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# THE ONTARIO FARMER,

A MONTHLY JOURNAL OF

Agriculture, Horticulture, Country Life, Emigration, and the Mechanic Arts.

VOL. II.

HAMILTON, MAY, 1870.

No. 5.

## AGRICULTURAL SCHOOLS, COLLEGES AND SOCIETIES.

Resuming our extracts from Professor Buckland's address before the New York State Agricultural Society, a discussion of the above topics presents itself.

"The great question is, how, in the present state of society and its educational appliances, a knowledge of scientific and practical agriculture can be best obtained ?

It has often occurred to me that in this, as in most other matters, the best plan is to begin at the beginning, by imparting a knowledge to the pupils of common country schools of the foundation principles of good husbandry. The extent of the information that could thus be given would necessarily be restricted, but it need not on that account be otherwise than sound and practical. We have already several little text-books suited for such a purpose, and teachers without the expenditure of much time and money, might prepare themselves for the work, which would certainly tend to raise their professional status in the country, by increasing their respect and usefulness. The matter contained in *Johnston's Catechism of Agricultural Chemistry and Geology*, and *Stephens' Catechism of Practical Agriculture*, modified and adapted to American wants, would, if carefully gone through in a country school, impart a considerable amount of sound and useful instruction, and lay a firm foundation for whatever subsequent additions the pupils might acquire to erect thereon. It would be a pleasing and instructive object to have country schools provided with gardens for experimental and illustrative purposes. Such adjuncts would form valuable auxiliaries of teaching, and also tend to refine the taste and enlarge the minds of the pupils. A school house, instead of being, as is even yet too much the case in old and wealthy districts, bald and uninviting in appearance, if not positively repulsive, should be expressive and in harmony with its primary objects, both in its exterior and interior features, and a little ornamental planting and fencing would, as in the cases of churches and

other buildings, public and private, very much improve the landscape of the country and add a new charm to rural life.

Agricultural Colleges have, of late years, attracted no inconsiderable amount of attention, both in Europe and America, and a number of experiments have been made with very varying degrees of success. The immense grants of the public lands made a few years ago by the Federal Government for the establishment of agricultural colleges, and the prompt action taken by many of the State Legislatures to reduce the noble project to practice, redound to the honor and intelligence of this great nation. An old and distinguished member of this Society has immortalized his name, and done imperishable honor to his country by the princely munificence which founded the *Cornell University*, in this State; an institution which recognizes the true dignity of human labor, both of the mind and of the hands, and strives in a natural and beneficent manner to combine both in harmonious relation. Every true friend of his country and race must earnestly desire that this and similar institutions may realize the aspirations of their founders and promoters, and impart untold blessings to posterity.

It would be impracticable to lay down, in all cases, absolute rules for teaching agriculture, theoretical or practical, in public institutions, as much must depend on the varying circumstances of each country or State. If elementary instruction were generally given in primary schools on the leading principles of this art, a desire, no doubt, would be increased, in many instances, for more extensive and minute information, which the higher order or colleges only could impart. When it is found impracticable to establish and sustain a pure and independent agricultural college, the object might, to a great extent, be accomplished by incorporating an Agricultural Department with already existing educational institutions, possessing a staff of teachers in the various branches usually comprised in a University course of instruction. A farm of more or less extent for experimental and illustrative purposes would seem to be a necessary appendage, where the teaching of the class room

might receive a practical exemplification in the field or the garden. And here I may observe that agriculture, or the other industrial arts, cannot be thoroughly learnt in colleges or schools, however well adapted they may be for teaching their scientific principles; the farm and the workshop are the only places where a practical knowledge, constituting an accomplished workman, can be obtained. It is most desirable that youths, intended for agriculture as a pursuit, should be regularly trained to farm labor, and in all young countries especially, such a condition is a necessity. Work, both of the head and hands, constitutes the basis of every sound system of agricultural education. And after all, perhaps, to make a thorough and accomplished agriculturist, one whose acquirements will enable him to extend the bounds of knowledge, and enable him to adapt himself to the varying circumstances and conditions of practical life, he must study in more than one school, and become familiar with more than one system of instruction. The facts and laws of science he can learn in the college, and observe their application to practice on the experimental grounds; but he will further require a wider circle of observation only to be acquired by travel, and thus make himself personally acquainted with the different systems of management pursued by distinguished cultivators and breeders in various localities or countries.

Among the most efficient means of advancing the agricultural and cognate arts, I feel no hesitation in placing Societies, such as the one whose annual exhibition many thousands will have witnessed on these grounds during the present week. Happily, Societies of this nature have been formed in most civilized countries, and their success, upon the whole, must be considered decidedly encouraging. Numbers, no doubt, attend on these occasions for mere holiday pleasure, and probably carry away but little information that will benefit either themselves or others. It is to be regretted that the great essential objects and functions of these shows are not more clearly and generally understood, and their teaching-power more deeply and widely felt. To see and to observe are too frequently very different things. It is the facilities given to observation, comparing one thing with another, and the drawing of sound practical conclusions from a sufficient number of well-observed facts, that give to occasions like this their principal means of usefulness. The management of these shows, as they increase in size and complexity, requires continued modification, and is yet susceptible in all instances of improvement. I observe that you have adopted the plan of entering articles some weeks previous to the holding of the show, a practice which we in Canada (Ontario) have pursued with much satisfac-

tion for several years. Now, we have only to take a step or two further; so to limit the period for taking entries, and make it *absolute*, that sufficient time may be afforded for compiling a complete classified catalogue or catalogues, and providing in the show-yard and its buildings "a place for every thing, and have everything in its place." To this state of advancement most of the great National Societies of Europe have already brought their exhibitions, and we on this side of the Atlantic would greatly consult the convenience and information of visitors, and materially enhance the interest and increase the usefulness of our exhibitions, by following, as close and rapidly as circumstances admit, so good an example. The management of the Royal English Society's show last year, at Leicester—the ease and harmony of its working—was to me a marvellous phenomenon. The grand secret of all this consists simply in the final closing of all entries in proper time to allow of the necessary arrangements for the placing of the articles in an orderly and systematic manner. Further: It has appeared to me that a longer time than is ordinarily given is required to bring fully out the teaching-power of our exhibitions. Live stock, probably, could not be kept longer than it usually is, without incurring an amount of inconvenience, risk, and expense, that might discourage exhibitors. But as regards mechanical, manufacturing, and fine arts productions, and those of the farm and garden, that is, with the exception only of live animals, the same reasons do not apply, or, at least, only in a very inferior degree, while the addition of only one or two days to the very contracted time usually allotted the public to observe these departments, would be both welcome and advantageous to all visitors. I have often thought that we go to enormous trouble and expense to get great crowds together for a day or two, in which it is always difficult, and sometimes impossible, for individuals desirous of obtaining information, to inspect the articles with any degree of care or comfort. The suggestion which I have ventured to make would, to a considerable extent, at least, rectify this serious defect.

It has often occurred to me that there is a latent power of good in local agricultural societies that would be of great public benefit, if it were properly developed. I refer to the advantages that would follow the more frequent meeting of their members, for the consideration and discussion of subjects of a practical or scientific character. Members of the majority of township societies are commonly satisfied, I believe, with an annual fair, and meeting for the yearly transaction of business and election of officers. Exhibitions are very useful and excellent things, but they are not everything. An agricultural society should be, in the strict sense of the

words, "a mutual improvement society." This valuable object is, no doubt, largely obtained by bringing the results of industry before public attention, for inspection and competition. Such occasions awaken thought and interest, inspire men with higher aims, and more powerful motives to improvement. Periodical meetings during the remainder of the year, especially the comparatively leisure season to farmers—the winter—would more effectually sustain and direct these impulses into fresh and practical channels. In this way the alleged sluggishness of the agricultural mind would be quickened, practical men would compare notes, and each would inspire and improve the other by the mutual interchange of thought and the teachings of experience. Thus the foundations of agricultural knowledge would become broader and deeper, popular fallacies corrected, a pleasing social interest strengthened, a taste for reading and observation elicited, and the proffered aids of science with increased earnestness invoked. I am not aware to what extent "Farmers' Clubs," as they are termed, exist in this country;—the one in the city of New York has for many years had a wide reputation; and I have felt much pleasure and derived considerable profit from reading the reports of meetings for discussion during the exhibition-week of your Society, and also of its winter meetings in Albany. If the smaller societies in the country would generally follow out this principle, a fresh and most salutary impulse would be given to agriculture, and young men engaged in the pursuit would take a greater and more rational interest in its advancement, and better prepare themselves for the discharge of the public duties of life."

#### THE MAMMOTH SUSPENSION BRIDGE BETWEEN NEW YORK AND BROOKLYN.

As our readers are probably aware, it is designed to build a grand suspension bridge to connect New York and Brooklyn: in fact, the work has already been commenced. This bridge will far exceed anything of the kind ever attempted, and its successful construction will put it in the same rank with the Menai tubular bridge, the Victoria bridge at Montreal, and the Niagara Railway suspension bridge,—if, indeed, it does not top the list of wonderful bridges. The design was conceived by the late John A. Roebling, who constructed the Niagara and Cincinnati suspension bridges, and its execution has been entrusted to his son.

We glean the following particulars respecting this great undertaking from our valued contemporary *The Manufacturer and Builder*:

The bridge is to be supported by four cables, resting on two piers situated on the shores. These

piers are to be 1,620 feet apart, and 280 feet high, and the bridge-bed will rest 130 feet above tide-water, thus offering no impediment to navigation. The cables will consist of parallel steel wire, and will be nearly one foot in thickness. They will be anchored in solid masonry, 1,337 feet from the pier on the New York side, and 837 feet from that on the Brooklyn side. Thus the real span will be 3,794 feet in length; and the approaches beyond these points will be of arched masonry, thrown, like the half-spans between anchorage and piers, over streets and houses. These approaches will commence at the City Hall Park, in New York, and at the junction of Fulton and Sands streets in Brooklyn, and although rising but three and a-half feet to one hundred, will offer small obstruction to street travel.

Naturally, the piers must be capable of withstanding an immense strain. Their base at water-line is to be 134 feet long by 56 feet wide, and the heaviest masonry is to be employed in their construction. Each will contain over 900,000 cubic feet of granite, and will weigh over 70,000 tons. In each pier there will be two arches, for entrances to the bridge, and each archway will be 32 feet wide, giving passage to a railroad track, a carriage-way, and a sidewalk. The bridge will weigh 3,600 tons, and it is thought this will be increased by transitory weight of trains, carriages, horses, etc., to little less than 5,000 tons. To insure complete safety, therefore, the foundation of each pier will number 17,000 square feet of surface, upon which the pressure will be only about four tons per square foot.

A proper foundation for these massive piers is of the greatest moment. Labor upon the Brooklyn side was begun in January last, and has since been continued, dredging machines being employed preparatory to sinking the colossal caisson which has been built at Greenpoint. This will be floated into position at high tide. The caisson, necessary because the Brooklyn shore presents no rock-basis, is constructed of white pine timbers a foot square, the seams tarred to render them water tight, and a sheathing of tin between two of felt placed between the outside layers of timber, to make the whole air tight. It is 163 feet long by 102 feet wide on the outside, and 15 feet high. The sides are wedge-shaped, the lower edge being eight inches, and the upper something over eight feet, in thickness, and the roof resting on these sides is five feet thick, leaving a working chamber nine feet in height. All the timbers are bolted together with one and a-quarter inch bolts, varying from two to seven feet in length, and the structure is made as firm as possible in every way.

Six shafts, lined with boiler iron, pass through the roof of the caisson, in which the water therein collected will rise to the height of the tide outside. Two other shafts will allow the passage of workmen, and the removal of earth from within. Air-pumps will force air into the caisson through air-shafts, expelling the water, and enabling laborers to work upon the bottom. As fast as these excavate the earth, they will deposit it around the shafts, through which a dredging machine will lift it and dump it into scows.

When this mammoth affair shall be sunk to its desired position, thirty feet below low tide, additional courses of timber will be laid on top of it, to the height of fifteen feet, and filled in with concrete; and when the whole has become firmly fixed in place, the tower will be built on the solid foundation thus secured. On the New York side it is believed nothing of the kind will be necessary, the nature of the shore there being wholly different.

That the bridge when completed will be well secured seems certain. Each of the four cables will enter the anchor walls to a distance of twenty feet, and will there connect with the anchor chains, composed of ten links, each twelve feet or more in length, and forming a downward curve of a quarter of a circle, in order to convert a portion of the tension into downward pressure. Then the cables will not be compelled to support the entire weight of the bridge. Stays, running from the top of each pier to the bottom of the span, will relieve much of the strain,—indeed, Mr. Koebling asserts that the bridge would not fall if the cables were removed, but would only sag.

### ONTARIO VETERINARY COLLEGE.

#### SESSIONAL EXAMINATION.

THE annual term of study in this institution having terminated, a number of students presented themselves for examination in the Council Chamber of the Agricultural Hall, on Thursday, April 7th. The examiners were A. C. Clarke, V. S., of the Royal Artillery, Drs. Thorburn and Rowell, of Toronto, and E. T. Haggard, V. S., Brampton. Mr. Cowan, of Galt, and Mr. Thomas, of Guelph, who were among the earlier graduates of the College, also examined the students in several special subjects connected with the theory and practice of veterinary medicine. It was pleasing to observe several other graduates, now successfully practising their profession in various parts of the Province, also present, and evincing much interest in the proceedings. Dr. Bretty, of Cobourg, attended on behalf of the Council of the Agricultural Association. The examination was of a very thorough character, embracing the anatomy and physiology, diseases and treatment of the horse, ox, &c., Chemistry and Materia Medica. The following are the names of students who passed the final examination, entitling them to the Diploma of the Agricultural Association, certifying their qualifications to practice the Veterinary art:—J. Craig, Sandhill; B. Richardson, Flesherton; D. Cumming, Milton; T. H. Lloyd, King; and J. Caesar, Kilmanagh. To these should be added D. McIntosh, Kingston; D. G. Sutherland, Crimore; and T. Hope, Dyer, who passed their final examination at Christmas—making eight graduated students for the past year. The following students passed the primary examination: J. Bailey, Laskey; J. Bryce, Mohawk; Charles Elliott, Peel; James Mayhen, Sandhill; A. Hartill, Toronto; and A. Thompson, Peel.

The following is a list of the students and their residences who have attended lectures during the past year:—Seniors—D. McIntosh, Kingston; D. G. Sutherland, Crimore; T. Hope, Ayr; B. Richardson, Flesherton; D. Cummins, Milton; T. H. Lloyd, King; J. Caesar, Kilmanagh; J. Craig, Sandhill; J. Bailey, Laskey; J. Bryce, Brantford; A. Hartill, Toronto; C. Elliott, Peel; J. Mayhen, Sandhill; A. Thompson, Peel. Juniors—R. Evans, Sleswick; J. G. Caesar, Waterloo, Iowa; J. A. Richardson, Mono Mills; J. Spiers, Glen Allan; W. H. Robinson, Jr., Omagh; W. Sweet, Exeter; J. Hawkins, Tilsonburgh; W. Fair, Drumbo; W. Colchagh, Mount Forrest; T. Churchill, Clinton; W. Churchill, Clinton; J. Gibson, Teeswater; S. Ottiwell, Glasgow; B. Hutchins, Ottawa; G. W. Ainger, Ohio; J. Elliott, Sandhill; H. Henderson, London.

In the evening, upwards of forty persons sat down to an excellent supper in the lecture-room of the College, including the professors, students, and a number of their friends. Mr. Principal Smith presided, supported by the Rev. Dr. Barclay, Drs. Rowell, Richardson and Kennedy, while Dr. Thorburn and Professor Buckland acted as croupiers. After the usual loyal toasts had been duly honored, a number of gentlemen were called upon to speak on the Medical and Veterinary professions, the importance of agriculture, manufactures and commerce; and a most agreeable evening was spent, by the interchange of social feeling and stirring remarks, calculated, as they were intended, to give a stimulus not only to the Veterinary College, but to the cause of education, and the best interests of the country generally.

It must have been truly gratifying to Mr. Smith, and all associated with him in his most useful enterprise, to witness the continued and increasing success of the Institution, which has now, in the new and commodious building it occupies, greatly increased means of imparting a knowledge of the Veterinary art both in theory and practice. The Principal gratefully acknowledged the cordial support he had in various ways received from distinguished members of the Medical profession in connection with the Toronto School of Medicine, of the teachings of whose classes his students might freely avail themselves, as they felt disposed. The students had fully availed themselves of Dr. Bovell's lectures on Physiology, and had derived the greatest advantages from attending Professor Croft's course on Chemistry, in University College.

As the agricultural wealth of the Province is constantly increasing, by improving the breeds of the various farm animals, the encouragement of the study of veterinary medicine becomes every year more expedient and necessary; and there is now every reason to believe that the increased facilities

which the College now possesses for thoroughly training students for the practice of their profession will be able to keep pace with the wants and demands of the country. The examiners expressed themselves highly satisfied with the very creditable manner of the answering of the students, most of whom evinced a more thorough knowledge of the subjects than was expected.

