grain and ensilage, and for the other six months they will be fed largely in pasture. At this rate, each cow should have about one ton a month of ensilage, or

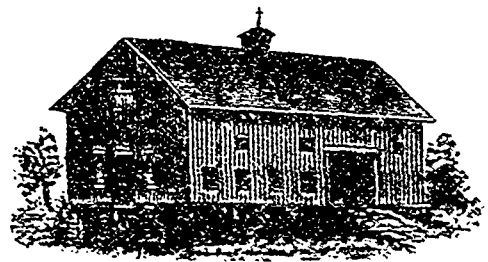


Fig. 1.

six tons in all, or 150 tons for the 25 cows. If they are fed one-fifth hay, they will require of this fodder about 10 tons in all. The horses, being fed mostly on hay, will consume about 3 tons each, or 12 tons. The 25 sheep will require about ten tons, more or less; and all these supplies will vary with their size, large animals eating as much more on an average than small ones as they exceed them in weight. The grain to be fed to all these animals will vary much with various conditions and circumstances. If each of the horses have four quarts twice a day, they will consume in the six months 180 bushels; and barn-room should therefore be provided for six tons of unthreshed straw. If each cow has two quarts daily, the 25 will consume 280 bushels, or nine tons of unthreshed straw. The sheep should have one quarter as much. Barley straw will occupy less room than oat; we give a full average which may be varied.

Bringing these estimates together, the amounts will be the following, omitting the 150 tons of ensilage:

(1) The finest crop of gooseberries I ever saw was growing in the garden of the late Judge Rolland, at Sainte-Marie de Monnoir, in 1855. There were one hundred bushes, all laden with fruit of the finest flavour. All of one kind, unfortunately, as the ripened all together which was a bore. I should think Mr. Martin, of Dorchester Street, Montreal, tells me that with a thick coat of coal-ashes in autumn, and heavy mulching with row dung in summer, he has always succeeded in avoiding mildew, the great pest of gooseberry in this climate. The Sainte-Marie soil was apparently, a hotish sandy gravel, facing, as nearly as I can recollect, due south

A R J. F.

Hay for cows .....	10 tons
Hay for horses.....	12
Hay for sheep.....	10
Unthreshed straw, horses .....	6
Unthreshed straw, cows .....	9
Unthreshed straw, sheep.....	2½

Making in all..... 4½ tons in space.

The space required for the 150 tons of ensilage, allowing 40 cubic feet for a ton, would be nearly 6,000 cubic feet, which would be the contents of a silo 12 feet wide, 21 feet deep, and 40 feet long. The accompanying plan, 40 by 78 feet, would therefore provide space for the animals and their food, fig. 1. The sheep pens, if not entirely separate, may

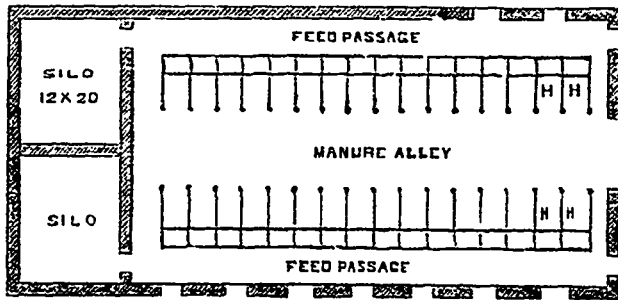


Fig. 2.

extend along the lower side of the building, as shown by the dotted lines, and if 10 feet wide, 65 feet long and 7 feet high, will accommodate 25 animals. A portion of this space may, if desired, be an open yard.

The silo is about 12 by 40 feet, and is 12 feet deep. It is divided into two parts, for the convenience of separate filling; and if the basement is 9 feet high, it will rise 3 feet about the barn floor when filled and settled. To secure this height, its walls should be at least 6 feet above the barn floor, to allow for settling. A small door, on a level with the floor, will allow the passage of the chopped fodder from the machine on the floor into the silo, until 9 feet in depth is filled,

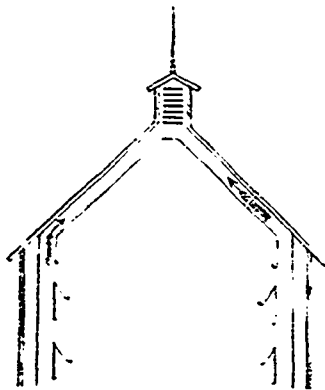


Fig. 3.



Fig. 6.

after which the carrier (provided by the Ross and others of the best manufacturers) will convey it several feet higher, as may be required. The walls of the silo in the basement may be solid masonry, and the portion above of strong wooden frame, well planked. A floor over the silo may be about 10 feet above the barn floor.

An important aim in this design is to place the bottom of the silo on the same level as the cow stables, so that the feed may be easily carried on a wheelbarrow with a large box, directly to the animals. Doors must therefore be made into each apartment of the silo, to be strongly closed with plank doors, which may be opened as soon as the feeding commences. It is hardly necessary to remark that the inner faces of these doors, as well as the inner face of the upper or wooden part of the silo, must be even with the inner face of the stone walls, so that the plank cover may fit as it descends.

Rather more width is given to the passages in the stables than is usual, as crowded space is a perpetual annoyance that is never outgrown. The cattle stalls are 3½ feet wide, and the central alley 10 feet wide, to allow a wagon or cart to be backed into it every morning for the removal of the manure.

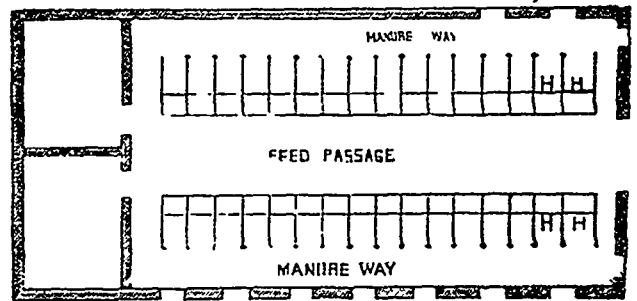


Fig. 4.

which may then be drawn directly to the land where it is to be applied, and thus save the labor of a single transfer. If the straw and hay, as well as the corstalks, are chopped short, the manure will be at once ready for spreading, with none of the inconvenience of long, fibrous matter. The horse stalls are 5 feet wide. They are placed towards the outer and dryer part of the basement, H H H H. If preferred, space for them may be taken above, and the barn be 10 feet shorter, with higher posts.

The plan which we give requires two separate passages for feeding the animals, and supplies must be drawn at the same time for both divisions of the silo. The plan may be modified so that the cows are all fed from the central passage, and from only one division at a time, giving less exposure to the ensilage as it is consumed, fig. 2. The manure, in this case, must be all carried out with a wheelbarrow.

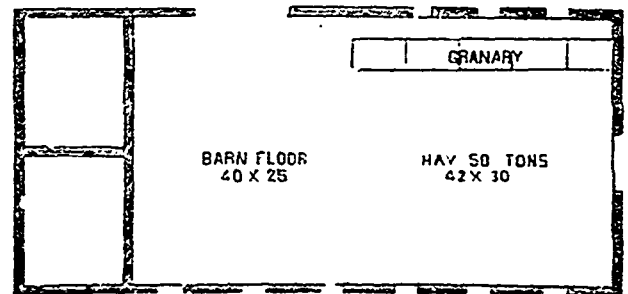


Fig. 5.

For many of the minor details for constructing silos, the reader is referred to the illustrated article on p. 558, in the COUNTRY GENTLEMAN for July 2, 1884.

The plan of the upper portion of the barn requires but little explanation, fig. 3. All but the granary is occupied with hay and unthreshed grain, and the space beside the gra-

nary, and that above the silo, will be large enough to receive the 50 tons, and leave an ample barn-floor 25 feet wide, which will afford space for the stalk-cutter, tread power, room for drawing in stalks, and for other purposes. The hay is easily deposited in the bay, 40 feet wide, with a horse-fork and carrier, and in winter fed to the animals through shoots. If more space is desired, it may be had by a loft directly over the barn floor, supported on timber specially placed for the purpose.

If the plan is adopted which places the feeding passage at the middle, between the rows of cow stalls, a ventilator about two feet square may extend upwards through the roof, passing up at a point between the barn floor and the large bay. It has side-doors at different heights for throwing down hay. These doors open downwards, and when not in actual use are buttoned up to prevent the vapor from the stalls from entering the hay, fig. 4. If, however, the other plan is adopted, the ventilators are placed over the feeding alleys on each side, and after going up to the roof, pass slanting immediately under the roof to the ventilating chimney at the peak of the barn. Down these ventilators the hay is thrown through openings at different heights below the roof, shown on a diminished scale in fig. 5. The one on the upper side passes through the granary and occupies the place of a small bin, the lower opening for throwing down hay being seven feet above the floor at the top of the granary.

The cost of such a barn, with unplanned boarding (heavily washed with petroleum), would be from \$1,200 to \$1,500. If planned and painted, the lumber would require a better quality, and the cost would probably be \$1,600 to \$1,800. With superficial workmanship, the cost might be less, with greater expense for repairs, &c., in the end.

For a farm of the moderate size mentioned, a two-horse tread power will be large enough for cutting the stalks, two horses of the four being employed to run the cutting machine, while the other two are drawing them from the field. For a larger farm and herd, a small steam engine would be required. The two-horse cutter, of the best construction, would cut fifteen tons in a day.