#### AN EMIGRATION FICTION.

We have had occasion heretofore to remark, that some American journalists are not over-scrupulous as to the means they employ to attract emigrants to the United States. A paragraph clipped from an exchange, and headed "From England to Kansas," inserted and commented on in our January issue, has been made a subject of enquiry by a correspondent, and is repudiated by the nobleman whose name figures conspicuously in it. We don't know who is responsible for the statements thus contradicted. Our impression is that we got the clipping among some news gleanings in the *Western Rural*, and we do not wish to cast any slur on that respectable journal by the correction to which we now gladly give insertion.

LANARK, 4th April, 1870.

Editor ONTARIO FARMER:

SIR,—In your January number I observed an extract from an American paper respecting a settlement of 1211 English families in Kansas, under the control of the Reform Society of London, of which the Earl of Shaftesbury is President. As I felt rather doubtful of the correctness of the extract referred to, I addressed a letter to the Earl of Shaftesbury, and I have this day received an answer, a copy of which I annex, and to which I hope you will give the same publicity, as you have given the article referred to.

I am, your obedient servant,

CHARLES JULYAN.

24 GROSVENOR SQUARE,  
London, 14th March, 1870.

SIR,—I am directed by the Earl of Shaftesbury to acknowledge the receipt of your letter of the 10th ult., in reference to what has appeared in a recent number of the ONTARIO FARMER, as to a colony of 1211 English families having bought 33,110 acres of land in Kansas, under the control of the Reform Society of London, of which his Lordship is said to be President. In reply, I am directed by his Lordship to assure you that you are quite in error, as he belongs to no company, neither has he bought any land.

I am, your obedient servant,

THOMAS MARTIN.

Mr. Charles Julyan.

#### NEW ZEALAND.

A GOVERNMENTAL return of population, revenue, crops, and other statistical matters of this interesting colony, for 1868, contains many important facts, a few of which we select and condense from an

abstract in the *North British Agriculturist* for the information of our readers.

The white population in 1868 was 226,619, and the number of Maories or aborigines is variously estimated at from forty to fifty or sixty thousand. The imports for the year amounted to £4,985,748; the exports to £4,429,198. Of the imports, £2,299,689 were from the United Kingdom, £2,251,685 from British colonies, and £334,376 from foreign states. The articles exported were chiefly gold and wool. The gold was valued at £2,504,326. The wool exported in 1868 weighed 28,875,163 lbs., valued at £1,516,568. The other articles exported, such as grain, flax, gum and hides, amounted to a comparatively small sum.

The Revenue consisted of £788,829, derived from customs; £404,685, other ordinary items; £287,433 from sale of Crown lands; £130,553 from gold duty and miners' rights,—making a total of £1,620,835. The custom duties in New Zealand are, on the whole, very moderate, yet they amount to £3 10s. per head annually of the whole white population. There were 1671 miles of telegraph; number of messages sent, 134,667; receipts, £26,224; cost of erection, £124,208. This department is in the hands of the Government.

The Returns show that in 1868 there were 687,015 acres of land under crop, or 3 acres for each head of the population; 64,517 acres of wheat—estimated yield, 1,619,169 bushels; 85,056 acres of oats—2,655,296 bushels; 15,427 acres of barley—377,834 bushels; 26,696 acres under hay—36,435 tons; 11,557 acres potatoes—56,538 tons; 8,878 acres under other crops; 501,580 acres under sown grass pasture; cattle, 312,835 head; horns, 65,715; sheep, 8,418, 579; pigs, 115,104; poultry, 676,065. There were in the colony, 579 threshing machines, 736 reaping machines, 12 steam ploughs, and 28 steam harrows. The production of butter reached 3,834,252 lbs., and cheese, 1,300,082 lbs. The number of holdings of all sizes amounted to 11,922.

Notwithstanding the recent colonization of New Zealand (about 20 years), its comparative isolation, and the very serious troubles which it had for so long a time with the natives, the progress of the colony cannot be regarded otherwise than satisfactory; and since the problem has at length been solved of preserving in sealed cans both beef and mutton in a fresh state, and of transporting it to England without suffering deterioration of either flavor or quality, a wider and more profitable field will be opened to the graziers of the British possessions in this distant part of the world. "A fortnight ago," remarks the *North British Agriculturist*, "several tins, samples of the supplies sent from an establishment in Queensland, at Redbank, on the edge of the tropics, were opened in the presence of several

gentlemen, all of which had been filled with mutton as cut from the carcase of the sheep, and though raw when put into the tins, was found fresh and wholesome, and smelt as if it had hung a week in a butcher's shop in the country: whereas it was part of a sheep killed four months ago, and had come a distance of fifteen thousand miles. The mutton itself afforded no indication of the process employed, and save that the boxes had been taken out for convenience of packing and carriage, it might have been mistaken for home-fed mutton. No sudden importation of any large quantity of such mutton can take place, though the forty millions of sheep in Australia are within reach, as the necessary plant required can only be gradually increased. It, however, must be borne in mind that, in a year or two, there will be as many sheep in New Zealand and Australia as there is both in France and England, viz., 64,000,000, though the weight per sheep is less in Australia. The populations of England and France together amount to 68,000,000, or scarcely a sheep to each person; whereas in the Australian colonies and New Zealand, the populations may not exceed 2,000,000, giving about thirty sheep to each inhabitant—thus affording a very large excess for exportation, when the means of doing so are acquired."

#### INTERNATIONAL EXHIBITION OF 1870.

Next year completes another decade since the last International Exhibition in London, England, and there is to be a great change inaugurated, both in the nature of the exhibition, and the periods of its occurrence. The British Government profiting by the experience of the past twenty years, have decided to adopt a new system of exhibitions, and instead of holding them every ten years, and making them universal, they propose to have annual exhibitions, confined to a limited number of articles. The past increase of manufactures, and the multiplicity of applications of science to the arts, render a universal show of them at one time, and in one building, next to impossible. The last Paris exhibition building covered nearly forty acres of ground, and the park outside embraced eighty acres more. The number of exhibitors was fifty thousand, and of separate articles there were several millions. The visitors to the palace were counted not by thousands, but literally by millions. It was noticed that the English Commissioners should have been appalled by the prospect in store for them, if they were to undertake another World's Fair in 1871. Nothing short of a building covering a hundred acres, and a park with a hundred more would suffice for the purpose, and then must follow the vast expenditure of money to put things in order at the appointed time,

ready for the inroads of exhibitors, who would naturally apply for space. The thing was manifestly not to be thought of, and the Commissioners have wisely decided to hold annual exhibitions open to people of all countries, but confined each year to specified articles.

Her Majesty's Commissioners announce that the first of a series of annual international exhibitions of selected works of fine and industrial art will be opened in London, at South Kensington, on Monday, the 1st of May, 1871, and be closed on Saturday, the 30th of September, 1871. The exhibition will take place in permanent buildings, about to be erected, adjoining the arcade of the Royal Horticultural Gardens. The productions of all nations will be admitted, subject to obtaining the certificate of competent judges, that they are of sufficient excellence to be worthy of exhibition. The objects in the first exhibition will consist of the following classes, for each of which will be appointed a reporter and separate committee:

1. Fine arts: paintings, sculpture, engravings, architectural models, tapestry, decorative designs, copies of ancient pictures.
2. Scientific inventions and new discoveries of all kinds.
3. Manufactures: pottery, earthenware, wool and worsted, educational manufactures and belongings, such as school buildings, books, maps, toys, and games for physical training, illustrations of modes of teaching fine art, natural history, and physical science.
4. Horticulture: The Royal Horticultural Society will exhibit new and rare plants, showing specialties of cultivation.

One third of the whole available space will be assigned to foreign exhibitors, who must obtain certificates for the admission of their objects from their respective governments. The objects must be delivered free of charge, and unpacked at the building, but all expenses of show cases, installation, etc., excepting machinery, will be borne by the commissioners. It is desirable to have prices and full descriptive labels attached to all articles. Foreign countries appoint their own judges and reporters. There will be no prizes, as the certificate of having obtained the distinction of admission to the exhibition, will be deemed sufficient to reward the exhibitor for his trouble. The arrangement of articles will be in classes, without regard to nationalities, and thus be better placed for study and examination.

#### MANUFACTURE OF BEET SUGAR.

The question has often been asked, will it pay in this country to manufacture sugar from the beet root? That it pays in Continental Europe, is no proof that it can be made to pay here. Some facts and figures have been collected in Wisconsin, which go far toward answering the question under consideration.

A committee appointed by the Fond du Lac Board of Trade, to investigate and report upon the beet sugar interest, have just presented a report, in which they recommend the formation of a joint stock

company for carrying on the business in that place. They also present the following statement of the costs, profits, &c., of a manufactory with sufficient capacity for extracting the sugar from 25 tons of beets per day :

COST OF BUILDING AND APPARATUS.	
Two steam boilers.....	\$2 400
Smoke stack.....	100
Steam engine, 16 horse power.....	1 500
Steam engine for running centrifugals.....	1 500
Air pump, 12 inches diameter.....	150
Feed pump.....	30
Retort.....	60
Water pump, 6 inch diameter.....	50
Grating machine and appurtenances.....	600
Four centrifugals.....	2 800
Three separating pans.....	1 000
One montegus.....	90
Gas retort.....	250
Two filter presses.....	600
Two filters.....	300
Evaporator, condenser and pipes.....	1 400
Sugar centrifugal.....	600
Fifty V boxes.....	200
Six crystalizing boxes.....	200
Eight stone syrup reservoirs.....	300
Acidulating boxes with coolers.....	200
Charcoal washing machine.....	150
Twenty animal charcoal steamers.....	50
Pipes, faucets, welds, etc.....	1 500
Shafts and pulleys.....	500
Beltng.....	300
Screws, tools, etc.....	600
Buildings.....	3 000
Setting up machinery.....	1 000
Carpenter work.....	250
Mason work.....	150
Nails, rings, etc.....	600
Animal charcoal.....	2 500
Filter cloth.....	500
Cultivating 400 acres beets at \$35 an acre.....	14 000
Cash capital and running expenses.....	10 000
<b>Total.....</b>	<b>\$49,930</b>

This includes everything for the factory for the first year of running. The committee think it probable, that with proper economy, the machinery could be set up from \$6,000 to \$8,000 less than these figures indicate.

When the season is favourable, the expenses and profits of such a mill are estimated by the committee as follows :

EXPENSES.	
Cultivating 400 acres beets.....	\$14 000
Wages, 160 days, \$8.60 per day.....	9 600
Fuel.....	5 000
Sundry expenses, light, oil, &c.....	10 000
Loss on animal charcoal.....	400
Interest on capital.....	4 200
Salary book-keeper, overseer, manager.....	2 000
Machinist.....	2 500
Overseer of beet cultivation.....	1 000
<b>Total.....</b>	<b>\$48 700</b>

RETURNS.	
400 tons beets, first product, 5 per cent, 400,000 pounds at 5 cents.....	\$60 000
Second product, 2½ per cent, 200,000 pounds, at 14c.....	28 000
2½ per cent of syrup.....	4 000
Pulp, for feed.....	3 000
<b>Total.....</b>	<b>\$95 000</b>
<b>Net profit.....</b>	<b>46 300</b>

The expenses and profits under unfavorable circumstances, are as follows :

EXPENSES.	
Cultivating 400 acres beets.....	\$14 000
Wages, 125 days.....	7 500
Fuel.....	3 360
Interest on capital.....	4 200
Running expenses.....	7 000
Loss on animal charcoal.....	300
Salaries.....	3 000
<b>Total.....</b>	<b>\$40 360</b>

## RETURNS.

2,800 tons beets, first products 3½ per cent, only at 14c.....	\$27 440
Second product 2½ per cent.....	18 200
3½ per cent, of syrup.....	3 860
Pulp, for feed.....	2 100
<b>Total.....</b>	<b>\$51 100</b>
<b>Net profit.....</b>	<b>10 740</b>

In the tables given above, the estimate of the yield of beets per acre, is made from the result of the past season's crop, and the yield of sugar is at the rate that the firm in Pond du Lac are now producing it from that crop. These figures are worth the study of farmers, and capitalists elsewhere as well as in Wisconsin.

## AGRICULTURAL EDUCATION.

UNDER this head the *Hearth and Home* copies the following remarks from *The Boston Journal of Chemistry*, which go to the very life of the question, How a farmer's son should, in the shortest time, acquire a good, scientific knowledge, of the importance of his own calling? Dr. Nickoll truly says: "In our view, a good and sufficient agricultural education may be acquired without a college course of study, without the aid of extensive laboratories, museums, herbariums, or mineralogical cabinets. We believe what is needed for the interest of agriculture is not so much 'agricultural colleges,' where young men are to have prolonged training in such branches of study as are taught in our ordinary educational institutions; but schools to which active farmers and their boys may resort in winter months, and learn by observation and experiment how, practically, to conduct farming operations to the best possible advantage." In such a school, conducted by a competent teacher, the theory of agricultural chemistry could be soon learned, with as much of the technicology in relation to the chemistry of agriculture, as would be necessary to make the student a scientific as well as a practical farmer. He would there learn the true value of all the elements of manure, their affinity for each other, and the great results arising from their combinations. With such knowledge, what before was a hidden mystery now becomes an acquired intelligence, which enables him to make, save, and apply his manure to the best advantage, and his labors will be lightened by the aid of his brains; and all the mistakes he may make thereafter will not be through ignorance, but only from neglect.

## EDITOR'S BOOK TABLE.

THE HANDY BOOK OF HUSBANDRY.—We have received from the publishers advance sheets of a new agricultural work with the above title, by George E. Waring, jr., of Ogden Farm, author of "Elements of Agriculture;" "Draining for Profit and for Health;" "Earth Closets and Earth Sewage;" and formerly Agricultural Engineer of New York Central Park. The specimen pages we have received give a very favourable idea of the contents, type, engravings, paper, and general get-up of the

book, which is intended as "a guide to farmers young and old." It contains practical information in regard to buying and leasing a farm,—when and where to buy,—commencing operations,—key-note of practical farming,—fences and farm,—buildings, farming implements,—drainage and tile-making,—ploughing,—subsoiling, trenching, and pulverizing surface soil,—manures,—rotation of crops,—root crops,—forage crops,—live stock, including cattle, horses, sheep, swine, poultry, &c., with winter management, feeding, pasturing, soiling, &c., with directions for medical and surgical treatment of the same,—the dairy in all its departments,—useful tables for farmers, gardeners, &c., &c.

The work is to be sold by subscription. Agents wanted every where. Parties wishing to sell the book, are to address the publishers, E. B. Treat & Co., 654 Broadway, New York. We should be glad to see "The Handy Book of Husbandry" extensively circulated among the farmers of Canada.

**THE POULTRY BULLETIN.**—We have received the first number of a periodical with the above title, issued at New York in the interest of the New York State Poultry Society. It is a modest, neat quarto of eight pages, and is intended not only to treat of poultry matters, but of "pet stock" generally, as pigeons, rabbits, song-birds, ponies, dogs, fish breeding, &c. The first number contains valuable articles on breeding for points, rump, influence of the cock, transportation of eggs for hatching, &c., together with a large number of advertisements. Subscription, one dollar a year, to be sent to the trainer of the N. Y. P. S., Box 316, New York City.