The land required to feed these animals, if fertile and well cultivated, would be not far from the following:

Meadow, for 32 tons of hay.....	15 acres.
Corn fodder for 150 tons, green.....	8 "
Grain, oats, barley and corn, 500 bush,	10 "
	—
	33 "

This leaves 27 acres for pasturage. It would require good farming on rich land to produce the full amount of these crops, but in favorable seasons the amount would be exceeded. Corn fodder would often yield more in green tons than our estimate, and whatever is left after filling the silo, if well cured, will be useful when chopped a fourth or half an inch long, for dry food in connection with ensilage.

The amount of food required for the animals will vary considerably with their size, and with the economy exercised in feeding; and the estimates we have made are rather intended as a guide in modifying them according to circumstances (1).

### The Milking Trials at London.

#### *The Champton Cow a Shorthorn.*

We clip the following account of the milking trials at the recent London Dairy Show from the *Irish Farmers' Gazette*:

The most important of all the awards at the show were made on Friday, as of all things it was desirable to determine which animals are of highest value in the production of milk

Accordingly, the 60 cows and heifers in the milking competition were clean milked to the satisfaction of the stewards on Tuesday night, and the milk yielded by each at the morning and evening milkings on Wednesday was weighed and then subjected to chemical analysis. The judges, Dr. Voelcker, F. R. S., Mr. G. F. Roumieu, and Mr. E. C. Tisdall, passed their judgment by a scale of points, taking into consideration the quality or weight of milk, the quality of the milk as represented by the percentage of solids and of fats, and the time which has elapsed in each case since calving, one point being gained for each ten days of the milking period. These results of actual performance are entirely at variance with the previous awards in the several classes, made according to the standard of merit by inspection. Thus, of the pure-bred Shorthorns the first and second prize milkers, together with the reserve cow, are those shown by Mr. I. N. Edwards, of St. Albans, which were left without mention in the prize list of the inspection judges, and in milking they beat the champion Shorthorn, Mr. Louis Ponsonby's *Leila*. Of Shorthorns not eligible for the herd book the best milker is *Red Cherry*, a cow shown by Mr. Joseph Phillips, of Peterborough. She is also the winner of the champion prize as best milker of all the breeds in the show. Yet the inspection judges did not give her even a commendation, though they highly commended a number of other animals in her class. The third best milker is Mr. Manoh Walker's *Cherry*, also without notice in the inspection prize list. Only the second prize milker has been honored in the prize list—namely, Mr. Abraham Stansfield's first prize *Una II*.

Among the Jerseys and Guernseys the best milker is Mr. Glyner's Guernsey cow *Gentle*, which had the second prize in the inspection judging; the second best milker is Mr. Frederick S. Champion's Jersey cow *Duchess 2d*, which took nothing in the other list; and the third best milker is Mr. W. Arkwright's Jersey cow *Lilian*, which was similarly without honor by the test of appearance. Of other breeds and crosses, the best milker is Captain Ross's Welsh cow *Duchess of Carnarvon*, which had been adjudged by inspection to the highest place; the second best is Mr. Thomas Birdsey's Shorthorn and Ayrshire cross, that had been highly commended; and the third best milker is Mr. George Ferme's Ayrshire cow *Lady Lindsey*, which had been adjudged no distinction in her class. It is, of course, possible that some of the animals which had been placed high in the prize list by inspection might have distinguished themselves in the milking competition had they been in full profit, but the fallacy of adjudicating the dairy merits of animals without actual trial is demonstrated by the general failure of cows which, having won prizes from the inspection judges, did compete in the pail on Wednesday. It is surprising what excessive differences exist between the milking merits of individual cows of the same kind in the same herd under the same feeding; for we hear of one Jersey yielding no less than £40 worth of milk between calf and calf, while another under the same treatment gives less than half that value. And it is only by a daily record of the milk produce of each individual animal on a dairy farm that dams can be selected for the breeding of bull and heifer calves certain to perpetuate rich milking properties.

Quantity of milk yielded was the most important point noted by the milking judges; next, the quality of that milk; and then, the duration of the milking period. The champion milker, Mr. Phillips's *Red Cherry*, a Shorthorn without pedigree, has been in milk for five months; her day's milk in two milkings was 51.75 lbs., containing 12.31 per cent. of total solids and 3.26 per cent. of fat. *Mr. Glynn's first prize Guernsey, having been in milk seven months, gave only 20½ lbs., of milk, but of such richness that it contains 14.99*

(1) This would suit the farms along the Coaticook Valley, &c.  
A. R. J. F.

per cent. of total solids and 6.28 per cent. of fat. Mr. Champion's second prize Jersey, in milk for only  $1\frac{1}{2}$  month, gave 36 lbs. of milk, with 13.52 per cent. of solids and 3.76 per cent. of fat. Captain Ross's first prize Welch cow, in milk only one month, gave 46 lbs. of milk; and Mr. Thomas Birdsey's second prize Short-Horn and Ayr-hire cross, in milk three weeks, gave  $37\frac{3}{4}$  lbs. of milk. Mr. Walter Gilbey's fine Dutch cow, with a most remarkably developed udder yielded at her two milkings in the day no less than  $52\frac{1}{2}$  lbs. of milk, but this of the poorest quality of any tried, containing under 2 per cent. of fat.

At the butter-making contest only four dairymaids competed. The first prize was won by Mrs. Holmes, of Sundridge-park Farm, Bromley, Kent, the second by her daughter, Miss Fanny Holmes, who was not quite so expert in salting the butter; and the third by Mrs. G. Green, of Avon Dairy, Ringwood, Hants. The Lord Mayor's champion prize for the best fresh butter made in the United Kingdom is awarded to Mr. Thomas Mercer of Balderstone, Blackburn. No decision had been come to last night by the judges of centrifugal cream separators; but it is understood that while the Laval machine of D. Hald & Co., of Wilson-street, Finsbury, driven by a one-horse power steam engine, claims merit for simplicity, the Danish machine of the Aylesbury Dairy Company, St. Petersburgh-place, Bayswater, driven by horse power, has effected the separation so perfectly as to leave a much lower percentage of cream in the skimmed milk. (1)

### THE POULTRY-YARD.

#### GOSLINGS FOR MARKET.

*Eds Country Gentleman*—The goose seems to be a favorite fowl for the table all over the world. It is not indigenous to any one country or continent. We have, beside the Emden and the Toulouse, Chinese, Egyptian, Canadian and Sebastopol geese, representing every continent save that of Australia. But, with the English-speaking race, the goose appears to be especially a favorite, and of no place more than England is this true. As there are so many customs which found their origin in this country, now carried over the seas by sons and daughters who still love the old home, or by their descendants, who follow these customs, perhaps without regard to their origin, I may give some particulars as to the ways in which geese are fattened.

At the present season of the year, large numbers of young geese are offered for sale in nearly every market town, and at reasonable prices. These have been sold by the breeders and dealers, the former having in many cases no accommodation for fattening, and there are many farmers who purchase these young goslings in preference to breeding them. They can now be put out on the fields after the crops are gathered, and will forage for themselves almost entirely. In Norfolk and the adjacent counties, very large numbers are kept, and I have often been interested in riding through the country there to see the flocks of geese and turkeys on fields and commons, in almost every village or hamlet. They are found by the farmers to be a considerable source of profit, and the vast numbers of the figures given which are sent to London every year about Christmas, would astonish those who are not conversant with the facts of the case. In these counties the farmers usually breed their own birds, but there are many who buy goslings at ten or twelve weeks old, and simply fatten them for the market. By this means the farmer can make his land profitable after the crops are gathered, and the geese do it an immense amount of good. The birds so purchased

1. Altogether, I am sure I am right in choosing the Guernseys for crossing with the Canadian cow. On richer soil, I am equally sure that the Shorthorn is the animal for that purpose.

A. R. J. F.

are generally bred by those who reside near commons or waste land. Large numbers are so bred in Ireland, in Cumberland, and in the districts of Eastern England.

The young goslings, when the fields are clear of the crops, are allowed to wander about during the day, when the weather is at all fine, and they are generally placed under the care of a lad, so as to prevent their wandering away too far and over-running themselves. This is necessary, as they are inveterate wanderers and inquisitive to the last degree, so that unless they are fenced in or watched they go all over the place. But a lad can easily keep a big flock in order and bring them home at night. Before going out in the morning, they have a feed of barley-meal made into a paste, and at night another feed, but this time of whole oats steeped in water. This, with cut grass, cabbage leaves, turnip tops, or other green stuff of a similar nature, is all they need in the way of food. And, as for water, if there is a pond available, that will do, or a small stream can be dammed up to form a bathing place. If neither of these can be obtained, then a tub sunk in the ground and kept supplied with clean water is made to answer the purpose.

At night the goslings are kept under cover, and an empty barn, a dry shed, or a large out-house littered with straw is best. In bad weather they are not allowed out at all, and for a month or five weeks previous to the time of killing they are kept indoors altogether. They are then fed three or four times a day, first in the morning with barley-meal and maize-meal made into a paste, and with soaked oats or boiled rice at other times for a change. Only as much as they eat readily is given, and none is ever left standing. The water supplied is very limited; not sufficient for them to wash in. Geese are different to other fowls in one respect, and that is they never thrive or fatten if put into separate compartments. They appear to be miserable without company, and if separated, instead of getting fatter, actually pine away. This is a needful hint in order to prevent a mistake being made, especially as I am strongly in favor of putting fowls into separate cages to fatten. Some birds, it will be noted, fatten more rapidly than others, and when the process has gone on for three weeks, careful watch should be kept upon the birds to note when they are ripe for killing. This is best known by the state of their appetites. As soon as they are as fat as they will be, the desire for food begins to slacken, and then it is that they should be dispatched or they will lose flesh instead of gaining it. We have known goslings fed up to fifteen and eighteen pounds in weight; but these have been exceptional ones, and a dozen pounds is nearer the mark. All must not be expected to turn out exactly the same. To go on feeding, therefore, in expectation of increasing the weight after the fowl has shown the symptoms already mentioned, would be playing at a losing game. As soon as the birds are found to be properly fattened, they are disposed of or killed forthwith. As a rule, the latter is found the better plan, as geese, or any fattened fowls, lose flesh rapidly when driven about or packed in baskets. It is also found preferable to send them to market plucked, for the feathers are valuable, and also because a nicely plucked goose realizes more than one not plucked.