### The Farm.

#### ON THE VALUE OF THE MANGEL WURTZEL ROOT.

To the Editor of the ONTARIO FARMER:—

SIR,—As some of your readers are fastidious enough to complain that there is too much theory and not sufficient practical articles on Agriculture in your journal, I have concluded upon giving them one which may prove interesting to most farmers reading your monthly journal, who possess the desire to turn every operation to the best account connected with their farms—for I hold that it is almost next to useless for a man to look for prosperity, unless he has an eye to the success of everything going on around him—for to succeed with one operation on his farm, and to lose by another through want of foresight or skill which, I am sorry to say, is too much the case in this country, is by no means profitable or satisfactory. But, sir, before I proceed to comment on the value of the root, named at the head of this article, to the

farming community, I would wish to ask them, and more especially those who have spoken to me of the paucity of the "practical articles" in your journal on farming, at whose door that sin lies, if it be one? Or, in other words, on whom does the culpability rest? Certainly, I should say, not altogether on you, as editor, for they cannot so easily expect that all practical articles should emanate from you, or be concocted in your sanctum: but let me ask any complainers if all practice is not grounded upon theory? Has not the mind first to plan what the hand is to bring to maturity? If some of your readers want more practical articles, why do they not furnish communications to your journal? It is greatly to be lamented that there should always have been a dearth in every Agricultural paper that has appeared in this Province of practical and useful communications from farmers themselves,—and why, let me ask, should this be so? For although, doubtless, there are many who do not possess the ability to frame articles of sufficient merit for publication in your journal, it is equally plain there are hundreds, aye, thousands, possessed of both education and ability sufficient to enable them to contribute once in a while, creditable and useful articles, grounded on their own and on their neighbor's experience; and, I may safely add, that any number may be found equally, and even far better, qualified than I am, to write on such subjects. What a contrast, in this respect, do we find existing in the United States! It is not many years since I was one day in personal communication with Mr. Tucker, of Albany, when that intelligent, energetic and sincere friend of Agriculture told me that he had, at that moment, more voluntary matter from subscribers to his paper (*Alban: Cultivator*) lying in his desk than he could possibly insert during the next six months! and this, too, at a period when I well know that it was a rare thing for the *Canadian Agriculturist* to have a voluntary contribution once a month! Why, Mr. Editor, should there be such a wide difference between the two communities? Let us, however, hope for better things, and that the effect of Agricultural education with the rising youth of the country may be generative of more satisfactory results in the future than we can boast of in the past! And now, having been led away, very unintentionally, to a greater length on this subject than I had intended at starting, I will, as briefly as possible, say my say on the superior benefit derivable from the cultivation of the mangel-wurtzel for both fattening and milking cattle, as well as for sheep, in comparison with the turnip. In the first place then, I am convinced and ready to prove that from four to five hundred bushels more of the former can be raised to the acre than there can be of the latter—each crop having the same treatment in every respect, and I fully intend, if I can lay my hand on the publication I have in view, to show to the sceptical, if there be such, where and when it has been done in this country. But I have, myself, known in England, a nobleman's steward who, on a ten acre piece

of redeemed land, grow seventy-five tons to the acre of mangels! I ought, however, to say that it took two summers to bring the wet, foul piece of land sufficiently into subjection and order before it could be sown, and the enormous yield that the soil gave for some years afterwards was perfectly astonishing. In the next place it is an ascertained fact, by analysis, which will therefore admit of no doubt, that the saccharine and feeding properties of the mangel are at least one-third more than of the turnip. In the old country it was always kept in reserve to top up our stall-fed cattle with, unless we had sufficient potatoes for the purpose. These are decidedly preferable, but too costly. Then again, if the land is properly prepared, (highly manured and deeply ploughed) in the fall, the seed can be and ought to be sown by the middle of May, or earlier if the soil will admit of it, by which two advantages are gained.—The first is, that your plant is thoroughly out of the way of the turnip fly, (a most important point gained) which will ravage the mangels as badly as it will the turnip plant if you'll only give it the chance. The next great advantage is, that your crop is cleaned and safely set out before you begin sowing your turnip land, for I do not wish it to be understood that I advise all the root crop to be in mangels any more than I would advise that it should all be in turnips. It is far better to have a portion of each kind, as it might so happen that the crop, if all in one kind, might be lost. The next consideration is, that you get rid of the objectionable flavor in your milk, cream and butter: no trifling consideration you'll allow. Then, again, you will obtain more milk, and of a greatly superior quality from the mangel than you will from the turnip. But there are other considerations which ought to weigh heavily in this matter, particularly where a dairy is kept. You can pull the leaves from the roots for at least three weeks before housing them, and beneficially to the roots, and feed the leaves night and morning, at milking time, to your cows. Then after cutting off the remainder of the top with a hoe, you can harrow up the roots as you would your turnip crop. By a liberal supply of leaves after the above fashion, I have found the milk considerably increased, and the quality greatly improved at a time when the grass pasture begins very seriously to decline. There are, however, other roots, even more beneficial and to be preferred to the mangel—I allude to the parsnip and carrot, of which you can, generally speaking, produce as large if not a larger weight than of turnips, as the rows can be made nearer together and the roots left almost touching each other in the row. I am quite convinced, after many year's experience and observation, that generally there is more room given to these plants than is actually necessary. They go deeper into the soil in search of food than either the mangel or turnip, if the culture will allow of their getting there, and as they have considerably less top than either of the last-named roots, they can be left closer together with impunity. Many farmers object to growing the parsnip and carrot on account of their requiring more labor in getting up, but if the right method is pursued, it is more imaginary than real. At any rate, any extra expense you may incur, will be far more remunerated by the real benefit secured. The most economical way to proceed is by topping them with a sharp hoe, as you do your turnips, and, after gathering away the tops, run the land side of your plough as close to the

roots as possible, throwing out the soil as deeply as you can get the plough in, and you can then pull and throw them into your cart with nearly as much expedition and ease as you do turnips. I was very much pleased some time back, in perusing the very able and satisfactory report regarding the Toronto Lunatic Asylum, wherein the physician of the institution (Dr. Workman), alluded in his address, to the value of the mangel over the turnip as food for milch cows. The worthy doctor said, "they found the milk increase in quality as well as quantity since they had been feeding liberally with mangels instead of turnips." I allude to this circumstance that it may, I hope, to a certain extent influence root growers generally to try the experiment. This, I think, with the quotation I am about to give as the result of the mangel over the turnip crop, at the Wentworth root match in the fall of 1863, will, I hope, have its due influence with the farmers of other counties, for sure I am that it is only a question of time when other roots will be more justly appreciated than is the turnip of the present day. With the hope and expectation that my wishes, in this respect, may be realized, I am, Mr. Editor,

Yours truly,

LEICESTERENSIS.

GUELPH TOWNSHIP, 15th April.

P. S.—Extract from J. A. Bruce & Co's seed catalogue of 1869:—

Report of Judges on the Wentworth Turnip Match.—Peter Grant, Hamilton, 1st prize. Weight of Turnip, 53,550 lbs., or 892 bushels—30 lbs. per acre.

Peter Grant, Hamilton, 1st prize. Weight of Mangels (Yellow Globe variety), 85,820 lbs., or 1,430 bushels—20 lbs. per acre.

Each crop receiving just the same treatment throughout, side by side, as told me by Mr. Grant himself. L.

#### ARNOLD'S HYBRID WHEAT.

A limited quantity of these new varieties of wheat, the results of Mr. C. Arnold's carefully conducted hybridizing experiments, will probably be in the market after next season's crop, and we have pleasure in publishing extracts from the report of the committee appointed by the Board of Agriculture to examine the wheat. The committee consisted of Hon. D. Christie, Messrs. W. H. Mills and James Cowan, who state that in their opinion the wheats were "really new varieties—crossbred, and inheriting some of the valuable qualities of both parents; that is, they seemed to have the midge-proof character of the Amber Michigan, while Soules parentage had greatly improved the quality of the grain as compared with that of the Amber Michigan. Another important fact ought to be stated, viz: the ears of the new varieties were much larger than those of the parent kinds, while they had even more than the compactness of the Soules wheat. The yield per acre was large, being as Mr. Arnold says, 52 bushels per acre. This return was not the result of extra culture; the land was not better prepared than any good farmer would deem necessary for good crops."

A Committee appointed by the North Brant Agricultural society to examine these varieties of

wheat report in similar favourable terms, respecting the size of the berry, the productiveness, hardness, and midge-proof qualities of the grain. Many other agricultural authorities have given equally flattering testimony, and we shall watch the results of a more extended trial with much interest. Such experiments as those of Mr. Arnold deserve every encouragement, and in the present aspect of the wheat question, and considering the gradual deterioration of most of the old varieties, the matter is of special importance.—*Globe*.

#### CULTURE OF BEETS.

The culture of the beet is said to be worth more to a country as a fertilizer than the product directly derived from the treatment of the root, the waste pulp proving more valuable than the sugar. It is fed to barned cattle in large quantities. It is stated that in France, where the business has grown to enormous dimensions, the increase in cattle on account of beef pulp is wonderful. In the district of country surrounding the city of Valenciennes, where, before the production of beet sugar, 700 oxen were the total amount, 11,500 were the total amount raised last year. But this is not all. This enormous increase of stock has so much advanced the fertility of the land, that 192,000 bushels more wheat are raised in the same district per annum than were ever raised in previous years.—*N. Y. Com. Bulletin*.

#### EARTH CLOSETS.

The only positive requisite is the dry earth or dust. A supply is easily shovelled up from the roads in August or September, but if none was secured, and if artificial drying is inconvenient, or if none can be scraped up from sheds, the siftings of coal ashes answer very well, better as a friable divisor than the earth, facilitating the intermixture of the manure with the soil to which it is applied, but perhaps not quite so effectual in retaining all its good qualities. But these will not escape if the ashes are used in sufficient abundance to absorb all the liquid without becoming saturated with it. A common tinful of this very dry ashes or dust poured after every use of the seat, will effectually prevent everything offensive to either sight or smell. It is best received on the ground, as if any wooden receptacle is used it will absorb some of the liquids, and as the dust cannot follow them into the wood, the latter will soon become offensive. And it is more convenient to shovel the harmless compost off the surface of the soil than to lift it out in a wooden box. I have seen plans of self-working seats much simpler than those of Mr. Moule, but it seems scarcely worth while to take the space necessary to describe them, when an old tin cup answers perfectly, and conveniently.—*Country Gentleman*.

#### FARM GLEANINGS.

The average crop of potatoes in Maine the past season was about 75 bushels per acre, one-third of which have decayed so as to be worthless.

It is said that many farmers in England intend to grow oats largely in place of wheat during the coming season, in consequence of the low price of the latter cereal.

The cost of fencing a quarter section of land in California is more than five times the amount charged by Government for the land, owing mainly to the scarcity of timber.

TOWA plants every year a forest of 5,000,000 trees. Within considerably less than half a dozen years, 25,000,000 forest trees have been planted, and are now growing in the Northwest.

LAND well drained will continue longer to give crops without manure than undrained, because the roots have a wider range for food, and when manured will give a larger return for the manure used.

The *St. Louis Journal of Agriculture*, learns that much of last year's growth of barley is unreliable seed. Farmers should take especial pains to determine whether their seed is good, and sow none other.

The *Canada Farmer*, in replying to a correspondent's queries about plaster of Paris, makes a mistake surely in saying—"It is always burnt before being ground." For "always," read "never."

Hon. George Geddes will probably accept the Professorship of Agriculture in Cornell University. He stands in the front rank of agricultural writers in this country, and has long been a very successful farmer.

There are 12,000 windmills in constant use in Holland at the present day, for the simple purpose of drainage. They are almost of colossal size, each lifting from 10,000,000 to 50,000,000 gallons of water every 24 hours.

Two farmers in Kansas recently had a lawsuit about seven pounds of butter. When the jury retired they took with them the butter, procured some crackers, ate them together, and returned a verdict of "no cause of action."

An English writer thinks the American early potatoes will come to an end ere long, for as each new variety is claimed to ripen about ten days earlier than any other, the time between planting and digging will soon be used up.

J. J. THOMAS says that fortunes are lost by farming in three ways—in badly wintering stock, in want of proper attention to rotation of crop, and in raising weeds. He calculates that it is easy for a farmer to lose \$20,000 in 40 years by raising weeds.

J. S. STONE, of Belvidere, Ohio, in reply to an inquiry recently made for a log-roller to clear new land from logs, states that the best way to get rid of large logs is to blast them with powder. It takes but little powder, he says, and the logs can then be easily handled and put in piles for burning.

The *Milwaukee News* has an article cautioning those who are thinking of engaging in beet-sugar making, to take into consideration the possibilities of failure before engaging in the enterprise—in other words, cautioning them to act only after cool deliberation, and not allow themselves to be carried away by a mania.

The *New England Farmer* says that the Massachusetts Agricultural College has property amounting to \$196,500, of which the live stock is valued at \$3,880, tools and vehicles \$2,240, produce \$4,345. The balance of accounts between the farm and its expense is \$2,567. There were 119 students in 1869. The trustees estimate that the buildings needed to accommodate the faculty and next class will cost between \$100,000 and \$200,000, according to the number provided for.

## RULES FOR HOUSEKEEPERS.

EVERY house should have a dry, cool storeroom, convenient to the kitchen.

Have a box for every kind of spice, and have them labelled.

Put dried herbs in paper bags, and hang in a dry place.

Dried fruit should be tied in cloth bags, and hung up.

Vegetables should be put in sand in the cellar for winter use; those not wanted till the spring, buried in the ground.

Flour should be kept in a barrel or bin, with scoop to dip it with, kept covered, and always sifted before using, both for lightness of the food and cleanliness.

Indian meal should be sifted and put in a barrel where it would keep cool and dry, occasionally stirring it, particularly in warm weather, as it is liable to get musty or sour.

Rice should be kept in a dry tub, and when used, picked over and washed before using.

Hominy should be washed in several waters to get out the hulls.

Sugar should be bought by the barrel, as it is more economical than buying in small quantities. It can generally be purchased lower by the barrel, and is more convenient.

It is a good plan to purchase molasses when you can get part of a hogshend, then draw off the molasses and put in a firkin or demijohn for use. The sugar at the bottom can be used for some kind of preserves or pickling.

Coffee should be bought in quantities, as it improves by age.

Tea is cheaper to buy by the box, but should be well covered; if bought in small quantities, put it in a tin can.

Raisins and starch are cheapest bought by the box.

Zante currants should be washed and dried, then put in a jar for use.

Lemon and orange-peel should be dried, and pounded, put in glass bottles, well corked, for use.

Nutmegs should be put in a box with the grater; cinnamon, cloves, allspice, mace, and pepper should be bought whole, then ground fine and put in boxes for use. Mustard should be ground and kept tight.

Sweet herbs should be gathered on a dry day, spread until dry, then put in paper bags. It is well to grind some and put in bottles for use.

Hops should be kept in paper bags and hung up; they are not good after a year old.

Codfish should be purchased in small quantities, as it is unpleasant about the house. If put in a dry place it will get too dry, if too damp it will spoil; it must be changed from garret to cellar.

Cream of tartar, tartaric acid, essences and sal volatile should be kept in glass bottles, particularly the sal volatile, which should have a ground glass stopper. Use cold water for dissolving it when used.

Keep cheese in a dry, cool place, and after it is cut, wrap a cloth around and put it in a tin box. If it gets dry before using, grate it and pour on brandy, then pack tight in a jar, and it will be better than at first.

Butter should be kept in dry, cool cellars in the Summer, and in the Winter in an outhouse or out-doors.

Smoked beef should be kept in a bag and hung up. While using ham, put in a bag and hang up.

Keep bread and cake in a tin box, well covered; it will keep fresh longer than any other way.

Strawberries, pine-apples, and all delicate preserves may be kept in a box, with sand or sawdust filled around them, and they will keep longer.

All salted provisions should be watched, and see that they are kept under the brine, for if one piece of meat lies up it will spoil the whole barrel. If the brine looks bloody, it must be scalded, and more salt added; when cold pour back.

Tallow should be kept in a dry cool place. All kinds of oil in the cellar. Salt should be kept in the dryest place that can be found.

No housekeeper should be without good vinegar; the best is made from cider or wine. The washings from honey (and after making jelly or wine), should be poured into the vinegar. Cold tea should be saved for this purpose.—*Mrs. Laura Trowbridge, in Excelsior Cook Book.*

## POULTRY HINTS.

Never cut a fowl's wing, to prevent its flying. Pull out its flight feathers of one wing.

In breeding "Games" don't breed "to feather" and expect superior endurance and other fighting qualities.

Wright says, "Any appreciable amount of snow water, soon reduces fowls to perfect skeletons." Why is it?

Mcal-worms are excellent for chicks, but half a dozen daily, is sufficient for them until they are four weeks old.

Bread soaked in porter, and well dusted with cayenne pepper, is excellent food for fowls out of condition.

Exposure to cold wind especially to a draft at night, causes colds and catarrhal affections in the most robust fowls.

Pork scraps or greaves is best fed, softened in hot water, chopped fine, and mixed with bran or boiled potatoes. If the cake is left for fowls to pick at, as is frequently the case, the pieces torn off are apt to swell after being eaten, and cause the fowls to be crop-bound.

Bear in mind that prize fowls almost always throw some birds which should never be seen in the exhibition room.

It is advisable to set a hen at night, and without a light if she be a timid one. Eggs sprinkled with water, on the 14th, 17th and 20th day after they are set, will rarely have dead chicks in them, at the end of the time for incubation.

TO REMOVE OLD IRON MOLD.—Dr. Thomson recommends that the part stained should be re-moistened with ink, and this removed by the use of muriatic acid, diluted with five or six times its weight of water, when it will be found that the old and new stain will be removed simultaneously.

### The Live Stock.

#### THE FAT STEER "SIR ANDREW."

The accompanying Engraving is an admirable likeness of the first prize-taker among the fat cattle at the last Provincial Show. "Sir Andrew" was a high Short-Horn grade steer, three years and a half

old, and shows very distinctly the effect of careful breeding and high feeding. He was sired by "Red Prince," dam "Lucy," by "Guelph," the stock having been previously crossed several times by thorough-bred male animals. "Sir Andrew" carried off the first prizes wherever he was exhibited, viz.: At the Easter Fair, Guelph, in 1869; at the



last Provincial Exhibition in London; and at the South Riding of Wellington, open to all Ontario, at which he took, not only the first prize in his class, but the silver cup, as the fattest animal on the show-ground.

He was sold to Setchell Brothers, Ottawa, at 15 cents per pound, live weight, and weighed when

delivered to the butcher two thousand three hundred and thirty (2330) pounds.

Mr. Armstrong deserves much praise for having bred and fattened so fine an animal, and we hope his example will stimulate others of his fellow-farmers to distinguish themselves in the Show-ring and the market.

### USAGE OF LIVE STOCK AT PROVINCIAL EXHIBITIONS.

To the Editor of the ONTARIO FARMER.

SIR,—With your permission, I desire to call the attention of the members of the Council of the Provincial Agricultural Association to a few matters in connection with the annual exhibitions of the Association, which I think deserve their consideration, and afford room for improvement. Probably no one will deny that the live stock department in these exhibitions is one of the most important features, if not *the* most important, connected with them. Let our Provincial Fairs be stripped of the display of horses, cattle, sheep, swine and poultry, that has made them so famous, and who will deny that their greatest attraction is gone? It is safe to say that the interest taken in them would be small compared with what it has been, and the attendance of visitors correspondingly small. Now I think a little consideration will convince any reasonable person that it is the worst-used department in the whole Exhibition. For the reception of the articles exhibited in other departments, a grand building is erected at an immense expense, where those articles can be displayed to great advantage, and men are paid to take care of them, and all this without any expense to the Exhibition; while for the live stock, which is infinitely more valuable, and just as liable to suffer from exposure, temporary sheds, which are frequently uncomfortable and inadequate, are provided, and if a box stall is required for a horse or a bull, an exorbitant rent fee is charged. Besides these things, feed for stock is only provided at extortionate prices, for an inferior article, and parties are not allowed to sell feed upon the ground at their own prices, because the Board has granted that special privilege to a special party, who is allowed to monopolize the business. How very different is this from the management of the State Fairs of our neighbors, where an abundance of good hay is furnished by the Association for the stock, without any charge,—where stalls are provided free, and Railway freights both to and from the Fair are free. If it be conceded that this is one of the most important features in the Exhibition, surely it ought to be encouraged. I write, not in the interest of our leading breeders and exhibitors of fine stock alone, for I know that they can afford to pay their own expenses, that by showing a large number of things they can secure enough prize money to pay the immediate expenses of their attendance at the Fair, besides finding a market for their stock; but I plead in the interest of the new beginners in this enterprise, and I hold that if greater encouragement were held out, there would be more exhibitors, and consequently greater interest manifested. For instance, according to the present arrangement, if a person living a considerable distance from the place where the Fair is held desires to exhibit a horse or a bull, he knows that if he is successful in

winning a first prize it will barely pay the expense of his carriage and feed, while if he fails to gain a prize the whole expense is lost to him, and in many instances these considerations deter persons from coming out. The expense of preparing stock for exhibition is heavy, and the charges for transportation are also great. Why cannot the same arrangements be made with our Railroads that the State Societies across the lines make with their roads? Canadians who take stock to the State Fairs can travel to almost any point with their stock by rail free of charge, and return free also. Surely the immense extra passenger traffic which these occasions bring to the railways ought to be sufficient to pay the expense of conveying articles to the Fair, and allow a good margin for profit. When we consider that it is these that make up the Exhibition and draw the crowd, surely some liberal policy ought to be adopted to encourage our young farmers to embark in this enterprise. I claim that in fairness and reason, stock ought to be transported to and from the Fairs free of expense to the exhibitor, and also that stalls and fodder should be provided free.

Hoping that these suggestions may receive the careful attention of the Board,

I am, yours, &c.,

YOUNG FARMER.

[For the ONTARIO FARMER.]

### SHORTHORNS.

BY MR. W. GOMERSALL, OTTERBURN, YORKSHIRE, ENGLAND.

As the day is gone by for arguing on the merits of the pure-bred Shorthorn, the following remarks, it is hoped, will be acceptable without further apology than the mention of the fact that the writer, after twenty-five years' experience as a breeder, finds his affection for them stronger than ever.

Pure-bred Shorthorns have, from the very beginning of the present century, been largely exported from England to nearly all the countries of Europe. They have made their way to the United States; and Canada, Cape of Good Hope and South Australia, have each dipped (as the English breeder loves to term it) into the pure blood. Even at the very time these remarks are being penned, the shipment of a couple of Shorthorns is taking place at Liverpool, en route by the great Pacific Railroad to San Francisco!

In the presence of these facts, it seems quite unnecessary to advise either Canadian farmers generally, or Ontario farmers particularly, to breed pure Shorthorns. Leaving that branch of the subject then, it may, nevertheless, be interesting to many readers to have a few practical remarks sent across the Atlantic on the breeding of Shorthorns.

Those parties who have already commenced, and those who may contemplate beginning to keep pure Shorthorns, will probably think it the most interesting part of the subject. That it is a very important branch of the subject, all will willingly admit. In the first place, then, unless farmers as

farmers can make Shorthorns profitable, they were better left in the hands of gentlemen or amateurs, who make use of their time and money alike from patriotic motives, or from mere fancy, or for pleasure, or even to catch "the bubble reputation."

Addressing the practical farmer, then, the main thing for his consideration is—and he must be sure to keep it in view—to be certain that his cattle keep, or materially assist in keeping, him. He must not on any pretence whatever, fall into the fatal error of having to keep his cattle. Investments in high-bred and high-priced Shorthorns have not unfrequently ended in that dilemma, and brought on a fit of disappointment and disgust. It is by no means a necessity that anyone taking a fancy to keep pure-bred Shorthorns, need begin by giving very extravagant prices. Good, useful, and pure-bred stock, can be obtained in England at moderate prices, and probably the same may be the case in Canada. As a proof of the fact, about 1500 pure-bred animals were brought to the hammer last year in England at an average of £35. It does not follow that a "Duchess" or a "Booth" Heifer can be bought cheap. Certainly not. There are yet, even, so few of *them*. But then, on the other hand, every variety of strain or mixture can be obtained, from a nearly "pure Booth" to as near a "pure Bates." In fact, we in England have several strains of the Br<sup>o</sup>es blood besides the renowned "Duchesses." It may not be impertinent to mention here, that the two rival strains of blood are not unfrequently both beaten at the Royal and other important shows, by those first-class animals that are constantly springing up from stock of good pedigree, though not specially allied to either "Bates" or "Booth." This fact, however, so far from militating against the argument for pure-bred cattle, is one of the strongest reasons in its favour, inasmuch as it so distinctly proves what excellence may be expected to spring from a "good pedigree," independent of the "high standard of the rivals."

One thing, however, should mark the commencement of a head of Shorthorns, and it is this: to buy some fair sized females, and be particular about their ability to send money through the *pail*! It is of no use for a "rent-paying farmer" (as we say in England) to keep one cow to breed a calf, and another cow to rear it. Yet we have "herds of Shorthorns" in England, highly fed for exhibiting, to please the fancy of owners or the eyes of visitors, that require nearly an equal number of *nurse cows* to support their offspring, their lacteal properties being all but obliterated by high feeding when young, and the digestive organs entirely devoted to the accumulation of fat, both internally and externally. Still there may, occasionally, be times

when an extra dairy cow may be necessary to keep up a supply of *old milk* for the young calves; for there is no food more natural than milk, and the butter that has been abstracted can always be replaced into the *old milk* at a cheaper rate than the consumption of new milk.

Without further detail on this point, we may at once go back to the breeding of stock; and on that point it is pretty evident that an animal with a good long pedigree will be more certain to perpetuate her own characteristics than an animal with a short pedigree. There is always some doubt about the latter, and frequently disappointment. Some farmers attempt, and very laudably, to *make* Shorthorns, by the constant use of pure-bred bulls with ordinary cows, and having got as far as four crosses, are allowed to enter them in the herd-book.

But why this round-about process with those who can afford, when a moderate price will purchase the animal of good pedigree to begin with? It is not every farmer who can afford to purchase even those moderate priced Shorthorns, because they are of necessity higher in price than the ordinary stock of the country; and therefore such farmers who rear young stock should not fail to keep in view the great advantage to them of the pure Shorthorn cross, through the *pure* Shorthorn sire—year by year and generation after generation; and by that process gradually improve the symmetry and permanent character of their herds, and at the same time also the general stock of the country. And it may not be out of place here to advance the opinion, that so far as live stock are concerned, the endeavor of every one to improvement acts in a material manner on all below, and has, in fact, a direct tendency to improve all those beneath their own standard.

There is a very peculiar pleasure in watching the progress and general development of young stock, whose ancestors have been in your possession for several generations.

No such pleasure attaches to the casual and migratory stock of any country. It may be assumed as a consequence that such watchful attachment has the very best influence on the stock of any country.

It is highly probable that the first efforts at establishing and permanently fixing the fine characteristics of the Shorthorn, had their origin in the minds of those enlightened and enthusiastic breeders, who persevered so steadfastly during the last century, with but scanty materials, upon the principle of a watchful attachment to old favourites. The lapse of less than a hundred years has served to prove with what glorious results those efforts are crowned. Similar results must attend like efforts,

in degree, when persevered in, even on the ordinary stock of any country. The stock of any country would rapidly increase in value every way, if ordinary breeders would keep constantly breeding from *their* best animals only. Attachment to animals bring with it another very important influence—the better provision and greater care for their progress and maturity. The Shorthorns of England enjoy this advantage in an eminent degree, the strongest attachment, as well as the most assiduous care, being co-existent in the thinly-populated and remote valleys of the North of England, from whence the pure Shorthorn dates its origin.

[NOTE BY ED. O. F.—The foregoing article finds its way to our columns through John Leeming, Esq., of Montreal, a personal friend of the writer, who having sent the ONTARIO FARMER to Mr. Gomersall during last year, lately received, along with a highly complimentary reference to this journal, the valuable contribution which precedes this note. We hope Mr. G. will continue the subject in future articles. It is a very large one, and one in regard to which he not only takes a lively interest, but is evidently quite at home. We cannot but wish that others who find pleasure and advantage in perusing these pages, would imitate the example of our Yorkshire contributor, and send us jottings of their observations and experiences in rural matters.]

#### WINTERING BEES.

To the Editor of the ONTARIO FARMER:

SIR,—As we are safely through the winter, some remarks in regard to wintering bees may not be out of place. The past season was, perhaps, the most unfavorable for bee keeping of any on record. Very few swarms came out before the first of July, and those a week later not more than half filled their hives with comb. Several of these weak swarms have been brought through by timely feeding, and kept in the dryest possible manner—damp being the greatest evil bees have to encounter. Timely cleaning out of all droppings—and a hive so constructed that this can be done at all times—and the bees left in the open air to dry away all damp that will accumulate, and give them the full benefit of the winter sun, that great invigorator of all animal life, stimulating them to go out to discharge their secretion—a necessity quite overlooked by many bee-keepers. Many old and stupid bees will never return which, if confined in the hive, would fall to the bottom and die, to the great detriment of the inmates above. Keeping bees in the open air is a pleasure that those imprisoned in pits, cellars, lofts and all manner of places do not enjoy. Nothing but a damp, dreary

foul-aired place to pass the winter in, which is quite contrary to the habits of the bee in his natural home in the hollow tree, exposed to the most extreme colds.

I have had opportunities the past winter to examine bees in various conditions, and have found that those who winter their bees in cellars and pits require to give more skill and care than those leaving them on their summer stands. A little neglect in the way of ventilation is fatal. In one instance a so-called experienced bee-keeper lost his whole stock through a little neglect in not closing the ventilation on a change of weather. Others bring them out damp and mouldy and smeared, with faces inside out, many of them in such a weak and sickly state that they fall a ready prey to robbers. Bees kept in lofts or out-buildings fare worse than those on out-door stands, as they have no relief and are subjected to continual damp which accumulates around them and ill fits them to stand the cold. When the spring sun enlivens them they get uneasy and are removed to the stand, where they are exposed to a sudden change of temperature. If your bees are strong there is no difficulty in wintering out of doors, as the cold never kills bees when kept in a dry, airy place. If your stocks are weak keep them on their summer stands, where you can feed when required early and late. Have your hives so made as to open easily, so that you can take out the frames and pour the feed on the combs and replace. It is sometimes necessary to shift the frames so as to bring the honey within reach of the bees. If you find them very weak take a frame from a strong stock and wing off a quantity of the bees, which will strengthen and, perhaps, save the weak stock. A very simple bee-feeder is made with a perforated tin, formed into a cup, and settled into the hole in the honey-board, where the bees can be reached at any time. I have two stocks, hived on the 15th and 17th July, which are now doing well, being in a convenient hive where their wants can be attended to. Bee-keeping is both a pleasure and profit when rightly understood; but, now-a-days, there are so many systems that tend to make bee-keeping a mysterious and expensive operation that none but the wealthy can think of entering into the business. By the time we study up one improvement we have another novel arrangement to be looked into, and so on.

B. LOSEE.

Cobourg, April 15th, 1870.

[NOTE BY ED. O. F.—Some points in the above communication are open to question and may, perhaps provoke a rejoinder from some of our bee-keeping readers,—possibly from the editorial pen, in a future number.]

**THE PRINCE OF WALES PRIZE HERD AT THE LAST PROVINCIAL EXHIBITION.**—By some unaccountable slip of the pen, we fell into the mistake of saying in our last issue, when speaking of Mr. John Miller's prize heifer "Ruberta," that she was "a conspicuous member of the herd which took the Prince of Wales prize at the last Provincial Exhibition." What we ought to have said was, that "Ruberta" was one of the herd that then *competed* for the Prince of Wales prize. It was taken by the herd owned by Mr. John Snell, of Edmonton, to whom we gladly restore the laurels of which we inadvertently deprived him.

#### A CHAPTER ON HENS.

Keeping poultry for both pleasure and profit is destined to be an institution of the farm. For the pleasure of it, the larger the variety, the greater the satisfaction, each breed having some points of excellence, and all together they make pretty pictures and interesting studies. For the profit of it, if the gain is coming from eggs, one or two kinds, at the most, should be selected; if from chickens (early or late,) some variety that may not be as good for eggs, but better as mothers; or if from breeding to sell, something rare or fanciful or "game" will be desirable.

We purpose a brief mention of the characteristics of each breed, in order that those unfamiliar with poultry and poultry-books may be able to judge which will best supply their wants.

Beginning alphabetically, we will take—

**BRAHMAS.**—There are two varieties of this breed—light and dark. The light are chiefly white in the color of their plumage. The dark have (mainly) dark-colored feathers, slightly and evenly tipped with white.

They are among the best layers, usually commencing at six months old; sometimes laying forty eggs before any manifestation of a desire to set, and in the year will produce a satisfactory number of the largest-sized eggs.

The dark variety is the largest—cocks of this kind weighing sometimes fifteen pounds; thirteen and fourteen being quite common weights. They are hardy, quiet, grow fast, and, taking all in all, are a first-class bird for either eggs or the table.

**COCHINS.**—The three principle colors of the Cochins are white, buff, and partridge color—the two former the most popular. The white should be all white, and the buff any shade of buff, but of no other color. They are a large bird—cocks weighing ten or twelve pounds, and hens from eight to ten pounds. The shanks are feathered down to the toes, and the legs are generally short and set widely apart.

The Cochins are fair layers, but they are unexceptionable setters, always wanting to experiment in that line after every dozen eggs, and are with the greatest difficulty induced to delay a three weeks' incubation. They are a good breed for family use, will give a fair amount of eggs, and will hatch as many chickens as any other kind in the same time; but the chickens need to be eaten young to be the most unexceptionable to the taste. They can be kept in a small space, bear absolute confinement better than most other breeds, and are better for winter layers than summer.

**CREVE CŒURS.**—The plumage of this fine French variety is mostly black, and they are distinguished from all other breeds by a comb which takes the form of two well-developed horns, the whole surmounted by a black crest. They are quite large, weighing from seven to ten pounds. The quality of the meat is said by French writers to be among the best. They mature early; they do well in the closest confinement; lay a fair quantity of the largest-sized eggs; are averse to setting; and are a desirable variety wherewith to stock a poultry-yard.

**DORKINGS.**—There are three varieties of this breed—gray, silver gray, and white—each having about the same characteristics. They weigh from eight and a half to fourteen pounds, and their qualities as a table bird are unrivalled. They are not good layers except when young. They are most excellent mothers; but the chicks are very tender, and unless kept in a warm, dry pen, but a small portion of those hatched ever arrive at maturity.

**HAMBURGS.**—There are four varieties of this beautiful and valuable bird, all of about equal merit. They are quite small, weighing from six to seven pounds; will almost always lay from two hundred to two hundred and fifty eggs a year; consume but little food. They love a wide range; will fly over a fence ten feet high. The chicks are hardy; the hens do not care to set, and as egg-producers are probably the most extraordinary breed known.

**HOUDANS.**—This variety resembles the Dorkings. Their plumage is usually white, with large black spangles, and the head is surmounted with a large-sized Polish crest.

They are a most valuable breed. The hens are prolific layers of good-sized eggs. The chickens feather with great rapidity, and are fit for market at four months old. The grown fowl is about the size of the Dorkings, weighing from eight to twelve pounds; and taking all the good qualities together, they are one of the best breeds that a "fancier" or farmer can have.

**POLANDS.**—There are (at least) five varieties of Polands, all of which are about the same size, and mainly distinguished by the difference of color. This breed has its solid merits. They mature slow, are quite hardy if kept in a dry place, and, under favorable circumstances, are most prolific layers, never wanting to set. They weigh about six and one half or seven pounds, and, on the whole, are desirable to have in any farm-yard.

**SPANISH.**—The white-faced black Spanish are truly a most beautiful breed. They weigh from six to eight pounds. They are most excellent layers, beginning when six months old, and giving five or six eggs a week for a whole year. The eggs are not very fertile, and the chickens are not as strong as many other varieties. Their eggs are white, large, and unrivalled in delicacy of flavor. With a warm, dry place for them, they are a desirable breed for any farmer.

There are at least a dozen other breeds, but our space will not allow of further mention in this issue.

We advise all our farmer friends to add to their stock from one or more of the breeds named, or from some other perhaps more "fancy," as they may elect, referring them to our advertising columns for information as to where both the birds and the eggs can be bought.—*Heath and Home.*

## LIVE STOCK GLEANINGS.

THE Nova Scotia Dog, Pigeon and Poultry Club, propose to hold a show in Halifax in June next, provided the requisite funds can be obtained. T. D. Almon, M. D., is the Secretary.

THE *Ulva* (N. Y.) *Herald* gives the following reports from 384 cheese factories:—They have 128,708 cows, and have made this season 528,746 cheese, of the average weight of 6,158 pounds, of which 368,268 have been sold, leaving 170,478 on hand. They are making daily 3,920 cheeses.