Where this fattening system is regularly carried on year by year, arrangements are often made between the breeders and fatteners for a supply. But this can only be where the best kind is bred. I think the grey variety is the best, as it fattens more readily than the others. In selecting birds to be so fed up, it is wise to pick all healthy looking ones—those with big frames capable of supporting a lot of flesh. Even if they look lanky and thin, those are conditions which can soon be altered, and it is found that they fatten much better than birds which are stunted or small, for they never grow to any size, though they may eat as much as the others.

and as size has all to do with the question of price realized when they are fattened, hence the importance of choosing large-framed goslings at first. (1)

II—, England, Oct 10 STEPHEN BEALE.

#### "SWEET ENSILAGE."

EDS COUNTRY GENTLEMAN—The experiments with ensilage, made at Houghton Farm, and reported in the COUNTRY GENTLEMAN of Oct. 16th, were suggested by the theory of Mr. George Fry of England, and that of Dr. Miles which followed it. They were conducted in accordance with the directions given by Mr. Fry. The very foundation of the theory is the destruction of the bacteria of fermentation by the heat generated in the process. Both gentlemen are on record as stating that a temperature of 115° to 140° is sufficient for this. The results of my observations, which are not "assumed" as Dr. Miles intimates, were decidedly to the contrary. The facts given in my article in the COUNTRY GENTLEMAN were presented on their merits, and I have no reason to withdraw them by reason of any criticism offered.

The experiments were not undertaken in support of any "theory," nor from prejudicial motives, and they were more extensive and, I believe, equally as accurate as any that have been reported in this country in support of the theory that bacteria will accomplish their own destruction by the heat of the fermentation which they produce. I do not propose to discuss Dr. Miles' criticism of my methods. The fact remains that a temperature of 120°, 130° or 140° F. did not kill the bacteria or prevent their development.

WINTHROP E. STONE, Mountainville, N. Y., Oct. 30

#### A House costing \$800 to \$1,000.

The form of this house, which is nearly an exact square, having no wings, "Ls" or re-entrant angles, is that which undoubtedly admits of the largest available room at the lowest cost. The whole plan, in fact, has been based on the principle of economy and simplicity, to which all the details have been made to conform. The finish is necessarily of the plainest description, and there is no attempt at embellishment. Nevertheless the result is not unsatisfactory, even as regards the external appearance of the house; and the plan, while here given in what may be called its lowest terms, is such as admits of indefinite expansion and increase, as regards dimensions, quality and cost.

It is the work of Mr. J. P. C. Steddom, of Webster, Ind., and received the second prize in the MECHANICAL NEWS House Plan Competition, for houses costing from \$500 to \$1,500. The height of ceiling on the first floor is 9 feet. This floor contains a parlor, I, kitchen and living room, II, bed-room, III, hall, IV, pantry, V, and two closets, OO. Thumbies are placed in the flue in the kitchen 2 feet below the ceiling, and through the partition between bed-room and parlor. A stove can be placed in the parlor and the heat conveyed through the partition to the bed-room.

The second story ceilings are 8 feet high. There are on this floor three bed rooms, I, I, I, four closets, II, II, II, II, and two halls, III, III. The stairs may be either open or enclosed, the former being decidedly preferable.

The cellar walls, which are of stone laid in lime mortar, are 18 inches thick and 6½ feet high. The chimney is started on a stone foundation level with the cellar floor. The verandah pillars are of brick; the plastering two coats of brown mortar.

(1) Green geese are best fed on oats alone. The older ones are often fastened to the floor with tin tacks passed through the web between the toes. The "pâtes de Périgord" are made from goose-liver swollen by heat and moisture—in other words, diseased.

A. R. J. F.

and one white wash or scum coat. The frame is of either hard wood or pine, all outside studding extending from sills to flats. The outer walls are finished outside with lap siding and inside with inch lumber furred with laths and plastered.

The floors are of common pine, tongued and grooved and driven up in paint. The inside wood-work is plainly finished with seasoned pine. The window frames are of the "skeleton box" variety, which is found serviceable and less expensive than the ordinary box frame. The verandah roof is of tin, and that of the house best pine shingles laid on laths 1½ by 2 inches, placed 5½ inches between centres.