IN the *Agricultural Gazette*, England, are published some directions as to the choice of cattle for fattening, by Mr. Hedly. He thinks the head ought to be the first consideration, and that an animal with a broad, full, capacious skull, will be found every way superior to one with a long, narrow skull. A large, bright, open, soft eye, he finds denotes aptitude to fatten.

A PECULIAR effect of the proximity of railroads on the hatching of eggs has been mentioned in various papers. It has been found that there are scarcely any chickens raised in poultry yards which are situated in the immediate neighbourhood of the rails of a much frequented railroad. This fact is supposed to result from the earthquake-like trembling shaking the soil caused by passing trains, which exert an unfavorable influence on the eggs.

A CORRESPONDENT of the *County Gentleman* planted a few acres of turnips, which were large enough to begin to feed the first week in July, when they were fed to pigs, and no other feed given until the last week in September. No lot of pigs could have done better, growing and keeping in good condition all the while. He does not advocate cooking white turnips for pigs under any circumstances. They are only fit for them raw in warm weather. Steamed Swedes are good mixed with plenty of meal, but potatoes are so much better than half the meal mixed with them would feed as fast.

MILKING TUBES.—Patent milking tubes are advertised. A correspondent of the *Practical Farmer* says, that forty years ago rye straws were used for this purpose; one of these inserted in each teat produced a constant flow of milk until the udder was emptied. Turkey quills were found better than straws. The writer finding the supply of milk diminished, and learning that in cows thus milked the teat became hardened, and lost the power of contracting to such an extent, that the milk was wasted in the fields, the tubes were abandoned, only being used in case of a sore teat, which could not be squeezed without giving pain or preventing it healing. The writer says if he had a dairy of fifty good cows, he would use these tubes on only one (and that a low priced one) for at least a year before adopting them altogether.

PARISIAN MODE OF PRESERVING MILK.—A simple method of keeping milk fresh for a long time, is now extensively practiced in the vicinity of Paris. This consists merely in adding to each quart of fresh milk, before the cream has risen upon it, about six grains of bicarbonate of soda or potash, and then placing the milk in bottles, which are to be tightly corked, for four hours in a water bath, heated to a temperature of about 190°, taking care not to go beyond this limit. When the bottles are removed from the bath, they are to be made perfectly tight by coating the cork with wax, and the milk can be kept a long time unchanged.

## The Garden.

THE GOOSEBERRY AND CURRANT WORM;  
HOW TO DESTROY IT.

Many persons attach great importance to the cultivation of the larger fruits, such as the apple, pear, plum, &c., while the small fruits are almost if not entirely neglected. This is a great mistake, as the small fruits may be relied on for a crop, when the large kinds often fail. We know of no fruit trees that will yield a greater crop for a small amount of pains, bestowed, than the currant and gooseberry; and if they were not so common and easily cultivated, there can be little doubt that they would be more highly esteemed. This is especially the case with respect to the currant.

The greatest enemy of these fruits is the green caterpillar or currant worm. Like many of our insect pests, it is said to have been imported from Europe, and it seems to be yearly becoming more troublesome, of a larger size, and more voracious. In a very short time it strips the trees of their foliage, leaving the fruit exposed, in which state it soon perishes. In some localities the evil has become so serious that it is difficult to find a lot of trees that are not devastated by this pest. Thus it is that many persons, after repeated attempts to banish this caterpillar, have finally become discouraged, and given up the cultivation of the currant and gooseberry.

Various remedies have been proposed. We think, however, there is none so efficient and simple as White Hellebore, a powder to be obtained at the druggists for about 30 cents per pound. Some persons may be aware of this being a specific for the currant worm, and yet not have any definite idea how to apply it. We will therefore give plain directions for its use, the results of our own practice.

Three large heaped tablespoonsful of powder to a patent pail of soft water, being about a spoonful to the gallon, will be found sufficient. Let this be well stirred occasionally for from twelve to twenty-four hours, and left to settle; then pour off the clear liquid into a watering pot with a fine rose; and so soon as the worms appear on the bushes, sprinkle them with the prepared liquid sufficiently to wet all the leaves. Evening is the best time to do this; and if you walk round and examine your trees on the following morning, you will have the satisfaction of finding the pests all dead or dying underneath them. If you wish to prepare your liquid more quickly, you can expedite the process by pouring scalding water on the powder, as in making tea. We do not waste the grounds or sediment, but put it in a bowl and lave it over some of the bushes with the hand. None need be afraid of

poison in the use of the above. Many substances, harmless to man, are destructive to insects. Olive oil, for instance, though it may be used with impunity by man, is death to an insect. The rains and dews take any injurious influences away from the fruit; and there are few persons who cook Gooseberries or Currants without first washing them. When this precaution is taken, every vestige and trace of Hellebore will be removed.

### THE BEET.

The Beet will grow in any ordinary garden soil, but the quality and size may both be very much improved by selecting a deep, light, rich, sandy loam. Where the soil is poor, it should be enriched with well-rotted barnyard manure. It is a good plan to sprinkle wood ashes over the bed, and rake them in previous to sowing the seed, as this will strengthen the young plants, and keep off insects. For an early supply, the seed should be sown as soon as the soil can be worked in spring; but for winter use, about the 10th of June is soon enough. The ground may be laid out in beds about five feet wide and eight or ten feet long; then, after being thoroughly dug and raked smooth, the drills should be marked out fourteen inches apart, and an inch and a-half deep. The seed should then be sown and covered the depth of the drills. When the young plants show signs of being crowded, they should be thinned out about six inches apart. The roots will be fit for use in the early part of July, and should be drawn frequently, so as to give room to those that remain. Some use the leaves for greens, as a substitute for spinach. They are said to be very tender and well-flavored. The winter crop should be taken up before the severe frost comes, as extreme cold destroys their fine quality, and causes them to decay. Care must be taken in gathering them not to cut or bruise the skin. After being spread to dry for a few hours, they should be stored away in sand or earth, where the frost will not touch them for the winter.

Varieties are numerous. For early use the Bassano is highly esteemed. The Early Blood Turnip-rooted is not quite so early as the Bassano, but is hardy and very popular. The improved Long-Blood is an excellent winter variety, being sweet, tender, and of a dark red color.

### MEDICINAL PROPERTIES OF THE ONION.

In a medicinal point of view, the onion is of more importance than any other of our domestic vegetables. It is a powerful diuretic, and is said, as such, to have been successfully used as a specific in dropsy, gout, gravel, lumbago, and generally in all affections of the kidneys, and urinary organs. As an instance of its efficacy in dropsy, we shall relate a circumstance which came within our observation

a few years since. We were travelling through one of the middle departments of France, in company with a very eminent counsellor, and member of the Parisian bar, who had turned his attention to discovering the medicinal properties of simples in illustration of a favorite theory of his, that all the ailments that afflict mankind may be removed by remedies from the vegetable kingdom, to the utter exclusion of all mineral substances.

One day we stopped and claimed the privileges of hospitality at a beautiful "chateau" belonging to a distant relative of our friend. We were most kindly received by the lord of the mansion; a fine-looking middle-aged man who, with tears in his eyes, informed us that his lady, whom our friend described as a most gentle, kind-hearted, and noble minded dame, was dying of dropsy, all the medical men in the neighborhood having stated that nothing more could be done for her. "That remains to be seen," said our friend hastily. "I must see her, forthwith," and he proceeded to her bed-chamber, dragging us with him—a circumstance which will create no surprise in those acquainted with the manner of the French. The lady was alarmingly ill and had swollen to an enormous size; she had been tapped once before, but on the present occasion had absolutely refused that mode of relief.

The Parisian lawyer, nothing daunted called for some white onions. Having peeled a sufficient quantity he filled with them a pepkin or coarse earthen mug, holding about three pints. Having put in as many onions as the vessel would contain, he filled this with cold water, covered it and set it in the midst of the warm embers, where the water would simmer with very little ebullition. He let the onions stew until they were reduced to a pulp, and the water to half its original quantity—a process which required three or four hours, as the vessel was kept closely covered and the fire slow. He strained the liquor through a linen bag, carefully expressing every drop of juice from the pulp. Having extracted the liquor, he carefully weighed it, and then, gently over the fire, but without boiling, dissolved in it its own weight of coarse brown sugar.

Of this syrup he gave his patient two tablespoonfuls every two hours, a fresh quantity being made, so as to keep up a constant supply. In a day or two the lady felt better, and in about six weeks, during which time we remained at the chateau as guests, she was able to walk with us about the grounds. We had occasion to visit our kind host about six months after our former visit and found his lady enjoying excellent health, and valuing her cousin's onion-syrup as a specific for all the complaints "that flesh is heir to."—*Cor. English Magazine.*

### THE ASTERS.

BY JAMES V. CK, ROCHESTER, N. Y.

It hardly seems possible that there was ever a time when the Aster, the Stock, and the Balsam, were unknown in the flower garden, and yet even the popular and universal Aster has been known in Europe and America only about a hundred years. A missionary carried the seeds from China to Paris in 1730, and the next year the florists of London obtained a few of the seeds ripened in Paris.

Thirty years ago the Aster was a poor ragged

flower, with a very unsightly centre, and no lover of flowers would tolerate in his garden for a moment such coarse-looking objects as form the colored specimens in Mrs. Loudon's work on Ornamental Annuals, published in 1840. For some fifteen years the attention of seedsmen has been directed particularly to this flower, and the improvement has been most marvellous.

Really astonishing is the improvement made in the Aster from year to year. We have them in our grounds now, so large, than an engraving of one of natural size would almost cover a quarto page—almost as large as a Peony, and as perfectly double as the best Chrysanthemum or Dahlia. For an autumn display, the Aster is unsurpassed. Give the Aster a deep, rich soil, and mulching with coarse manure is very beneficial. Plants may be grown in the hot-bed, cold-frame, or a seed-bed in the garden. They can be transplanted very easily. Twelve inches apart is the proper distance for making a showy bed of the large varieties; the dwarf kinds may be set six inches or less. The tall, large-flowered varieties, need a little support, or during storms of rain and wind they are easily blown down when in blossom. Set a stick in the ground, close to the roots, and fasten the stem to it at about the centre. The top of the stake should be about six inches below the flowers, and it will not be seen. Engravings are needed to illustrate the habits of the several varieties.

#### CARE OF LAWNS.

THERE is no season of the year when careful and persistent watchful attention and labor are more requisite to the perfection of a lawn than that of the early spring months. Nor is there any season during which the same amount of labor is better repaid by the future results. A severe rain, followed by a sharp frost, or a half dozen clear days, warm and bright, with cold, freezing nights, always result in throwing more or less of the turf and grass roots, which, if not at once and almost daily rolled and again pressed down, would by exposure at this time die out; besides, if the lawn be now left to take its own course without the use of the roller, there will ensue more or less of a rough, uneven surface, caused by some lines of soil being finer and heavier than others, and therefore settling more rapidly and firmly.

If by any previous neglect the lawn has already got upon its surface small pit holes or undulations, varying from four to six inches across and half the depth, now is the time to go over it with a barrow of fine soil and fill them up, at the same time filling the soil with a heavy seeding of pure lawn grass seed; then finish by rolling again and again.

If the lawn has become impoverished, make a mixture of pulverized hen manure, or guano, two parts, and two parts of fine, very fine, bone meal, not bone dust, one part of plaster, (gypsum,) together with two parts common salt, (seven parts in all,) and sow at the rate of eight bushels to the acre. Sow just before a rain, and as soon as the rain is over roll thoroughly, and then follow with two bushels of clean blue grass seed to the acre, and another, and another, and yet another rolling. Before doing anything, however, rake the lawn thoroughly to clear it of chips, stones, etc.—*Cor. Rural New Yorker.*

#### HOUGHTON SEEDLING GOOSEBERRY.

This was the first introduced of the American gooseberries, which have almost superseded the English varieties in our gardens, being, unlike the latter, entirely free from mildew. It is one of the best flavored of the American varieties, and well worthy of cultivation, though its habit of growth is not so good as some others. The best way of managing it is, to take a young plant grown from a cutting, with all but two or three of the upper eyes removed, and drive a durable stake by it, to which the leading shoot should be carefully tied. Every Summer one or two tiers of branches, which will take a drooping position, should be grown from the main stem. In this way it may be carried to the height of five or six feet forming a beautiful pyramid, than which there will be few objects in the fruit garden more attractive. Being very productive, a few plants will give an ample supply for a large family. With a little thinning and shortening of the wood early in the Spring, taking care to remove the old wood, and retain such as is young and vigorous, the plants will last a long time, and the fruit will be much finer than when left unpruned. Or, if preferred, the tender flexible shoots of this variety may be easily trained to a trellis, and for this method, a partially shaded place will be as good as one exposed to the rays of the sun.—*Jour. of Horticulture.*

#### GARDEN GLEANINGS.

A GRAPE vine in Jonchecy, France, 54 years old, yielded three tons of grapes last year. The stem is 100 feet long, and the branches cover a space of 200 feet square.

*The Gardener's Monthly* says:—"It has been argued that asparagus will not come true from seed, but, like rhubarb, it can be propagated true only by division of the roots. There is no reason why varieties of asparagus may not do as well from seed as peas or beans."

ONE of our successful farmers says he plants peas with potatoes in the same hill, and thus has great success. The writer has often planted peas with corn, and from three or four pea vines, and say two stalks of corn in a hill, has gathered peas much later in the season than when the peas were more openly exposed, or in other words planted by themselves.

JAMES VICK says that no cabbage with which he is acquainted has given such general satisfaction as the Filderkraut. It is very conical or "sugar-loaf" in form, is very solid, and keeps well. It forms a solid head even under unfavourable circumstances, and scarce three plants out of an acre fail to make a fair marketable head.

*The Gardener's Magazine* (London) mentions that in the department of Vaudoise (France), out of 60,000 acres of vines, 20,000 acres have been utterly ruined by what is called the "vine disease," and that the loss in some districts has been even greater than this, so that many entire plantations have been grubbed up and planted with other crops.

THE Slug, which appears on the leaves of the pear, plum and cherry, usually on the upper surface, can be easily destroyed by dusting the tree thoroughly with slaked lime or unleached wood ashes, as often as the slugs make their appearance. Indeed, the dry dust from the surface of the ground, if thrown with a little force upon them, will usually kill them.

To cure the blues, a correspondent in Illinois advises that farmers devote their blue moments to devising some improvement or other in the appearance of their premises. He has found it a sure panacea. It not only drives off the cerulean devils, but every improvement made helps to keep them from coming again. There is no doubt about it.

At a late meeting of the Waltham, Mass., Farmers' Club, Mr. Dickinson said that he had successfully protected his plants from the depredations of the striped bug by taking a barrel hoop, cut it in halves, cross the halves at right angles, and set in the ground over a hill of vines, and covered this with a newspaper. It worked well.

Do not always base the value of a fruit on the appearance which the same variety gives when upon show on the table of some horticultural society, for it is always the case that these are the largest of their kind, generally forced by some particular process, but the general quality can be had by deducting about one-fourth of its merits, and the remainder will generally give its true value.

A CORRESPONDENT of the *Cincinnati Times* says that the following recipe will preserve all kind of grain and garden seeds from the ravages of cut-worms, birds, &c.: One pound sulphate of iron, one pound aloes. Dissolve in water heated to ninety or ninety-five degrees, and pour over one bushel of grain, and in a similar proportion for a greater or lesser quantity.

A correspondent of the *Rural New Yorker* states that he has found Tomatoes grown in boxes in the kitchen window, and transplanted a few times, though only a few inches high when set out, would ripen their fruit quite as early as large plants of the same variety grown in pots, and purchased of the market gardeners. He therefore concludes that age, not size, is what is wanted.

The finding of insects in a black knot no more proves them to be the cause of it, than finding rats in a corn-crib proves that they are the origin of the corn. It may be a "philosophical solution," but not in accordance with facts. It is just as well settled that the black knot is caused by a fungus, as that a plum tree grows from a seed. The remedy proposed—cutting them out with a knife when first forming—is the true one. They are usually left too late.

A NEW field for women may be found in Landscape Gardening. A lady was once criticising in our presence, the manner in which a landscape effect was marred by a gardener, when he said, "Why not enter this profession? You have evidently a taste for it, and are 'dying for something to do.'" She replied, "The time will come when woman's love of the beautiful, and her quick perception will be utilized in this direction." We hoped so then and do still.

THERE is no one thing connected with garden or lawn, that pays so well for the little labor and cost, as a conveniently arranged liquid manure tank, into which all the chamber lye and soap suds of the house may be readily conducted. It is merely to sink a tight barrel or large cask in the earth, and by a pipe laid eighteen inches deep in the ground, connect it with a wire-screened drain receiver at the house, taking care that there shall be sufficient fall to have the water run rapidly and free. It only requires a trial of one season to convince any observing man of the profitable value to be derived

from distributing the liquid from time to time on strawberry, asparagus and flower beds or grass plots.

THE NEW ROSE, "PRINCESS CHRISTIAN," received three first class certificates during the year 1869, from the Royal Horticultural Society, Royal Botanic Society, and at the Crystal Palace Rose Show, and has been thought worthy of a colored plate in the *Flora and Pomologist* for January, 1870. It is described as being a very large flower, globular in the bud state, and finely cupped when expanded, the color ranging from deep salmon to rosy peach, according to the age of the flowers, and holding on clear and bright to the last. It blooms continuously and abundantly from June to November, is robust, and of a hardy constitution. It is introduced by Mr. William Paul, of Waltham Cross, near London, England, and will be sent out by him this spring.