The author of this plan says of it: "It may be objected to on account of its plainness, or lack of style, but the idea has been to get a house large enough and convenient for a good-sized family, with the money. Such a house I built here last season for a small farmer, who is well pleased with it."

We should add that the figures given us by the builder are even below the smallest sum (\$800) which we have named, but we have preferred to make due allowance for higher cost of material and labor in other localities. Any additional embellishment would of course cause an increased outlay.

#### Leffel's House Plans.

We are in receipt of a copy of this work, just published by James Leffel & Co., 110, Liberty St., New York. It is a volume of more than 200 pages, containing upwards of 150 illustrations. It comprises elevations and plans, with descriptions, of forty houses costing from \$500 to \$3,000, and adapted to families having good taste and moderate means. The book is printed on heavy paper of the best quality, with clean type and illustrations, and handsomely bound in cloth, with blue and gold cover.

It is designed to meet the wants of that large number of persons who have but a limited amount of money at their command, and in building a home wish to use it to the best advantage. Many such cannot afford to buy expensive architectural works which, moreover, deal mainly with a costly class of houses.

Mechanics, clerks, salaried men, workmen of every calling, carpenters and builders in cities, towns and villages, will find this book a useful aid, worth many times its cost in the information and practical suggestions which it gives.

The book is sent by mail, postage paid by the publisher, to any part of the United States or Canada on receipt of the price, \$2 00. It will doubtless command a large sale, being of a practical character and suited to the wants of those who cannot afford to employ professional architects, and yet wish for such aid and counsel as are given in this work.

#### SOURCES OF FERTILIZERS.

A recently issued bulletin by Prof. Geo. H. Cook, of the New-Jersey Experiment Station, contains in condensed form so distinct an explanation of the sources of the most valuable portion of commercial fertilizers, that we insert this portion of the bulletin for the benefit of such of our readers as are interested in the subject:

For many years past an active search has been maintained for new sources of fertilizer supplies. Nearly every crude product which contains any noticeable percentage of either nitrogen, phosphoric acid, or potash, is now carefully saved, and when mixed with other necessary material generally retailed as a complete manure. Many of these waste products are of great agricultural value; a few are almost worthless, either because they do not decay rapidly, or because they contain substances proved to be plant poisons.

This bulletin is intended to give information regarding the sources, chemical composition and retail prices of the supplies which are used by reputable fertilizer manufacturers.

**NITROGEN**—Nitrate of soda, sulphate of ammonia, and dried blood, are valued commercially on their percentage of nitrogen alone. Dried flesh, dried fish, and tankage, are regarded chiefly as sources of nitrogen, but also contain considerable quantities of phosphoric acid. Cotton-seed meal and similar products, in addition to several per cent. of both nitrogen and phosphoric acid, furnish small amounts of potash; as this potash is insoluble in water it is generally overlooked in analyses made for the fertilizer trade.

Nitrate of soda is mined and purified in the rainless regions of the Pacific coast of South America. It is used in complete fertilizers, and to a limited extent, in a unmixed state, as a top dressing for grain and grass.

Sulphate of ammonia can be obtained in paying quantities wherever bituminous coal is distilled, either for illuminating gas or for coke, and wherever bones are manufactured into bone black. The domestic supply is drawn principally from the large cities in our Eastern and Western States. (1)

Dried blood, ammonite and tankage are products from abattoirs and pork packing establishments. The ammonite from South America consists mainly of dried wastes from the manufacture of Liebig's Beef Extracts, and similar products.

Dried fish is the pomace from the fish oil presses now so numerous along the Atlantic coast.

Cotton seed meal as its name indicates, comes at present from the Southern cotton belt; but as soon as its value as stock food is generally recognized it will disappear from the fertilizer market.

The supply of the very rich Peruvian guano, formerly one of the leading sources of nitrogen, is now said to be nearly exhausted.

**PHOSPHORIC ACID.**—The chief sources of phosphoric acid are bone ash from South America, spent bone black from sugar refineries, guanos from islands in the Carribean Sea, and from portions of the coast of Peru, the mineral apatite from Canada and phosphate rock from South Carolina.

When finely ground and treated with oil of vitriol, any one of the above materials yields a superphosphate rich in phosphoric acid but free from nitrogen and potash. (2)

Bone ash and bone black superphosphates, when properly made, are fine dry products with seventeen per cent. and more of soluble, and traces of insoluble phosphoric acid. These superphosphates do not change or revert if stored under shelter.

Excellent superphosphates can also be made from Canadian apatite and South Carolina rock. Frequently, however, a considerable portion of their phosphoric acid is insoluble in water, and under certain conditions and limitations the longer such superphosphates are stored the lower their percentage of soluble acids becomes. Of this insoluble phosphoric acid a certain amount can be dissolved in a solution of nitrate of ammonia; to this the name reverted phosphoric acid has been applied.

Although opinions differ, it is but fair to state that many regard soluble and reverted phosphoric acid equally valuable both from the commercial and agricultural stand-point. German farmers, on the other hand, buy soluble phosphoric acid only, and refuse to pay for that which does not dissolve in water.

**POTASH.**—Potash was formerly obtained entirely from wood ashes, and Canada still furnishes the market with con-

(1) Here, at Sorel, all the ammoniacal water is wasted, the plant for the conversion of the carbonate into the sulphate being considered too costly for so small a concern as our gas-works

A. R. J. F.

(2) For mangels and for cereals, add from 120 lbs to 200 lbs of sulphate of ammonia, or from 150 lbs. to 220 lbs. of nitrate of soda to the superphosphate. Complete manures are generally humbug.

A. R. J. F.

siderable quantities from this source. Its price however is too high to allow it to compete for agricultural uses with the products from the Prussian mines at Stassfurt.

The grades of salts exported by these mines are: Kainit—with from twelve to thirteen per cent. sulphate of potash with twenty-three to twenty five per cent., and muriate of potash with fifty per cent. and more of actual potash.

When nitrate of soda, sulphate of ammonia, dried blood and similar nitrogenous matters are mixed with superphosphates and potash salts, a complete fertilizer is formed which (1) contains all the chemical elements known to exist in stable manure.

Repeated trials by farmers and market gardeners, in some cases embracing a period of eight or ten years, have proven the high agricultural value of these fertilizers. Some market gardeners now use such fertilizers exclusively, instead of buying manures at the stables of street car companies. This statement is not intended to excuse the careless manner in which barnyard manure is generally saved. Its aim is solely to show that when the farm supply is exhausted it is better to purchase concentrated fertilizers than to pay high prices for freighting, carting, and spreading the bulky manures bought at distant stables. (2)

Prosperous and thoughtful farmers are well aware of this fact, and those who have conducted carefully planned field experiments on their own farms are most favorably impressed with these concentrated fertilizers, particularly when they have found that a single element of plant food, for instance potash, is the only thing which they need to buy for a certain crop. (Bosh! A. R. J. F.) Such men are not in the habit either of asking advice from others, as to what their own fields require, or of laying any weight on the statement that artificial fertilizers will exhaust their farms.

The bulletin from which the above statements are quoted, gives the analyses of a large number of fertilizers offered in market, in which it is interesting to observe how near the composition guaranteed by the manufacturers accords with the results obtained by analysis; and also the slight variation of the real market value thus obtained, from the prices at which they are sold. The inferior and worthless stuff formerly offered in the several States where stations for analysis have since been established, have thus been driven from the market, and these stations have conferred an immense benefit on the farmers who purchase commercial manures.

Prof. Cook gives the following as the cost of the different fertilizers, as obtained from the average prices of the manufacturers in 1884, which are 14 per cent. lower than 1883:

	<i>Cost per lb.</i>
Nitrogen from nitrate of soda .....	16 9c.
Nitrogen from sulphate of ammonia .....	17.1
Nitrogen from dried blood .....	18 3
Nitrogen from ammonite and tankage .....	15.8
Soluble phosphoric acid from bone black .....	7 3
Soluble phosphoric acid from S. C. rock .....	8 6
Reverted phosphoric acid from bone black.....	6 7
Reverted phosphoric acid from S. C. rock .....	7 8
Insoluble phosphoric acid from bone black.....	2 9
Insoluble phosphoric acid from S. C. rock.....	1 9
Potash from high grade sulphate .....	7 2
Potash from kainit.....	4
Potash from Muriate (3) .....	3 7

(1) Potash is hardly ever wanted on heavy land A. R. J. F.

(2) Fond as I am of artificial manures, I am sure no gardener will ever neglect a copious use of dung, with all its mechanical effects, without paying dearly for his folly. It is the dung that causes the so rapid vegetation in our market-gardens. A. R. J. F.

(3) Expense of manuring one acre of wheat, then, would be: forty lbs. of nitrogen at 17c (sulph. am) \$6.80. 30 lbs. soluble phos. as. (Carolina rock) at 85 = \$2.55: in all \$9.35 A. R. J. F.



VICK'S ILLUSTRATED MAGAZINE for December, just received, is unusually interesting. Besides the usual beautiful colored plate, which in this issue is a group of double Dahlias, there are forty pages of just such reading as those interested in flowers and gardening generally will enjoy. Among the articles of special interest we may name "A Californian Outing," "Grafting the Grape," "Azalea and Cape Jasmine," "Irrigation," "Pruning Roses," "Culture of Celery," and a large number of smaller articles. Besides these, the department of "Our Young People" has a beautiful poem by Margaret Eyeringe, and an illustrated poem, "King Frost," by Mrs. Whittemore. For the long winter evenings we can conceive of no more profitable reading for those who desire to gain knowledge in the culture of flowers, and indeed, everything pertaining to the garden. It may be summed up as being "a compendium of useful and valuable information." The inducements offered to subscribers of VICK'S MAGAZINE for clubbing with other popular first-class periodicals, are astonishing.