Mr. D. W. Beadle, Horticultural Editor of the *Canada Farmer*, speaks in high terms of the new double Geraniums as bedding-out plants. He says: "These double Geraniums possess the advantage of holding their bloom much longer than the single varieties. In some the flower truss is remarkably large, containing from sixty to eighty blossoms, and in colour as rich as a Provence Rose. Gloire de Nancy is of a rosy carmine, Le Vesuve is an orange scarlet, Madame Lemoine is a bright rose colour, Victor is bright orange scarlet, striped and flaked with white, and Victor Lemoine is of the finest scarlet. These varieties are now grown in Canada, and can be had of our nurserymen and florists."

AT the winter meeting of the Western New York Horticultural Society, the Red Astrachan was proposed by some of the most distinguished horticulturists as the best summer apple. A few of the members objected to it on the ground that it did not ripen its crop at one time, but extended its period of ripening over several weeks; while others valued it on that very account, its gradual ripening enabling them to market all the fruit without occasioning a glut in the market. The fruit dealers spoke of its handsome colour, which made it sell well; a few complained that the fruit with them was imperfect. F. R. Elliot, of Cleveland, Ohio, said it was one of the best market varieties at the West. We believe this variety succeeds well in all parts of Ontario, particularly in the colder parts, and on clay soils, and is one of the best, if not the best summer apple we have.

THE CONCORD GRAPE.—A correspondent of the *Rural New Yorker*, writing from Montgomery county, New York, says that the Concord grape stands first, is hardy, well adapted to our severe winters, bears full and ripens early. The Isabella is too often cut off by the early frosts to be reliable.

DAVIDSON'S THORNLESS RASPBERRY.—Mr. H. Collins, writing to the *Gardeners' Monthly*, says that the fruit of this variety is large and fine, earlier than the Doolittle, matures its whole crop, while the later berries of the Doolittle are so small and dried up as not to be worth picking, and that the comfort of picking from plants that are free from thorns is no small consideration.

THE LOGAN GRAPE.—It bears full and ripens, colouring the earliest of any grape I have. It is not as sweet as some, but in view of its hardness, and the fact, too, that the fruit is not injured by light frosts, I cannot but regard it as a valuable

variety. It bears the winter well. Still, the hardiest here needs some protection in cold weather, at least laying down and being kept close to the ground.—M. Quimby, in the *Rural New Yorker*.

**TOMATOES.**—Sow in boxes of about two feet by one and a half, and six inches deep, in earth of the richest kind. Cover the seed half an inch deep. If you have a hotbed, place this box in it; if not, set it in a warm room, near a sunny window. Water occasionally. When the plants are an inch or two high, thin them out to about an inch apart. So soon as the weather is free of frost, transplant in moderately good garden soil, not rich, as that would make fine vines, but poor fruit.—*Rural New Yorker*.

## Our Country.

### MAGNETIC IRON SANDS OF CANADA.

The *American Exchange and Review* contains the following epitome of a letter of Dr. T. Sterry Hunt, on the magnetic iron sands of Canada, of considerable interest to iron and steel masters:

"The sands from the crystalline rocks of Canada are in large degree a mixture of pure magnetic ore, with a titaniferous iron ore and garnet sand, the last two ingredients not being attracted by the magnet, and the titaniferous ore containing from 30 to 35 per cent of titaniferous acid. The bar iron made of these sands at Moisie is of excellent quality, not alloyed by titanium. The slaws, however, contain the titaniferous acid as silico-titanate. The magnetic portion is separated from the titaniferous sand, and from the siliceous by a magnetic separator, which, according to Dr. Hunt, will, in one hour, separate from three tons of sand, containing one ton of magnetic ore, one ton of ore, containing 99 per cent of magnetic iron, or twenty-four tons in twenty-four hours. It is six feet long, by five feet wide, and four high. These magnetic sands are said to be found on the north side of the St. Lawrence, in quantities practically inexhaustible, from the Saguenay to Newfoundland, at Batiscan, between Montreal and Quebec, and there is a large accumulation at the mouth of Lake Huron, also, on both shores of Lake Erie, and along the seaboard of Connecticut and Rhode Island. The iron sands of Taranaki, New Zealand, are well known. Dr. Hunt places considerable reliance upon the magnetic separator for success in working the sands. The separator is the invention of Dr. Larnie, professor of chemistry in the Laval University, Quebec. The advantage arising from these sands is found in their freedom from phosphorus and sulphur.

"In this connection it will be interesting to speak of the metallurgical process of reducing these magnetic sands, as performed at Moisie, a name not found in Lippincott's Gazetteer, therefore, needing some notice as a place. Moisie is said to be the

seat of the most northern iron works of this continent, and remarkable for the exclusive use of the magnetic sands spoken of above. Moisie is near the mouth of the St. Lawrence, some seventy miles west of Anticosti Island, at the mouth of the Moisie river, which empties into the St. Lawrence upon its northern shore. The sands are about half a mile distant on either side of the works, which consist of charcoal bloomeries, or modified Catalan forges, with all their necessary accompaniments. The blast is heated in U pipes, placed in the chimney. The hearths have each a cast iron frame, are three feet square and high, closed by a plate in front for a foot from the bottom, with slag-holes and with a shelf on the level of the tweer, which is semi-circular, with a radius of an inch, placed on one side at an inclination of fifteen degrees. The ore is thrown upon the fire from time to time, as the bloomers see fit, until a bloom is made of the average weight of 200 pounds, and after about three hours' work. An interesting fact appertains to the charcoal economies of the place. The charcoal is burned in kilns, cylindrical at the bottom and dome-shaped at the top, of about thirty feet diameter at the base, and twenty-five feet high, with walls about a foot thick and requiring about 40,000 bricks. They hold about 100 cords apiece, yielding about 4,000 bushels of charcoal; require about from twenty-five to thirty days' burning, affording a fine coal at a reckoned cost of four and a half cents a bushel, weighing fifteen pounds to the bushel, the wood being almost all fir tree and some birch, but small, and hence denser. The wood is supposed to cost at the kiln eighty cents a cord. Ten of these kilns afford about 40,000 bushels a month, a little more than is sufficient to supply four forges. Four forges make about three tons of blooms per day, using 1,400 bushels of coal.

"Of the ore, it is interesting to know that the storms work the sand at times as well as could be done by manual labor, leaving the true magnetic ore in irregular patches, and advantage is taken of the beneficial effect of the waves and winds. A patch of sand one hundred yards long, by fifty yards wide, averaging two inches thick, should yield about seven tons of ore. The separation of the ore from sand and impurities is done by washing tables. The gentleman from whose account we have derived our information for this condensed statement, and who visited the place October, 1869, gives a very interesting description of the exceeding isolation of the works, and of the unlimited forests around, together with the loneliness of a situation which, as we have stated, is upon the northernmost boundaries of the iron manufactures of the North American continent."

## Arts and Manufactures.

### IMPROVED METHOD OF PRESERVING THE AROMA OF HOPS.

It is well known that the quality of Hops greatly deteriorates by the ordinary methods of keeping, so that in the course of a twelve month much of their peculiar aromatic flavour and odour which gives them their principal use in the manufacture of beer becomes in a great measure volatilised. Hops should be packed after being thoroughly dried, as tightly as possible in bales made of good thick cloth, and when not intended for immediate use, their bulk should be further reduced by additional pressure, and kept in a dry place, as much removed as possible from the currents and moisture of the atmosphere. Hops as they are usually exposed by retailers, soon lose the greater part of their "lupuline," which is found in the form of fine yellow grains or dust covering the base of the scales of the catkin, and which imparts to them much of their weight, and the greater portion of their use and quality. These aromatic properties vary much in amount according to the variety or sorts cultivated, and the character of the soil and season. The "Goldings" are considered in England to have a larger proportion of "lupuline" than most other kinds, and a rich dry limestone soil, containing a liberal per centage of phosphoric acid, produces a much finer quality than soils, however judiciously manured, that contain a large relative amount of clay or sand.

We learn that Mr. E. D. Brainard, of Albany, N. Y., has a plan of preserving the "lupuline" or resinous substances in hops unchanged, so as to retain its valuable aromatic qualities by the dryness of the surrounding air and a low temperature combined, both conditions being essential for the preservation of the aromatic principle. It is stated that in this way hops can be kept for several years, retaining almost without any appreciable diminution their original strength.

"The hops are packed in bags in the usual way, and placed in a chamber or other receptacle made tight and close, to prevent ventilation or communication with the atmosphere. The receptacle is connected with an in-house or refrigerating chamber so as to have the air surrounding the hops reduced to a low temperature, or nearly to freezing point, say, between 40° and 50° Fah. The hops having been thus stored and kept cold and dry, the resinous substance "lupuline" undergoes no material change in its nature, and the flavour and odour of the hops are not dissipated or lost by evaporation."

Few of our readers, perhaps, interested in the growth or consumption of this article, will be disposed to reduce literally the above directions to practice. The principle, however, which they in-

volve will admit of varied degrees of application, and a little trouble and forethought will often be sufficient to arrest the rapid deterioration of the quality of hops, to which they are so commonly exposed by the ordinary methods of packing and preserving.

### KALSOMINING PARLOR WALLS.

It is a popular error to believe that the materials for kalsomining are very expensive, and also that few men have sufficient skill to apply the liquid even after it has been properly prepared. For this reason, people are frequently deceived into paying exorbitant prices for this kind of work.

The materials employed are good clear glue, Paris white, and water. Paris white is sold here in New York City and Brooklyn from two to three cents per pound. Itinerant kalsominers frequently charge twenty-five cents per pound, as "they use nothing but the genuine silver polish, which is scarce, and very expensive."

In case the wall of a large room, say sixteen by twenty feet square, is to be kalsomined with two coats, it will require about one fourth of a pound of light-colored glue, and five or six pounds of Paris white. Soak the glue over night in a tin vessel, containing about a quart of warm water. If the kalsomine is to be applied the next day, add a pint more of clean water to the glue, and set the tin vessel containing the glue into a kettle of boiling water over the fire, and continue to stir the glue until it is well dissolved and quite thin. If the glue-pail be placed in a kettle of boiling water, the glue will not be scorched. Then, after putting the Paris white into a large water-pail, pour on hot water, and stir it until the liquid appears like thick milk. Now mingle the glue-liquid with the whiting, stir it thoroughly, and apply it to the wall with a white-wash brush, or with a large paint-brush. It is of little consequence what kind of an instrument is employed in laying on the kalsomine, provided the liquid is spread smoothly. Expensive brushes, made expressly for kalsomining, may be obtained at brush-factories, and at some drug and hardware stores. But a good whitewash-brush, having long and thick hair, will do very well. In case the liquid is so thick that it will not flow from the brush so as to make smooth work, add a little more hot water. When applying the kalsomine, stir it frequently. Dip the brush often, and only so deep in the liquid as to take as much as the hair will retain without letting large drops fall to the floor. If too much glue be added, the kalsomine can not be laid on smoothly, and will be liable to crack. The aim should be to apply a thin layer of sizing, that can not be brushed off with a broom or dry cloth. A thin coat will not crack.—*Manufacturer and Builder.*

CHLORIDE OF LIME FOR VERMIN.—Some years ago I read, in a French scientific periodical, that chloride of lime would rid a house of all these nuisances. I treasured up the information, and some four years since I took an old country house, infested with rats, mice and flies. I stuffed every rat and mouse-hole with the chloride; I threw it on the quarry floors of the dairy and cellars; I kept saucers of it under the chests of drawers, or some other convenient piece of furniture, and in every

nursery, bed, or dressing-room. An ornamental glass vase held a quantity at the foot of the staircases. Stables, cow-sheds, pig-sties, all had their dose, and the result was glorious. I thoroughly routed my enemies, and if the rats, more impudent than all the rest, did make renewed attacks upon the dairy in about twelve months, when probably from repeated cleansing all traces of the chloride had vanished, a handful of fresh again routed them, and left me master of my premises. Last year was a great one for wasps; they wouldn't face the chloride, though in the dining-room, in which we had none—as its smell, to me most refreshing and wholesome, is not approved by all persons—we had a perpetual warfare. And all this comfort for eight-pence! Only let housekeepers beware that they place not the chloride in their china pantries, or in too close proximity to bright steel wares, or the result will be that their gilded china will be reduced to plain, and their bright steel fenders to rusty iron in quick time.—*Cor. London Builder.*

**BLACK VARNISH FOR IRON WORK.**—The following is a method given by Mr. Weiskopf, of producing upon iron a durable black shining varnish: Take oil of turpentine, add to it, drop by drop, and while stirring, strong sulphuric acid until a syrupy precipitate is quite formed, and no more of it is produced on further addition of a drop of acid. The liquid is now repeatedly washed with water, every time refreshed after a good stirring, until the water does not exhibit any more acid reaction on being tested with blue litmus paper. The precipitate is next brought upon a cloth filter, and, after all the water has run off, the syrupy mass is fit for use. This thickish magma is painted over the iron with a brush; if it happens to be too stiff, it is previously diluted with some oil of turpentine. Immediately after the iron has been so painted, the paint is burnt in by a gentle heat, and, after cooling, the black surface is rubbed over with a piece of woollen stuff, dipped in and moistened with linseed oil. According to the author, this varnish is not a simple covering of the surface, but it is chemically combined with the metal, and does not, therefore, wear off or peel off, as other paints and varnishes do, from iron.—*Milwaukee Journal of Commerce.*

#### ART GLEANINGS.

A CORRESPONDENT of the Cincinnati *Gazette* advises in the building of board fence to throw up a ridge under it about a foot high, which saves one board and admits of a lower fence; and setting two posts in the same hole fifty feet apart, disconnecting the boards, so that the lineal shrinkage instead of breaking off nails shall only pull the posts open.

A MEXICAN letter speaks of a new textile discovered in the Mountains of Vera Cruz, Pueblo Morchos. It yields a thread of two varas in length, shining white, and stronger than hemp. It is said that any laborer can prepare daily 75 pounds of this new flax without any particular machinery. The plant yields an acid which may prove useful in some industries.

In answer to a question as to the most economical, healthful and convenient way of heating a house, a writer in the *N. Y. Evening Post* says: "To our agricultural mind, the royal way to heat a house is to supply each room with a roaring hickory fire on the hearth. This compasses fresh air, good

spirits, good complexion, sound sleep and sound health. Stoves are an abomination; furnaces are an invention of the Evil One.

WARREN Leland writes to the *Country Gentleman*, objecting to recommendations that corn cribs be constructed in barns. He tried the plan, and found it resulted in large wastage from rats and mice, and from damaged corn. He then tried the old fashioned corn crib, set on posts extending three feet from the ground, and with inverted tin pans on the top, and having slat floor and slat sides. Such a building is rat and mice proof, and perfectly preserves the corn.

**POLISH FOR PATENT LEATHER GOODS.**—Take half pound of molasses or sugar, 1 ounce of gum-arabic, and 2 pounds of ivory black; boil them well together, then let the vessel stand till quite cooled, and the contents are settled; after which, bottle off. This is an excellent reviver, and may be used as a blacking in the ordinary way, no brushes for polishing being required.

**HOW TO CLEAN LAMP CHIMNEYS.**—Most people, in cleaning lamp chimneys, use either a brush made of bristles twisted into a wire, or a rag on the point of scissors. Both of these are bad; for without great care, the wire or scissors will scratch the glass as a diamond does, which, under the expansive power of heat, soon breaks, as all scratched glass will. If you want a neat thing that costs nothing, and will save half your glass, tie a piece of soft sponge, the size of your chimney, to a pine stick.

**LIQUID GLUE.**—To 1 oz. of borax in a pint of boiling water, add 2 ozs. of shellac, and boil till the shellac is dissolved. Another—Dissolve 8 ozs. of the best glue in half a pint of water; that being done, add slowly, and keep stirring, 2½ ozs. strong aquafortis. Keep well corked ready for use. Another—A useful glue for fastening papers together only by being wetted by the tongue, is made as follows: Dissolve 1 pound of glue or gelatine in water, and half a pound of brown sugar, and boil them together. Make into cakes by pouring into shapes. It becomes solid when cold.

**ANTI-RUST VARNISH, OR VARNISH FOR IRON AND STEEL RODS.**—Take the following ingredients, 1, 2, 3, in a pounded condition, and digest them by a regular heat till melted, then add the turpentine very gradually, stirring all the while: 1. Resin, 120 parts. 2. Sandarac, 180 parts. 3. Gum lac, 60 parts. 4. Essence of turpentine, 120 parts. The mixture should be digested until dissolution; then add—Rectified alcohol, 180 parts. Filter through fine cloth, or thick bibulous papers, and preserve in well stoppered bottles or cases. It will be found very effective in preserving things from rust.

"If the Arts are to flourish among us," says John Ruskin in one of his Oxford lectures, "we must recover for the mass of the nation three requisites which they at present want: 1. Wholesomeness of food. We must no longer allow them to eat and drink poison instead of food; everything provided for their daily sustenance must be good and pure, as well as plentiful. 2. Wholesomeness and decency in dress. It must be such as becomes their rank—serviceable and good, and, at the same time, becoming and in good taste. 3. We must improve the lodgings. All ecclesiastical architecture is developed for civil and domestic building, and its highest achievement may be said to be a 'glorified roof.'"