#### Silos and Ensilage in England.

Silos are becoming more and more popular in England every year. They are now to be found in almost every part of the British Isles, and are not only more numerous than ever before, but generally larger in size, most of the old experimenters having considerably extended their operations. The root crop in England is often uncertain, resulting in heavy losses, and British farmers are directing their attention to ensilage, in which they are sanguine of finding a partial remedy in this regard.

The tests made last year, it is true, did not in all cases prove satisfactory; but they went far toward strengthening the faith of those engaged in ensilage experiments, and the old experimenters have returned to their work with renewed vigor, while many who have hitherto been skeptical are identifying themselves with the movement. The results of the present year will, therefore, be awaited with considerable interest, and decide to a great extent the benefit which farmers may expect to derive from the silo. The difficulties involved in applying adequate pressure to the silage, says the North British Agriculturist, if not entirely, have at least in some measure been overcome. Various modes of weighting have been recently invented, but that designed by Messrs. Reynolds & Co., London, seems to give the best satisfaction. The pressure is steady and equal, and much saving of labor is effected—no dead weights being used, doing away with the constant and costly handling of them. Although it has not been extensively tested, this method has been adopted at Brightlingsea, where one of the largest silos ever constructed in England is now in operation, and has so far proved successful.

The Agriculturist further says that the success of the ensilage system would enable farmers to turn to good account such cereal crops as are rendered useless for malting, milling or grinding, by unseasonable weather during harvest, as well as those which are not likely to mature, as they can be put into the silo wet or dry. (1) Fodder ensiled in a saturated condition, it has been conclusively proved, is equally as good when taken out as that filled in a dry state. In Scotland, tares, meadow and other grass are being used for fodder, and in England some extensive tests are being made in the pre-

servation of maize. The Agriculturist summarizes Mr. Wood's observations at Merton with regard to maize, as follows:

He found that one acre of maize cut green weighed 28 tons, and produced 26 tons of ensilage. Its value was £1.6s. 8d. per ton, being one third the value of hay at £4 per ton, or £34 13s. 4d. in the aggregate. From this is to be deducted rent and tithe, cost of cultivation, manure, seed, cutting, carting, chaffing, filling silo, and all other expenses, including interest on cost of barn silo, amounting to £14 7s. 10d., which made the net value of the ensilage maize £20 9s. 6d. per acre. In regard to grass, he discovered that one acre produced 12½ tons, from which 12 tons of ensilage was obtained. The value of this ensilage was 26s. 8d. per ton, or £16 in all, which, by deducting the expenses, amounting to £5 4s. 9d., was reduced to a net value of £10 15s. 3d.

The Brightlingsea silos are the most extensive in England. Every farm on Mr. Bateman's estate is supplied with ensilage accommodation, nine silos of various sizes being in working order. Three of these formed together have capacity for 444 tons of ensilage. They stand in a row, the length of which is 64 feet, and are built of concrete. They are 22½ feet wide and 20 feet deep, and are built in the side of a bank. The filling side stands but 6 feet above ground, while the emptying side is 17 feet above and only 2 feet below ground. Carts are enabled to draw up to the filling side and discharge into it from the top. The cost of this 444-ton silo was £300.

#### CHEAP FARMS

NEAR MARQUIS

The State of Michigan has more than 4,500 miles of railroad and 1,600 miles of Lake transportation, schools and churches in every county, public buildings all paid for, and no debt. Its soil and climate combine to produce large crops, and it is the best fruit state in the Northwest. Several million acres of unoccupied and fertile lands are yet in the market at low prices. The State has issued a PAMPHLET containing a map, also descriptions of the soil, crops and general resources, which may be had free of charge by writing to the COMM'R OF IMMIGRATION, DETROIT, MICH.

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Of all the publications of nurserymen, there is no other that can be compared with *Lovett's Guide to Fruit Culture*. It is really a valuable work on Horticulture giving, as it does, full instructions for planting, pruning, culture and management of fruits of all kinds, and impartial descriptions of all worthy varieties. It is a book of over 70 pages, with an illuminated cover, elegantly printed and embellished with hundreds of engravings and several colored plates true to nature. Everybody at all interested in fruit culture should send to J. T. Lovett, Little Silver, New Jersey, and get a copy. See advertisement in this number.

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(1) Most useful in all late districts in our province, many acres of late-sown oats are hardly worth threshing. A. R. J. F.