## Hearth and Home.

### FARMING FOR BOYS.

#### CHAPTER VII.

VISIT TO A MODEL FARM.—THE STORY OF ROBERT ALLEN.—HOW TO RAISE HORSE RADISH.—NO SUCH THING AS LUCK.

The disposition to go ahead which the boys displayed, as well as their aptitude for learning, were strong encouragements with Uncle Benny to continue his fatherly care over them,—to teach them that it was impossible to earn genuine manhood except by steadily and industriously serving out their boyhood. He found his own interest in all their little concerns insensibly increasing, and noticed also that even Spangler himself took constant observation of their doings, though he seldom gave a word of encouragement, but rather doubted whether their labors would ever pay a profit. He estimated results by their money product, not by their moral and educational value.

On the afternoon of a fine early-summer day the old man obtained permission to take them with him to a farm some two miles off, for the purpose of showing them how a really good farmer managed his business. The boys had often heard of this place, and had many times walked by it, but had never ventured up to the house or over the grounds. It belonged to a Mr. Allen, and consisted of sixty acres. The history of this man was so remarkable, that Uncle Benny, thinking it afforded an example that ought to be impressed on the minds of the boys, took occasion, as they walked leisurely along, to relate it to them.

Mr. Allen was one of a large family of children, his father being a laboring man, so poor that he was glad to have them placed out whenever a situation could be found for them. No great pains were taken to see that the places were good ones, where a tolerable share of schooling would be allowed, or where they would be likely to receive a thorough agricultural education. The father was too poorly off in the world to be very nice in choosing places; besides, his children had had so indifferent a training at home, that whoever took them was quite certain that, if they were ever to do any good, they must be taught how to do it.

This one, Robert, was accordingly placed with a very penurious man, who allowed him very little time, even in winter, for schooling. His very name had a suspicious sound,—it was John Screwme. The poor boy was excessively fond of study, and had luckily learned to read well before he left home. He accordingly read everything he found about the house, and even carried a book of some kind in his bosom whenever he went ploughing.

This he read and re-read when he paused to rest his horses, seeking to carry in his memory, while following in the furrow, the information he had obtained. It was so when not at work,—the same passionate desire to obtain knowledge occupying his time and thoughts. But his master's house was a very poor school in which to learn, with very few books or papers about. He therefore borrowed from the neighboring boys all that they were able to lend him.

But this supply was insufficient for his wants, as he had become a rapid reader. He had the great good sense to understand that it was important for him to qualify himself, while young, for the business he was to pursue in after life,—that of farming. Hence he sought for books on agriculture and natural history, but few of these could be obtained.

His master was a widower, with an only child, a daughter, whose temperament was directly the opposite of her father's. She was as fond of cultivating flowers as Robert was of reading books. Her father had indulged her by subscribing for an agricultural paper, which came once a month, and which cost only half a dollar a year. It was the cheapest of all, and therefore he took it. This Robert devoured as soon as it came, but it was far from being sufficient for him. The girl also wanted more; but as neither of them had any money with which to subscribe for other papers, Robert undertook the setting of traps for muskrats, rabbits, and moles, and succeeded in catching great numbers of them. The girl took off the skins and dried them, and Robert walked with his spoils to Trenton, and sold them to the storekeepers. He thus raised money enough to pay for an agricultural paper which came every week. From the reading of this he derived so much information, that he never afterwards permitted the subscription to run out.

Among other useful things, it taught him how to manage bees. So he bought a colony, and, being extremely observant and careful, he gradually multiplied them until the product amounted to twenty or thirty dollars every year. His master made no objection to his doing this, as the bees consumed only such food as would have been wasted had they not gathered it from the fields and flowers. In this bee culture the daughter, Alice, assisted him very materially, giving him prompt notice of a swarm coming out, and sometimes even assisting him in getting them safely into a new hive. Several times, from the profits of his honey, he was able to present her a handsome book at Christmas, and, on more than one occasion, a new bonnet. His bees thus made it a very easy matter to pay for his weekly paper, as well as to keep himself supplied with numerous new works on his favorite studies.

As might be expected, such a boy was always

observant of whatever was going on around him,—of everything from which he could get a new practical hint. Having on one occasion gone to Trenton to dispose of his honey in the market, after he had pocketed his little roll of notes, he strolled leisurely through the long building, from end to end, to see what others had brought there to sell, as well as to learn what prices they were getting. But he saw nothing that attracted his attention particularly, until, on coming out at the lower end, he noticed an old man with a very rude machine resembling that of a perambulating scissors-grinder, having his foot on the treadle, with which he was driving some kind of a mill. He stood quite a long while looking at the machine, endeavoring to ascertain what the old man was doing. While thus standing, several women and children came up in succession, with little cups in their hands, into which the old man measured a gill or two of a white, pulpy preparation, for which each buyer paid him a few cents. It struck him that the old man must be grinding this pulp; so, coming close up to the machine, he at once perceived a strong odor of horseradish. It was this the old fellow was grinding; and Robert saw that he had customers for it as fast as it could be produced. He had seen in the machine-shops about Trenton many great machines, but this was truly a *grater*.

Now he understood all about raising horseradish, and knew that it could be grown more readily even than potatoes; but never having seen it anywhere except on his employer's table, he had no idea that a large quantity could be sold, and hence was greatly surprised at finding how quickly it went off in the market. He immediately inquired of the old man how much he gave for the roots, of which he had a bushel or two in baskets near him. He replied, two dollars a hundred for the smaller ones, and three or four for the largest; adding, that he would buy as many as he could bring him.

The boy was so elated at this unexpected discovery of something that was exactly in his own line, that he asked no more questions. But that evening he looked over all the old numbers of the agricultural papers in the house, to see if they contained any information about the cultivation of horseradish, what was the best soil, whether there was a superior variety, or any other instructions to guide him in undertaking what he shrewdly thought he could make a profitable operation. He found a dozen articles on the subject, which contained the experience of practical growers, with minute directions how to plant and cultivate, as well as how to harvest, a large crop, and where to find a market for it. He had seen these articles before; but as his mind was not interested in the subject at the time, he gave them only a passing notice. But

now that his attention had been directed to it, he discovered in them an almost priceless value. They were exactly what he wanted, and he read them over and over. He made up his mind that, if he had inquired of every farmer in the township how to cultivate so simple a thing as horseradish on a large scale, not one could have told him half as much as did these old numbers of the agricultural papers he had been preserving.

Here Uncle Benny took occasion to remind the boys that it was impossible for a man to be a really good, progressive farmer, without not only having a full supply of the best agricultural papers, but diligently studying their contents, as well as preserving the numbers for future reference. He said they were full of sound advice and instruction, and kept their readers informed of all the new seeds, plants, machines, and breeds of animals, as they were either discovered or introduced. It was only by having his eyes and ears open to these things, that a farmer could get along successfully, and keep up with the best.

He went on to tell them that Robert, discovering that a deep, rich soil was the best for horseradish, immediately made up his mind that the very best place for him to plant it would be by the side of a long ditch in the meadow, which had been cleaned out that very fall. As the ditch-bank could not be used for any crop,—at least his employer was not the man to put it to any useful purpose,—Robert easily obtained his permission to plant it with horseradish. He would have refused anything that he could use himself. As may be supposed, Robert thought of this matter the whole winter, and was impatient for spring to come round, that he might make a beginning. At Christmas he went to Trenton and engaged from the old man in the market as many of the lower ends of the horseradish roots as he would need. On measuring the ditch-bank, by pacing it off, he found he could get in three rows containing altogether two thousand roots, and so contracted for that number at five dollars per thousand. The old man had been in the habit of throwing away these "tails," as there was no steady demand for them, and was glad enough to find a customer.

When April came, Robert put the ditch-bank in order with his own hands, doing most of the work by moonlight, and then actually planting the roots by moonlight also, as his employer would not spare him even a half-day for himself. The roots were about five inches long and were planted in rows. Holes about eight inches deep were made in the ground with a sharp stick, into which the roots were dropped, thus leaving them a few inches below the surface. It was a long and tedious job for a boy like him to undertake and go through

with, but he was full of ambition to do something for himself, and this was about the only chance he saw. Then during the whole growing season he kept the ground clear of weeds, and frequently stirred it up on the surface, all which greatly promoted the growth of the plants. They threw up such luxuriant tops, that by midsummer they shaded most of the ground and smothered a large portion of the weeds. All this attention to his horseradish bed was bestowed at odd times.

But he was well rewarded for his labor, as at the close of the season he had a fine crop of roots. They were so large, and there were so many of them, that he was obliged to hire a man to dig them up and wheel them to the house. His employer had paid no more attention to the crop during the summer than he had to Robert's bees; but when he came to see the splendid results of his labor, he was astonished at his success, and told Alice to help him wash and trim them up for market. This she was willing enough to do, as Robert's tastes and hers were so similar that they had long been close friends, ever ready to oblige each other. By devoting one or two evenings to the task, the roots were made ready for the Trenton market. There Robert was allowed to take them, and there, sure enough, he found the old man at work in the market-house with his machine, still grinding out horseradish for a large circle of customers. He sold his crop for sixty dollars, and was so delighted with his success that he treated himself to a new coat.

He also bought for Alice, in return for the help she had given him, a neat little dressing-box, containing trifles which he thought would please her, for there was not a particle of meanness in Robert's disposition. While he was ambitious, and industrious, and saving, he was far from being stingy. Besides, he had already learned that pleasure was reciprocal, and that no one feels it who does not at the same time communicate it; for to be really pleased, one must be pleasing to others. As he saw that Alice was gratified by his thus thinking of her he was abundantly gratified himself.

The purchase of a new coat was a clear saving to Mr. Screwme. He was pleased in turn, thinking how much he had saved, and readily gave Robert permission to use the ditch-bank as long as he desired, as his horseradish farm. Thus the industrious fellow was encouraged to look ahead, and a bit of waste land was in a fair way of being turned into a productive one, by the shrewdness and energy of a mere boy. Taking all the land on the farm, there was not an acre that produced more clear profit than this, though the rest had had twice as much labor in proportion bestowed upon it.

Still, the owner did not take the hint thus given to him, and try what could be done on a larger scale.

The reason was, that raising horseradish was not regular farming,—it was something out of the usual line,—well enough for a boy to amuse himself with, but not the kind of farming he had been brought up to. Another reason was, the neighbors would ridicule him. In truth he was not a wise man, for wisdom is not the mere seeing of things that are actually before us, but consists in discerning and comprehending those which are likely to come to pass. He would have thought it all right for him to plant an acre of cabbages, because it was done by others; but an acre of what he considered a new farm product, such as horseradish, was too great a novelty, though he saw that the crop paid well. Nor was he sufficiently wise to see that the time was coming when a plant so easily cultivated would be grown upon fields as large as any of his.

Thus Robert was left in undisturbed possession. He started the second year under better auspices, as, in trimming his roots for market, he had cut off and saved the lower ends for another planting. This would save him ten dollars, besides affording him not only better "sets" than he had begun with, but twice as many. He thought that he would double his crop by planting both sides of the ditch. On asking permission of his employer, he readily gave it, adding that, if he chose, he might plant the bottom of the ditch also.

The boy's ambition seemed to have won some little sympathy from his master; for, when planting-time came the next spring, he actually assisted Robert by ploughing up the ground and putting it in order for him. Then, as Robert made the holes in the ground, he called on Alice to drop the roots into them, as she was quite willing to do. With this help he got on finely with his double crop. But he was obliged to hire a man occasionally during the summer to keep the ground in order, as he knew it was never worth while to set a plant in the ground and then neglect it. But he had the money with which to pay for such labor. Still, it cost very little, as to his ditch-banks was devoted all the spare time he had. His bees gave him no such trouble, as they took care of themselves. The better preparation of the ground caused a quicker and larger growth of the plants, and of course there was a better yield than that of the first season. He sold the second crop for more than a hundred dollars, and could have disposed of three times the quantity. That season his honey sold for over twenty dollars.

Most of this money he saved, spending very little except for books and papers, all which he studied so assiduously, that, by the time he came of age, he was one of the best-informed young men in the neighborhood, with a respectable library about him. He was a fine, handsome-looking fellow, of pleasant

manners, steady habits, and, besides all this, had more than four hundred dollars, all made from the profits of his bees and horseradish.

"You see, boys," said Uncle Benny, "how much can be accomplished, from the very smallest beginnings, by a boy who has ambition, good sense, and industry. But all these acquisitions, especially the mental ones, come from application. It is the price that every man must pay for them, and they cannot be had without it. To expect good results of any kind without application, would be as absurd as for you to hope for a crop of corn without having planted a hill."

The old man went on with his story. He told them that, when Robert came of age, he was able to manage the farm far better than his employer had ever done. He continued to do the principal work until he was twenty-three years old, at which time his employer died, and a year after that he and Alice were married.

"Now," continued the old man, "the farm we are going to see is the same one on which Robert Allen began life as a poor boy. All this happened years before you were born, so that you will see great changes from the condition of the farm as it was in the time of Robert's boyhood."

The boys listened to this history with profound attention. It ran so nearly parallel to the current of their own thoughts that they could not fail to be struck with it. They had seen Mr. Allen very often, and two of his sons had been their companions at school; but they had never before had the least inkling that so wealthy a farmer had sprung from so small a beginning. The farm, therefore, as they approached it, acquired a new interest in their eyes, and they surveyed with increased attention whatever belonged to it.

A few steps farther brought them to the gate, which opened into a lawn of moderate size, in which were pear and apple trees many years old, now gorgeous in a profusion of bloom. These living monuments of the thoughtfulness of a former generation had been carefully trimmed of all the dead wood, and the trunks had been whitewashed. Indeed, the fences, the out-houses, and every spot or thing to which whitewash was appropriate, shone out gayly and cheerfully in a coat of brilliant white. A dozen large stones, that lay about in the edge of a luxuriant border near the house, had been brushed in the same way, presenting a beautiful contrast with the rich green of the early springing grass. Even the projecting stump of an old apple-tree, that had once stood in the lawn, held up its slowly decaying head in all the glory of a similar covering.

The stone dwelling-house, evidently very old, but very comfortable, had shared in the same beautifying application. Its ancient doors, and sashes, and

shutters had been replaced by new ones of modern finish. For the old roof there had been substituted a new one, with projecting eaves and ornamental brackets. An ample piazza at the front, built in cottage style, was clustered over with honeysuckles, from whose opening flowers a thousand bees were gathering honey. Some architect, skilled in the beautiful art of transforming an old farm-house into an elegant modern cottage, had evidently touched this venerable homestead with his renovating hand, engrafting on its uncouth outlines not only symmetry, but even elegance. The whole aspect of the premises struck the visitors with admiration of their trimness and cleanliness, while a more practised eye would at once set down the owner as belonging to the higher order of farmers.

As they turned a corner of the house on their way to the rear, they were met by Mr. Allen and his two sons, the school-mates of the Spanglers. Greetings being cordially exchanged, the visitors were politely invited into the house; but Uncle Benny replied that he had brought his boys with him to see what there was out of doors, and that he would like them to learn for themselves how a good farmer managed his business.

"Ah," replied Mr. Allen, "it requires a man superior in one way or another, to be a really good farmer."

"But," rejoined Uncle Benny, "men are estimated by their success in life, and, by common consent, success is held to be evidence of superiority. You are known as the luckiest man in the township."

"But I don't believe in luck, Uncle Benny," replied Mr. Allen. "It was not luck that made me what I am, but God's blessing on my labors, from the time I was a poor boy up to the present hour."

They walked forward to the barn-yard. The fences round it, and all the adjacent buildings, had been newly whitewashed. There were gutters which carried away from every roof the rains that fell upon it, and led them into a low spot a long distance off, to which the pigs had access as a wallow. The barn-yard was shaped like an earthen pie-dish, lowest at the centre, so that no liquid manure could run away. The bottom had been scooped out and furnished with a coat of clay nearly six inches thick, so that no liquor could soak away into the ground. There was but a single outlet for the fluid, and that led into a capacious cistern, connected with a pump, by which the contents were raised into buckets and used on the garden close at hand. This had been in operation only a year or two; but Mr. Allen described the result on his garden products as almost incredible, and he should use the pump and cistern more frequently than ever. "This liquor," he said, "is what a plant lives and grows fat on, just as a pig grows on what you give to him. If I were able

to manure my whole farm with these juices of the barn-yard, I would saturate the manure-heap until the water came away colorless, and spread it over the ground."

As the Spangler boys heard this they looked up to Uncle Benny in a very knowing way, evidently recognizing the words of this excellent farmer as conveying the identical lesson the old man had taught them at their own squalid barn-yard.

There were a dozen head of cattle in the yard, fine, portly cows, of quiet mien and buttery promise. They had all been born within its enclosure, and had never been allowed to go beyond its limits. During the growing season all their food was cut fresh from the fields, and brought to them regularly three times a day. This arrangement cost additional care and money, but it saved some hundreds of dollars' worth of fences, while it trebled the products of the barn-yard. It saved acres of clover from being trampled down and wasted, thus enabling the land to feed double the number of cows. The abundant yield of butter found a quick market at Trenton.

From this spot they were taken to the pig-pen, and there they saw the Suffolk and Chester County breeds, all in clean quarters, with warm shelters covered from the rain, the outer part of the enclosure strewed with an ample supply of cornstalks and other litter, which they were rapidly grinding up into the most valuable kind of fertilizer. Bill Spangler, having a particular home-feeling for the pig-pen, examined the animals in this enclosure with the greatest care. The others were equally interested. Though they noticed how complete the pen was, and how superior were all its arrangements to their own, yet, after a long and close survey, Bill could not help exclaiming to the Allen boys, "There's no sow here equal to our Nancy!"

#### CHAPTER VIII.

NEVER KILL THE BIRDS.—PETS OF ALL KINDS.—WHAT UNDERDRAINING MEANS.—MORE HORSERADISH.—ENCOURAGING THE BOYS.

From this point of observation they moved off to the garden, where they found everything in such nice order that it amazed and delighted Uncle Benny, who did not fail to point out to his pupils all the strong features of its management, comparing them with the miserably neglected condition of their own garden. Every fruit-tree had an old crook-necked squash hung upon it, far out of harm's way, pierced with a hole for a bird's nest. Mr. Allen evidently had a pride in this abundant supply of accommodation for the birds, for, addressing himself to the Spanglers, he called their especial attention to the subject. "Do you see boys," said he, "how the birds are building in all these squashes?

They are my journeymen insecters. Do you know that these birds destroy millions of worms and bugs and millers, which prey on the fruits and flowers of the farm and garden? I could not do without them, as, if I had no birds, I should have no fruit. I have tried it for myself, and it has been tried more extensively in European countries, where they attend to small matters of this kind much more attentively than we do here. Why, Touy, you know what the wire-worm is. Well, in a single department in France that worm has been known to destroy three successive harvests, each worth nearly a million of dollars. In portions of Germany, other insects have destroyed immense forests of large trees. One of the kings of Prussia once ordered all the sparrows killed because they ate the cherries; but two years afterwards he found his cherries and other fruits devoured by caterpillars. It was the same thing in Hungary, when the sparrows were generally destroyed; the insects, having no enemies, multiplied so fast that they consumed so much of the crops that laws were made forbidding the destruction of the birds. We shall have the same ruin here if we allow our small birds to be killed as everybody is now killing them. If we are to do without birds, we must make up our minds to go without fruit. This is the reason why every tree in my garden has its bird's nest. My boys never shoot a bird, not even an owl, for an owl is one of the farmer's best friends,—better than a dozen cats about the barn. He is the sharpest mouse-trap that can be set, because he goes about after the mice, while the trap holds still until the mouse thinks proper to walk in. Even the common buzzard, that every fool shoots when he can, will eat up six thousand field mice annually,—and how much grain would that number consume, or how many apple-trees would they nibble to death? No, no, boys, never kill the birds. Don't even drive them away, but coax them about you in flocks. It costs more to do without them than to have them."

Most of this was news to the boys, as no one had taken pains to impress them with the value of birds to a farmer, except Uncle Benny, who had occasionally referred to the subject. But what they saw here was a practical lesson that had its effect, for when they went home, not having any squashes at hand, they hunted up a dozen deplorably old boots that had been kicking about Spangler's premises, and nailed them to the trees, thus bringing a new set of shabby things directly within everybody's view. However, it was the best they could do with the meagre means they possessed, and it showed a disposition to imitate good examples. It was found, however, that the birds were not well pleased with the smell of old leather. Though they repeatedly went in and out of the boots, evidently anxious for

places in which to build their nests, yet only two or three took possession. Uncle Benny was not sorry, as the great ragged boots, hung where, he could not fail to see them, were a constant eyesore to him; and as soon as it was evident the birds refused to build in them, he had them all taken down.

On coming out of the garden, Mr. Allen let them into the open yard in front of his carriage-house and corn-cribs. There was a great flock of pigeons picking up the remains of the noonday feeding which had been thrown to them. The Spanglers were delighted, and examined the pigeons attentively, but could not discover that they were any better than their own. The proprietorship of pigs and pigeons had already produced the good effect of making them observant and critical, thus teaching them to compare one thing with another.

"Now," said Mr. Allen to Uncle Benny, "these all belong to my boys. They began with only two pairs of birds, and you see to what they have grown."

"How many of them do you sell every year?" inquired Tony of the Allens, in a tone too low for the others to hear.

"Thirty dollars' worth of squabs," he answered, "and some seasons a good many pairs of old birds,—besides what we eat up ourselves."

"But who finds the corn?" inquired Tony, bearing in mind the bargain which Spangler had imposed upon them when consenting to his boys procuring pigeons.

"O," said he, "father finds it, but I'll show directly how we pay for it."

In addition to the pigeons there was a large collection of fine poultry, with a dozen broods of different ages, some just hatched out, the little fellows running round the coops in which the mothers were confined. There was also a flock of turkeys moving slowly about, with all the gravity peculiar to that bird. Uncle Benny made up his mind he had never seen a more inviting dinner-party than these would very soon make.

From the poultry-yard they wandered fall over the farm. Everything was kept in the nicest order. No unsightly hedgerow of weeds and briars fringed fences, nor was a broken post or rail to be seen. The fencing had been made in the best manner in the first place, and would therefore last a lifetime. The winter grain stood up thick and rank, showing that the ground was in good heart. The corn had been planted, and in fact all the urgent spring work had been done, Mr. Allen having so managed it as to be ahead with whatever he had undertaken. Great piles of manure, with marl intermixed, were scattered about several fields, ready to be used on crops that would be put in at a later day. The

springing grass on the mowing ground showed that it had been top-dressed with manure the preceding fall, and that the grass roots had been all winter drinking up the rich juices which the rain and melting snow had extracted and carried down directly into their ever open mouths. Everything about the farm showed marks of its being in the hands of a thorough man, who, in addition to understanding his business, had an eye to neatness, taste, and economy.

Uncle Benny was impressed with the completeness of all that he saw. He called the attention of his pupils to the remarkable difference between the practice of Mr. Allen and Mr. Spangler, stopping repeatedly to explain, and enter into minute particulars. The results were so manifestly superior to any they had witnessed at home, that they did not fail to appreciate them. The old man's effort was to make them understand why it was that results should differ so widely. He told them the soil of the two farms was exactly similar, one farm, naturally, being as good as the other. The difference was altogether in the mode of management. Mr. Allen manufactured all the manure he could, and bought quantities of fertilizers. He sold some hay, because he produced more than he could use, but his straw was all worked up on the farm. He was quite as likely to set fire to his dwelling-house as to burn a pile of corn-stalks. On the other hand, Mr. Spangler took no pains to accumulate manure, neither did he purchase any; but even what he did collect was spoilt by the deluge of rains that carried off all its stimulating juices into the highway. As to selling hay, he had scarcely enough for his own use, while more than once he had burnt up a whole crop of corn-stalks. Thus, while one farm was growing richer every year, the other was growing poorer.

Presently they came to a beautiful meadow of at least ten acres, through the centre of which ran a wide ditch, with a lively stream of water in the bottom. As they came up to the bank the Spanglers observed an earthen pipe projecting from the opposite bank, and spouting forth a strong jet of water. Proceeding farther they noticed another, and then another still. In fact they saw them sticking out all along the course of the ditch, about thirty feet apart. Every one of them was discharging more or less water. As they had never seen such things before, Tony inquired what they were.

"These are underdrains," replied Uncle Benny. "You know I showed the other day what surface-drains were,—now you see what underdraining is. Those pipes are called tiles."

"But where does all the water come from that we see pouring out of them?" inquired Joe.

"Come from? Why, it comes from everywhere,

—above, below, and around the drains," replied Uncle Benny. "When a rain falls, it soaks its way down through the earth, that is, all that the earth don't require, and finds its way into the underdrains, and then runs off as you see. Then the water which rises from the springs under this meadow finds its way also into the drains, and is carried off like the surplus rain-water. If it were not for these drains the land would be so water-lodged that nothing but wild grasses and aquatic plants would grow on it; but now you see it is yielding the very finest kind of grass. If your father's meadow, now filed with ferns and skunk-root, were drained as this is, it would be quite as productive."

"Quite as good," added Mr. Allen. "This meadow was as foul and worthless as Mr. Spangler's when I began to underdrain. I never spent any money that paid me half as well as the money I have laid out in underdraining. It cost me about three hundred dollars to do this work, but the land is a thousand dollars better for it,—in fact, it was good for nothing as it lay a few years ago. All the water you see pouring out of these drains was formerly retained in the ground. It is just so much more than the land required.

Now it has exactly enough, and it is the difference between enough and too much that converts a meadow into bog, or a bog into a meadow.

"When I was a boy," he continued, "it was on the margin of this long ditch that I made the first attempt at farming for myself. It was a rough place then, Uncle Benny, and I had a hard row to hoe. My crop of horseradish from this ground was the beginning of my success in life. I made only a little money, it is true, but it was a great deal for a boy. I can see now that its value was not in the number of dollars I made, but in the stimulus it gave to my energies. It braced me up, it gave me confidence in my own powers, it taught me not only that I was able to do something for myself, but exactly how to do it. Still, it was very satisfactory to know that I was making money, young as I was, but I have never sought to make money merely for the love of it, but only that it might be used wisely and generously,—the only way in which it can be profitably expended.

"Now, my lads," he continued, addressing himself to the boys, "I have heard of a youth who once picked up a guinea lying in the road. Ever afterwards, so the story goes, he kept his eyes steadfastly fixed on the ground, in hopes of finding another, and in the course of a long life he did pick up at times a good amount of gold and silver. But all these days, as he was looking for gold, he saw not that heaven was bright above him, and nature beautiful around him. He never once allowed his eyes to look up from the mud and filth in which he

sought the treasure, and when he died, a rich old man, he only knew this fair earth of ours as a dirty road in which to pick up money as you walk along. Boys, you were not made for a pursuit so degrading as this. Remember it when your turn comes."

"But," added Uncle Benny, "if you found the cultivation of horseradish so profitable, why did you abandon it?"

"Bless you," Uncle Benny," he replied, "I have never quitted it from the day I set the first root into the ground up to the present hour. On the contrary, I have enlarged my operations in that line perhaps a hundred-fold. Come this way and see what we are doing."

He then led them to the upper end of the meadow, where the ground was higher and drier, though it had also been underdrained. Here were three acres set with horseradish. The harrow had just been run over the field between the rows, and the green tops were peeping here and there above the surface. Uncle Benny had travelled all the world over, and, as he was sometimes disposed to think, had seen everything there was in it. But he admitted that here was a thing new, even to him; he had never stumbled on a three-acre field of horseradish until now. It was as great a novelty to the boys, who knew nothing more of the cultivation of the plant than seeing a few roots growing on the edge of a dirty gutter at home, while they were utterly ignorant of its marketable capabilities. They could tell everything about corn, but not an item about horseradish. Uncle Benny knew there must be some kind of a demand for it, but how extensive that might be he had never had occasion to learn. Hence he and his pupils stood in silent surprise at this unexpected exhibition.

"But, what is to become of the vast quantity of roots you are producing here?" inquired Uncle Benny. "Does the world want as much horseradish as this? Who is to buy it, and who is to eat it?"

"Not a bit of fear as to a market," replied Mr. Allen, smiling at the old man's surprise and incredulity. "New York never has enough, never had, and never will have. One dealer in that city takes my whole crop, and is annually calling for more. I am determined next year to double the quantity of ground already planted."

"You surprise me," said the old man. "Then the crop must pay. How many roots can you grow upon an acre?"

"Why, you see these rows are three feet apart, and the plants are set one foot asunder in the rows, thus giving me nearly fifteen thousand per acre. At that distance, on suitable soil, the average weight per root would be one pound. The rows are just wide enough apart to get safely through with a small cultivator, so as to keep down the weeds,—

for when I set out to raise anything, I can't afford to raise weeds also. Weeds don't pay,—we don't believe in them."

"And what can the New-Yorkers afford to give you per root?" again inquired the old man.

"Don't know what they *can* afford, but they *do* afford to pay me an average of five cents," was the rejoinder.

"Why, that's far better than Spangler's cabbages, or anybody else's," added Uncle Benny.

"No doubt of it,—it's better than my own, and they are equal to any in the neighborhood," replied Mr. Allen. "The fact is, Uncle Benny, agriculture has made such astonishing progress within the last fifteen years, and our great cities have so increased their population, that what at one time was the most insignificant farm product has risen to the position of a staple, which everybody wants. I could name a dozen such. But take the single article of horseradish, one of the most insignificant things that ever grew in a farmer's garden, in some wet place where it could catch the drip of the kitchen pump. I see you are smiling at the idea, but hear me through. It is now cultivated in fields of from ten to twenty acres, and goes to the great cities by hundreds of tons. There is a single dealer in New York who buys thirty tons annually. He has machinery, driven by steam, which grinds or rasps it up into pulp, after which it is mixed with vinegar and bottled up in various ways, to preserve its strength and flavor. It is then sold in great quantities as part of the stores of every ship, not only as a condiment for the table, but as a certain preventive of the scurvy. In this prepared state it goes all over the country, and is thus consumed in every hotel and boarding-house. Even private families have become so luxurious and indolent in their habits as to refuse to grate their own horseradish, preferring to buy it ready grated. Thus there is a vast body of consumers, with only a limited number of growers. But it is used in other ways, in the arts, and for other purposes. Go into any market-house in a large city, and you will see men with machines grinding up horseradish for crowds of customers who come daily to be supplied with a few cents' worth. These apparently small operators do a very large business, for the pennies have a way of counting up into dollars that would surprise one who has never gone into a calculation.

"The facility of getting horseradish ready ground induces people to buy many times the quantity they would if compelled to grind for themselves. I have no idea that the business of growing it can be overdone. I have been raising it for twenty years, and have found that the more I can produce, the more I can sell. Besides, there is no farm crop that gives less trouble or pays better." While this

colloquy was going on, the boys had wandered some few paces away, and the Spangler's were examining the three acres with attention, when one of the Allens exclaimed, "That's our acre,—we take care of that,—that's the way we pay father for our corn."

This piece of information was very satisfactory to the Spanglers. They had been wanting to know how the Allens contrived to feed their pigeons, whether out of their own crib or their father's.

Just then Mr. Allen and Uncle Benny came up, and the former said, "Now this outside acre of horseradish belongs to my boys and their sister. They take the whole care of it except harrowing the ground, but doing the hoeing, weeding, and harvesting, their sister helping them to wash it and get it ready for market. I think it right to give them a chance to do something for themselves. I remember when I was a poor boy, that a very mean one was offered to me, though I wanted so much to make some kind of a beginning. All the money this acre produces belongs to them. They keep regular accounts of what is done upon it, charging themselves with the ploughing, cultivating, and also with what we estimate their pigeons will consume. All the money produced from these two sources, after deducting expenses, belongs to them, and I put most of it out for them as an investment, where it increases a little every year, and will be a snug capital for them to begin life with. I think it is about the best investment, next to underdraining that I have ever made."

## Poetry.

### COUNTRY CHILDREN.

Little fresh violets,  
Born in the wildwood;  
Sweetly illustrating  
Innocent childhood;  
Shy as the antelope—  
Brown as a berry—  
Free as the mountain air.  
Romping and merry.

Blue eyes and hazel eyes  
Peep from the hedges,  
Shaded by sun-bonnets,  
Frayed at the edges!  
Up in apple-trees,  
Needless of danger,  
Manhood in embryo  
Stares at the stranger.

Out in the hilly patch,  
Seeking the berries—  
Under the orchard tree,  
Feasting on cherries—  
Tramping the clover blooms  
Down 'mong the grasses,  
No voice to hinder them,  
Dear lads and lasses!

No grim propriety—  
No interdiction;  
Free as the birdlings  
From city restriction!  
Coining the purest blood,  
Strengthening each muscle,  
Donning health armor  
'Gainst life's coming bustle!

Dear little innocents!  
Born in the wildwood;  
Oh, that all little ones  
Had such a childhood!  
God's blue spread over them,  
God's green beneath them,  
No sweeter heritage  
Could we bequeath them!

## Music.

## NELLIE WHITE.

SONG WITH PIANO ACCOMPANIMENT.

WORDS BY KATE WOODLAND.

MUSIC BY DR. J. D. VINTON.

PIANO.

1. Such a dear lit - tle sprito Is
2. Sho's so cun - ning and sweet, With such
3. Sho is not o - ver wise, This
4. As I gazo with do - light, On the
5. If the Fath - er a - bove, In his
6. But the Shep - herd who leads, The dear

weo Nellie White, With hair 'like the silk - i - est gold, With eyes that are blue, And  
 quick lit - tle feet, And hands that a fai - ry might own, And the sweet - est of words, Like  
 maid - en I prize, For her years have not yet number'd three; But, for one of her age, I will  
 dear lit - tle sprito, In her in - nocence, beau - ty, and graco; I won - der what thing The dark  
 wis - dom and love, Did not know what was best for us here, I would ask for her feet Paths  
 lambs whom he feeds, Knows best where the green pastures lie; And the storms which descend, In the

ro - sy cheeks too; I will paint her and you may be - hold.  
 songs of spring birds, Come twit - tering forth with each tone.  
 dare to en - gage Sho's as cute as you oft - en will see.  
 fu - ture will bring, To dim the sweet light of her face.  
 blooming and sweet, And eyes un - dimm'd by a tear.  
 sunshine will end And thorns lead to flow'rs by and by.

*Sym.* *rit.*